

*Using realist approaches to explain and understand the optimal
use of paramedics in primary care.*



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Statement of contributions

This doctoral thesis is the independent and original work of which Georgette Eaton is the sole author.

Academic supervisors Dr Geoff Wong, Professor Kamal R Mahtani, Dr Stephanie Tierney, and Dr Veronika Williams contributed intellectual guidance on the overall research strategy, analysis, and presentation of this thesis.

Other individuals have made contributions in the following ways:

Amadea Turk: DPhil Student in Primary Care (University of Oxford) reviewed data extraction and quality assessment of a proportion of papers included in the realist review in Chapter 3.

Dr Jason Oke: Senior Statistician, Nuffield Department of Primary Care Health Sciences (University of Oxford) reviewed the quantitative analysis of results in Chapter 4.

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Declaration of authorship

This thesis is submitted in fulfilment of the requirements for the degree of Doctor of Philosophy in Evidence Based Healthcare.

This thesis is the outcome of my individual efforts and research, unless otherwise specified. I have acknowledged appropriately any assistance I have received in addition to that provided by my supervisors. Any additional sources are recognised through explicit references.

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Abstract

Paramedics, with their generalist clinical background acquired from ambulance service experience, are increasingly employed in primary care. However, the specific contribution paramedics can offer to the primary care workforce has not been distinctly outlined. This thesis aims to address this uncertainty, employing realist approaches to construct a programme theory. This theory is derived from evidence gathered through five interconnected studies, enriched by active involvement and engagement with stakeholders, patients, and the public.

An exploratory systematic review of the literature published in the United Kingdom (UK) identified gaps in the evidence base on the subject and enabled the production of an initial programme theory. This initial programme theory was refined following a broader realist review, which included a range of document sources across a global scale, and integration with key substantive theories.

Realist evaluation unfolded in three consecutive phases, each contributing to the refinement of the middle-range program theory:

- In Phase I, a mixed-methods cross-sectional survey of paramedics in primary care in the UK was conducted to comprehend the existing practices of paramedics within the NHS.
- Phase II involved an analytic auto-netnography, where the DPhil student observed online conversations among paramedics in primary care. This exploration aimed to understand paramedics' perceptions of their role and provided a unique perspective for the student as a practitioner-researcher.

- Phase III utilised focused observations and interviews to delve into the impact of paramedics on the primary care workforce. This comparative study collected data from sixty participants across fifteen sites in the UK, and twelve participants across three sites in a specific region in Canada.

The culmination of findings from each phase led to the development of a final programme theory, encompassing three conceptual categories: Expectations associated with paramedics in primary care, the transition of paramedics into primary care roles, and the roles and responsibilities of paramedics in primary care. Based on the evidence generated, there are four key recommendations regarding how paramedics work in primary care:

1. A clear strategy for communication of the paramedic's role in primary care
2. Developing a comprehensive curriculum framework for paramedics in primary care
3. The need for an effective transition support structure
4. Changes to legislation and policy

Addressing these recommendations on education, implementation and policy adjustments would likely enable paramedics optimise their contribution to primary care teams.

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List of Abbreviations

ACP	Advanced Clinical Practitioner
ARRS	Additional Roles Reimbursement Scheme
ACMD	Advisory Council on the Misuse of Drugs
CMO	Context + mechanism = outcome
CMOC	Context, mechanism, and outcome configurations
CP	Community Paramedic
CRN	Clinical Research Network
CUREC	Central University Research Ethics Committee
DWP	Department for Work and Pensions
ECG	Electrocardiogram
EMS	Emergency Medical Service
GDPR	General Data Protection Regulation
GP	General practitioner
HEE	Health Education England
HRA	Health Research Authority
MIU	Minor Injury Unit
NIHR	National Institute for Health and Care Research
OSF	Open Science Framework
OXTREC	Oxford Tropical Research Ethics Committee
PCN	Primary Care Network
PPIE	Patient and public involvement and engagement
PREOS-PC	Patient Reported Experiences and Outcomes of Safety in Primary Care
PQOC	Perceptions of Quality of Care
RAMESES	Realist And Meta-narrative Evidence Syntheses: Evolving Standards
STROBE	Strengthening the Reporting of Observational Studies in Epidemiology
UK	United Kingdom

Preface

“He who does not know the mechanical side of the craft cannot judge it.”

- Johann Goethe

This thesis represents a journey in the development of a realist programme theory that seeks to understand the role of paramedics working in NHS primary care. **Chapter 1** sets out the contextual background of the paramedic profession, the evolution of ambulance services, and the subsequent progression of the paramedic profession that has situated them in primary care. This chapter also draws on evidence gathered as part of an exploratory systematic literature review, which sets out the gaps in the evidence base and is used as a basis to develop the direction of thesis. **Chapter 2** outlines the methodology of this thesis, emphasising and justifying the use of realist approaches with reference to its ontological and epistemological assumptions. As well as an overview of the realist work packages, this chapter also introduces the stakeholder group and the patient and public involvement and engagement which forms a significant component of the direction within this doctoral research. **Chapter 3** presents the first work package in its entirety: The realist review. Starting with the initial programme theory developed from the exploratory scope of the literature in Chapter 1, this chapter outlines the methodology, results, and integration with substantive theory to support the development of the initial programme theory to a middle range realist programme theory. This format is used across each of the chapters that details empirical collection of data.

The first phase of work package two is detailed in **Chapter 4**. This sees the first refinement of the programme theory, using evidence gathered from a mixed-methods cross-sectional survey of paramedics in primary care. Most significantly, this phase

results in the development of an additional sub-category within one of the conceptual categories of the programme theory. The programme theory is refined further in **Chapter 5**, but on a deeply personal perspective to the researcher. Part of the chapter moves to a first-person narrative as an analytic auto-netnography is undertaken, and the evidence generated is explored further within additional substantive theories relating to identity, resulting in the second refinement of the middle range programme theory. **Chapter 6** refines this programme theory for the final time, following data collected in focused observations and interviews using a comparative research approach between the UK and Canada.

An overall synthesis of findings is presented in **Chapter 7**, where the evidence supporting each conceptual category within the programme theory is combined, resulting in refinement to present the final programme theory. Lastly, **Chapter 8** addresses the research questions posed in Chapter 2, concluding the thesis and offering recommendations for the employment of paramedics in primary care. A change in the narrative structure is observed during the personal reflections of the researcher in this chapter, before moving to consider future research directions.

The development of the programme theory serves as a consistent thread throughout the thesis, linking empirical evidence and substantive contributions to its refinement. Recommendations derived from understanding how, why, to what extent, and in what contexts paramedics work in primary care contribute to intelligent policy and professional development. Considering this in the context of the opening quotation of this preface, perhaps this too should evolve to:

*He who does not know the mechanical side of the craft cannot **develop** it.*

Chapter 1: Introduction

Paramedics in the United Kingdom (UK) are traditionally associated with the provision of emergency care within an emergency ambulance service, responding to life-threatening emergencies through the 999-call system. However, over the last decade, changes to healthcare access for patients have created a sociocultural dependence on ambulance services (Wankhade, 2010), and a large proportion of patients access 999 with lower-acuity presentations, with only 8% of 999 calls being for life-threatening illnesses or injuries (NHS England, 2014).

As the care provided by ambulance services has changed, the role of the paramedic has had to evolve. In addition to advanced life support, paramedics now need to be skilled in managing undifferentiated and unscheduled health complaints, including long-term conditions; acute presentations of mental ill health; assessment of social care needs; and a range of urgent care presentations (National Institute for Health and Care Excellence, 2017a, 2017b, 2018). This has created the opportunity for paramedics to work across a variety of healthcare settings, in addition to their traditional ambulance service employers. These settings include acute hospital trusts, forensic healthcare, minor injury units, urgent care centres, and primary care services (Evans et al., 2014; O'Meara, 2014; Eaton et al., 2018; Mahtani et al., 2018; Ellis, 2022).

Support for paramedics to work specifically in primary care has been outlined in key policy documents published in the last five years (NHS England, 2019a, 2019b),

cementing the paramedic position in the English primary care workforce through remuneration by central government funds to general practices who employ this professional group (NHS Confederation, 2021; NHS England, 2021). This has been in a bid to bolster the primary care workforce, which has experienced an unprecedented increase in demand in terms of patient needs and more patients requiring complex case management within the community (Montgomery et al., 2017). These challenges have resulted in recruitment and retention issues for physicians within primary care (Majeed, 2017), requiring workforce changes and opportunities for other clinicians to work in this setting to support general practitioner (GP) roles (NHS England, 2019b; Primary Care Workforce Commission, 2015).

The professional evolution of paramedics within ambulance services has equipped them to be well suited to work in primary care. Unsurprisingly, paramedics may wish to develop their practice in a clinical setting characterised by an absence of shift work and having access to clinical supervision by physicians, which may develop their practice further (Mahtani et al., 2018). Indeed, as paramedics transition into these roles within primary care, their knowledge and skill sets will undoubtedly change and grow (Batt et al., 2019), offering career development outside of the ambulance service.

These expanded roles for paramedics to focus on urgent care have coincided with a move from a range of vocational training pathways to degree-level pre-registration programmes (Health and Care Professions Council, 2018). This is complemented by a career framework for paramedics to progress in specialist practice in urgent or critical care before moving into advanced practice roles through postgraduate study (College of Paramedics, 2016a). Legislation has also evolved to support independent

prescribing by paramedics working in advanced practice roles (NHS England, 2018). With changing demands on health and social care services and higher education thresholds associated with clinical career development, the paramedic of the 21st century has evolved to be a generalist.

1.1 What we know and do not know about paramedics in primary care

While paramedics may be well suited to work in primary care based on their generalist background developed from working in the ambulance service, and with key policy supporting the move of paramedics into the primary care workforce, what is not clear is the contribution paramedics can make to the primary care workforce.

To address this, an exploratory systematic scope of the literature was undertaken to identify gaps in the evidence base since the last literature review on the subject (Ball, 2005). The methodology and search results of this systematic review are outlined in **Appendix A**. A narrative synthesis describes the nature and scope of the reported findings within the identified studies, and the paper was subsequently published (Eaton et al., 2020). These findings are summarised in the following sections.

1.2 Clinical work environment

The literature identified that paramedics work in a range of clinical environments, including commissioned home visiting services (Abrams et al., 2018; Lattimer et al., 2010; NHS England, 2015, 2017; Proctor, 2019; RSM UK Group, 2017), primary care (Brown, 2017; Clarke, 2018; Lattimer et al., 2010; Mason et al., 2006; NHS England, 2019a, 2019b; Northumberland Clinical Commissioning Group, 2016; Spence, 2017; Spencer, 2016; Turner & Williams, 2018), out-of-hours (Eaton, 2017; Halter et al.,

2007; Moule et al., 2018), and urgent care units (including first aid units, minor injury units, minors departments in hospitals and walk-in-centres) (Eaton, 2017; Hill et al., 2014; Mason et al., 2006; NHS England, 2015; Turner et al., 2015).

There was also evidence of rotational roles, where paramedics were either employed by the ambulance service and worked on a rotational rota through other clinical settings, such as primary care settings (Eaton, 2017; Mason et al., 2006; RSM UK Group, 2017; Turner et al., 2015; Turner & Williams, 2018; Woollard, 2006) or where paramedics had a portfolio role between ambulance service and primary care employment (Hill et al., 2014).

1.3 Clinical activities in primary care

The role of the paramedic in primary care varied little across the papers, highlighting that paramedics in primary care generally undertake similar roles that focus on the undifferentiated, undiagnosed patient. These include minor injury and illness clinics (Brown, 2017; Clarke, 2018; Daly, 2013; Eaton, 2017; Mason et al., 2006; Northumberland Clinical Commissioning Group, 2016; Spencer, 2016; Turner & Williams, 2018), home visiting (Abrams et al., 2018; Brown, 2017; Daly, 2013; Lattimer et al., 2010; NHS England, 2015, 2017; Northumberland Clinical Commissioning Group, 2016; Proctor, 2019; RSM UK Group, 2017; Spencer, 2016; Turner & Williams, 2018), and using paramedic-specific skills (such as 12-lead ECG interpretation) to assist in general health assessment (Brown, 2017; Clarke, 2018; Daly, 2013; Eaton, 2017; NHS England, 2019a; Spencer, 2016; Woollard, 2006). There was no mention of paramedics providing high-acuity care within these settings, but it was acknowledged that one of the advantages of the employment of paramedics in primary

care was the ability to provide high-acuity or emergency care if needed (Daly, 2013; Eaton, 2017; Spence, 2017; Spencer, 2016).

Four case studies (Brown, 2017; Daly, 2013; Eaton, 2017; Lattimer et al., 2010) and one report (Clarke, 2018) presented typical days for paramedics working in primary care settings of general practice surgeries and a rural first aid unit. Despite the different geographical areas of the UK identified in these case studies, the type of work undertaken was similar, indicating that paramedics working in clinical primary and urgent care roles tended to adopt a similar working day.

1.4 Education and training

Postgraduate education was outlined as a requirement for paramedics to work in primary and urgent care (Clarke, 2018; Hill et al., 2014; Lattimer et al., 2010; Mason et al., 2006; Moule et al., 2018; Scott & Carney, 2004a; Turner & Williams, 2018; Woollard, 2009), in line with the guidance outlined by the College of Paramedics (College of Paramedics, 2016b). However, there was no outline of the specific competencies required for paramedics to work in these settings. One paper (Moule et al., 2018) highlighted the importance of supervision and mentoring for paramedics as they entered primary or urgent care roles, while another (Brown, 2017) outlined how paramedics may also be used to provide mentorship to student nurses and physician associates.

There was no mention of the education level or training required for paramedics to work in primary care in national policy documents that encourage this professional group to join this workforce (NHS England, 2019a, 2019b).

1.5 Job titles

There appears to be a wide variation in the job titles of the paramedics working in primary care, either being “paramedic” (Clarke, 2018; Daly, 2013; Moule et al., 2018; NHS England, 2015; NHS Wales, 2015; Spence, 2017; Spencer, 2016; Woollard, 2007), “specialist paramedic” (Eaton, 2017; RSM UK Group, 2017; Turner & Williams, 2018), “paramedic practitioner” (Brown, 2017; Lattimer et al., 2010; NHS England, 2016; Proctor, 2019), “emergency care practitioner” (Abrams et al., 2018; Hill et al., 2014; Lattimer et al., 2010; Scott & Carney, 2004a); “advanced paramedic” (NHS Wales, 2015; Northumberland Clinical Commissioning Group, 2016), or “community paramedic” (NHS England, 2019b, 2019a; Northumberland Clinical Commissioning Group, 2016).

This review highlighted both the variety of job titles paramedics working in primary and urgent care operate under and the lack of uptake of the professional body’s stance on the job titles of registered paramedics. Some of these titles represent different clinical grades, as the progression in seniority moves from “paramedic” to “specialist paramedic” to “advanced paramedic” (College of Paramedics, 2018). “Paramedic practitioner” and “specialist paramedic” equate to the same clinical grade. It is interesting to note that the two most recent documents by NHS England (NHS England, 2019b, 2019a) refer to paramedics working within primary care with different job titles – “first contact community paramedic” and “community paramedic” – neither of which are endorsed or used by the professional body. Furthermore, there is no formal definition for “community paramedic” within the UK, though these do exist internationally (Guo et al., 2017). The job title “emergency care practitioner” is an outdated term used to describe a paramedic or nurse with extended combined skills

(Scott & Carney, 2004a), and such titles have been formally discouraged by both the nursing and paramedic professional bodies since 2008 because of the confusion to service users caused by this title (Leary et al., 2017).

From the results of this review, the variety of job titles was reported to be confusing for patients in two studies (Halter et al., 2007; Proctor, 2019), as well as other clinicians within primary care (Hill et al., 2014; Turner & Williams, 2018; Woollard, 2007).

1.6 Patient satisfaction

Three papers used retrospective comparators to record patient satisfaction following treatment by a paramedic (Halter et al., 2007; Proctor, 2019; RSM UK Group, 2017). While these papers document high satisfaction levels from patients who were visited by a paramedic in their home, in two papers a small minority of patients remained keen to be assessed by their GP (Proctor, 2019; RSM UK Group, 2017), and other patients remained unclear about the purpose of the assessment undertaken by the paramedic (Halter et al., 2007). Across these papers, patient satisfaction was a side component of the research rather than the main focus.

1.7 Reduction in GP workload

Paramedics were partly introduced into the primary care workforce to support the rising demands and workloads of GPs. In some cases, the role of paramedics in primary care settings was specifically reported to decrease general practitioner workload by assessing and treating urgent, non-complex patients (Brown, 2017; Daly, 2013; NHS England, 2019a; RSM UK Group, 2017; Spence, 2017; Spencer, 2016).

However, two papers highlighted that patients may still prefer to see their registered general practitioner rather than a paramedic (Proctor, 2019; RSM UK Group, 2017).

Issues were raised that patients may not have a straightforward consultation with a paramedic if treatment needs to be clarified with a medical doctor (Lattimer et al., 2010; Mason et al., 2006), and this would therefore create an extra step in the patient journey. In some areas, there was an expectation that the paramedic would report to a more senior clinician for all patient cases (Daly, 2013; Northumberland Clinical Commissioning Group, 2016; Scott & Carney, 2004a). Such referrals were reported as lengthening consultation time, with little gain for the patient, and the paramedic role in these cases was regarded as being of more limited value.

Other papers highlighted that the time paramedics spent with patients was generally longer than their physician or nursing counterparts within primary care (Halter et al., 2007; Hill et al., 2014; Mason et al., 2006; Moule et al., 2018; Turner & Williams, 2018), and so researchers questioned the benefit of their value from an economic standpoint. The slightly longer home visits by paramedics were deemed to be positive by patients in one study (Proctor, 2019). Another study (Hill et al., 2014) showed that the length of patient contact differed between clinical settings, typically being longer when paramedics were employed by ambulance services rather than in primary care. The reasons for this were not explored in the paper, but it is worth noting that the pressure to see patients within a specific time frame does not exist in the ambulance service, unlike in primary care.

Only one paper associated paramedic roles in primary care with an overall cost saving (Mason et al., 2006), although this finding was an estimate and the paper was authored in 2006; therefore, relevance to today's primary care operating environment is unclear.

1.8 Summary

The evidence within this review identified that the role of the paramedic working in primary and urgent care is being advocated for and implemented across the UK, but current evidence failed to provide sufficient detail regarding the clinical contribution of paramedics in this setting. If primary care employers are to see the full potential of paramedics in this workforce, then research needs to be undertaken to understand the impact of paramedics working in primary care on different populations and contexts. It is this question that is the crux of this thesis and will be outlined in more detail in **Chapter 2**.

Chapter 2: Methodology

The systematic review outlined in **Chapter 1** identified various factors that appeared to contribute to the paramedic's role in primary care. These include the clinical skills of the paramedic, the education and training preparing them to work in this setting and the titles under which they were employed. To understand these factors, the employment of paramedics in primary care can be conceptualised as a complex intervention. Interventions may be considered complex due to the range of factors that contribute to the intervention. These can include the expertise and skills required (e.g., paramedic education and training resulting in the acquisition of clinical acumen), the permitted level of flexibility of the components of the intervention (e.g., how the paramedic's clinical role in primary care is standardised), the number of groups within the intervention itself (e.g., the types of paramedics working in primary care), and the number of components involved (such as the three outlined above). It is the non-linear interactions of these various components that make the intervention complex to understand (Skivington et al., 2021).

Evaluation of a complex intervention requires a sound theoretical understanding of how and why the intervention works so that weak components of the intervention can be identified and steps taken to strengthen them. For example, the systematic review identified a lack of standardisation in the implementation of paramedics in primary care (Eaton et al., 2020). Evaluating the integration of paramedics in primary care as a complex intervention enables the determination of whether strict standardisation is appropriate (e.g., whether there should be standardisation of the paramedic's clinical

role in primary care) or whether the intervention works better when adapted to suit specific settings (Campbell et al., 2007). In order to comprehend any outcome of interest when the intervention is implemented, an understanding is required regarding how the setting and social environment impact the outcome (McNeill et al., 2006). The dynamic and non-linear nature of humans acting in society is one of the reasons why traditional research methods that seek to understand some interventions, such as randomised controlled trials, have limitations in their ability to understand the emergent nature of outcomes in the social world. Factors that could make a difference, including individual agency, are converted into empirically recorded variables or, worse, ignored (Emmel et al., 2018).

The papers included in the systematic review of **Chapter 1**, and the methodology of the review itself, outlined a description of what is occurring as paramedics move to work in primary care (Eaton et al., 2020), without explaining the real social processes that impact their work in this clinical setting. This does little to offer a broad or deep understanding regarding *how* paramedics are working in primary care, failing to surface *what* they do in that work, *why* they work there, *where* their contribution is maximised, and *for whom*. Realist science seeks to answer explanatory questions about real social processes through the use of models that can explain why the empirically recordable looks and behaves the way it does (Emmel et al., 2018). It is this perspective that can provide the ontological breadth and depth required to embrace real social processes and understand the phenomena associated with a complex intervention.

2.1 Ontology and epistemology of the realist approach

The foundational ontology in realism holds that there is the 'actual' that is tangible, and that there is a mind-independent reality that exists, regardless of awareness of the fact that it does so. Acknowledging such a stratified account of reality is essential in order to explain the deeper causal powers that shape the observable (Bhaskar, 2008; Bourdon, 1998; Harré, 1972; Hesse, 1974; Lawson, 2012; Pawson, 1989; Sayer, 2000; Stinchcombe, 1991). Thus, epistemology in realism claims that knowledge is gained through understanding the mind-independent reality based on information that can be obtained through the 'empirical'.

There are differing schools that seek to expand and explain this concept within realism. For the following methodology, the philosophy of critical realism outlined by Bhaskar (2008) was adopted. This stated that the world comprises the 'actual' (which exists, regardless of whether or not it is experienced), the 'empirical' (which can be tangibly observed or experienced), and the 'real', which is a combination of the actual and the empirical, but also includes the generative processes or events that result in the actual and the real being manifested. Central to this viewpoint is how causality is assumed by Bhaskar to occur: that which has real effect must, by definition, be real, regardless of whether it is observable. A key feature of realism is this natural necessity that it results from an uninhibited and deterministic natural tendency (Harré & Madden, 1975) for all events, including acts of will, to be determined by antecedent causes. This is the foundation of the causal processes that underpin reality. For Bhaskar, reality is a social construct with mentalistic tendencies. Therefore, realist thinking *de dicto* presents a dual-aspect philosophy of social reality, accepting both behaviourism

and mentalism. This duality supports the creation of models, known as mechanisms, which are central to realism.

While mechanisms may reside in Bhaskar's realm of the 'real', they are not observable and are invisible within the causal process (Bhaskar, 2008). Building on Bhaskar's concept of the stratified ontology and hidden causal forces that are found in the domain of the 'real', Pawson (1989) developed mechanistic thinking. In the realism of Pawson, mechanisms remain hidden, but are also considered to be context-sensitive, in that mechanisms fire differently in different contexts to produce different outcomes (Pawson, 2013b). Therefore, mechanisms are conceptualised to occur across different system levels, such as the cognitive, material or social.

It is this mechanistic thinking that is a cornerstone of realist reasoning and the foundation on which realist research is developed. Within each system, mechanisms may be conceptualised in a variety of ways. These include feedback loops, where later stages depend on inherently earlier stages (Westhorp, 2018), such as paramedics bringing their experience from work in the ambulance service to work in primary care. They may also be conceptualised as forces that exert pressure (i.e., legislation that enables paramedics to prescribe medicines) or interactions (i.e., transfer between elements resulting in a changed state, such as a gunpowder explosion) (Emmel et al., 2019). Mechanisms may also be considered in relation to power and accountability (such as the provision of clinical supervision given to paramedics working in primary care) and reasoning (such as the assumptions made about paramedics by the patients they see or the healthcare professionals they work with). Considering mechanisms in this way, Westhorp (2018) proposed that mechanisms are "*nested within each other*"

(p. 44). It is therefore logically consistent for these invisible mechanisms to operate at different system levels, across different temporalities, and be necessarily dependent on relationships between different components within a system. This is not dissimilar to how complex interventions are conceptualised (Skivington et al., 2021).

2.2 The realist approach to research

In their seminal work on realist evaluation, Pawson and Tilley (1997) argued that to examine complex problems, researchers must look for mechanisms at the level of human reasoning. Rooted in a stratified social reality, realist evaluation considers mechanisms to cause change, rather than specific interventions (Pawson, 2013a). Since mechanisms are inherent liabilities or a property of things and people, they are everywhere but do not necessarily have real effects unless activated within a specific context, and these contexts may belong to the 'actual' or 'empirical' (Pawson & Tilley, 1997). While recent work has tried to standardise the conceptualisation of contexts either as a "*feature that triggers*" (Greenhalgh & Manzano, 2022, p. 592) or as an unstable construct (Heritage & Drew, 1992), Pawson argued that context may be "*absolutely bloody everything*" (Greenhalgh & Manzano, 2022, p. 592). Therefore, a broader approach is needed when considering the definition of a context. However it is manifested, context (conceptualised broadly) and mechanism (part of the real) can be linked to an outcome (empirical) to explain how, why, and when something happens (Linsley et al., 2015).

Here, it is mechanisms that are the key, as they encapsulate the "*underlying entities, processes, or structures which operate in particular contexts to generate outcomes of interest*" (Astbury & Leeuw, 2010, p. 368). Thus, mechanisms will only activate in the

right conditions, providing a context + mechanism = outcome (CMO) configuration (CMOC), and this is the central theory of knowledge (known as the programme theory) within realist enquiry (Pawson & Tilley, 1997). These programme theories are the rudimentary, tentative, and testable models of realist science.

However, there are methodological implications regarding how these theories can be developed empirically. Research methods must have the capability to investigate mechanisms as they occur and operate at the micro, meso, and macro levels of a system, both instantaneously and over time. Considerations also need to be given to the invisible nature of mechanisms and how these may be elicited from the relationships and interactions of agents within a system. While some aspects of interactions can be observed (i.e., conversation), other aspects cannot (i.e., the thoughts, beliefs, and values of agents within that conversation). Westhorp (2018) advised that these three components (system level, temporality, and relationships/interactions) should be the focus of research that seeks to explain causal mechanisms through the production of a CMOC.

To provide guidance for the conduct and publication of realist research, Realist And Meta-narrative Evidence Syntheses: Evolving Standards (RAMESES) exist for realist review (Wong, Greenhalgh, et al., 2013; Wong, Westhorp, et al., 2013) and realist evaluation (Wong et al., 2016, 2017). Standardisation of the research approach is important to ensure quality and consistency for realist research in policy-relevant areas, such as paramedics working in primary care.

As paramedics transition to roles within primary care, their knowledge and skillset will need to change (National Institute for Health and Care Excellence, 2017b, 2017a; Primary Care Workforce Commission, 2015). Therefore, the current opportunities for paramedics' employment in primary care require careful evaluation in order to contribute to patients and the NHS primary care agenda. Evidence must be generated to show how and why these changes would work, for whom, in what context, and to what extent. Gaining a comprehensive understanding of why paramedics are opting for these roles, how they practise in this setting, and what their contribution to patient care is will contribute to the development of the profession, workforce planning, and patient safety. Without this understanding, there is a risk of developing a future workforce that is not fit for purpose and lacks direction.

Taking a realist approach is important for this project, as the methodology recognises the complexity of the real-world working lives of paramedics who will (by nature of their experiences) work differently and in different contexts. The approach is ideally suited, as it is already known that paramedics are trained to different standards and work in a different capacity in different environments (Eaton et al., 2020). Therefore, realist approaches will facilitate the exploration of these different contexts, how they influence outcomes, and through which mechanisms. This will also enable consideration to be given as to whether patients, other healthcare professionals, and the health service in general are benefitting (or not) from paramedics working in primary care.

2.3 Research objectives and questions

This research aims to improve the understanding of the ways in which paramedics impact (or not) the primary care workforce. This research seeks to achieve the following research objectives:

1. To conduct a realist review to understand the ways in which paramedics impact the primary care workforce. This will be done with (a) engagement with a diverse range of literature; (b) the development of a programme theory; and (c) feedback and advice from stakeholders experienced in the field.
2. To undertake a realist evaluation of the existing ways in which paramedics work in primary care within the NHS. This will build on the information obtained from the realist review and develop the programme theory.
3. To produce recommendations that guide the implementation of a workplace-based curriculum framework for paramedics working in primary care.

These will be achieved by answering the overarching research question: What is the role of paramedics working in NHS primary care?

This, in turn, will be addressed through the following sub-questions:

1. How, why, for whom and in what contexts do paramedics 'work' in primary care settings?
2. What is the impact of paramedics working in primary care teams on the working practices of other healthcare professionals and the experiences of patients?
3. What knowledge, capabilities and skills do paramedics working in primary care need to work in primary care within the NHS?

2.4 Research methods

This research uses two main approaches: realist review (Work Package 1) and realist evaluation (Work Package 2). These approaches were outlined in a protocol published at the outset of this research (Eaton et al., 2019) and summarized in **Appendix B**. This research uses the approaches put forward by Pawson and Tilley (Pawson, 2006b; Pawson & Tilley, 1997) and follows the RAMESES standards for conducting and reporting realist reviews (Wong, Greenhalgh, et al., 2013) and realist evaluations (Wong et al., 2016).

2.4.1 Work Package 1

As outlined in **Chapter 1**, a systematic review of the literature (Eaton et al., 2020) enabled the development of an initial programme theory. This initial theory can be expanded through undertaking a realist review. A realist review can synthesise a range of relevant data, such as quantitative, qualitative, and mixed-method research, as well as grey literature, and move beyond a description of literature by using a theory-driven interpretative approach to analysis. Using data from such diverse sources enables the revision of the initial programme theory and the development of CMO configurations (Pawson et al., 2005). This work package is summarised in detail in **Chapter 3**.

2.4.2 Work Package 2

Realist evaluation is a form of primary research that is theory-driven. Primary data will be collected from the 'real world' NHS practice to further develop the programme theory developed from the realist review in Work Package 1 (Pawson & Tilley, 1997). Realist evaluation may be carried out using more than one method to collect relevant data (Ebenso et al., 2019; McEvoy & Richards, 2006; Nurjono et al., 2018); therefore,

data collection will occur in three distinct phases: (a) a cross-sectional survey of paramedics working in primary care (outlined in **Chapter 4**); (b) an analytic auto-nethnography (**Chapter 5**); and (c) focused observations and interviews of paramedics, patients they have seen and other professionals they work with in primary care (**Chapter 6**).

2.5 Patient and public involvement and engagement

For recommendations to be made regarding the addition of paramedics into primary care workforces, including the voices of patients is paramount. The moral argument for citizens to have a voice in public services, particularly health and care services for which they pay taxes, is founded on the notion of rights of citizenship – where citizens, or patients in this case, have the right to be involved in health interventions that would affect them as individuals (Martin, 2008). This has been introduced in health research policy since the early noughties, with patient and public involvement and engagement (PPIE) becoming a statutory part of research governance frameworks (Department of Health, 2005) and subsequent legislation (Health and Social Care Act, 2008).

At the start of this project, initial engagement with patients and members of the public came from an established patient participatory group attached to a community hospital within which paramedics ran the out-of-hours service (Gallagher, 2016). While this group was fundamental in supporting the initial stages associated with the development of this research, the lack of diversity was recognised within this group. Subsequently, an advertisement for patient and public representatives to be part of and involved in this research was listed on the National Institute for Health and Care Research (NIHR) People in Research recruitment website. Following an excellent

response, a diverse range of nine contributors from across the UK (including England, Scotland, and Wales) were invited to start the PPIE group supporting this project.

2.6 Stakeholder engagement

In addition to PPIE, stakeholder engagement in research is increasingly promoted as an important pathway to achieving impact (Kok et al., 2016). To ensure appropriate involvement from relevant experts for this research, stakeholders were defined as *“individuals, organizations or communities that have a direct interest in the process and outcomes of a project, research or policy endeavour”* (Deverka et al., 2012, p. 5). With this definition in mind, a multi-stakeholder engagement approach was undertaken with representation from the College of Paramedics (the professional body for paramedics), the Health Foundation, the King’s Fund, the Nuffield Trust (policy advocates working in the non-governmental sector), NHS England Workforce Transformation and Education Directorate¹ (policymakers), and the Royal College of General Practitioners (the professional body for GPs).

The subsequent engagement with these patients, public, and stakeholder representatives will be outlined in **Chapter 8** regarding the overall contribution within this thesis. Collaboratively, insights provided by patients, the public, and key stakeholders will enhance comprehension of the underlying 'folk theories' guiding this research. These theories, as outlined by Pawson and Tilley (2004), represent enduring beliefs that emerge due to uncertainty about how a process functions.

¹Formally called Health Education England, NHS England Workforce Transformation and Education Directorate is a non-departmental public body, which provides coordination and support for the training and education within England’s healthcare workforce.

Chapter 3: Realist Review

Realist reviews are a theory-driven approach to evidence synthesis. They are underpinned by a realist philosophy of science in which causation is viewed as a generative process where the outcomes are caused by context-sensitive mechanisms (Pawson, 2006b). Outcomes in complex interventions are explained by context, mechanism, and outcome configurations (CMOCs), where certain mechanisms are triggered by certain contexts, producing certain outcomes. These come together to create a programme theory about how an intervention is thought to work, and under which conditions (Pawson et al., 2004).

This review followed the RAMESES publication standards for realist synthesis (Wong, Greenhalgh, et al., 2013). A protocol was published *a priori* (Eaton et al., 2019), and the findings were subsequently accepted for publication (Eaton, Wong, et al., 2021). This chapter summarises the methods, results, and main findings of this realist review.

3.1 Initial programme theory

This realist review builds on the aforementioned systematic review (Eaton et al., 2020) to offer a more in-depth understanding of how paramedics might work in primary care, for whom, in what circumstances, and how to optimise their contribution to the primary care workforce. Reviewing the evidence concerning paramedics working in primary care in this way is warranted, given the prominence of paramedics working in primary care globally.

A realist review starts and ends with a theory or theories. A programme theory is described as “a set of explicit or implicit assumptions of how the programme should be organised and why the programme is expected to work” (Chen, 2012, p. 16). Exploratory scoping of the literature (Eaton et al., 2020) enabled an initial programme theory to be developed to explain how paramedics work in primary care (Figure 1). In this initial programme theory, key contexts were the nature of employment of paramedics in primary care, the nature of their implementation in the primary care workforce, existing workforce capacity and the perceived nature of the needs of the patient (for whom the paramedic would provide care). Key outcomes were satisfaction of paramedics working in the ambulance service and primary care, patient satisfaction with seeing a paramedic, the development of a paramedic to transition from working in ambulance services to primary care, and how the gaps in the primary care workforce were addressed. These outcomes were influenced by trust in the paramedic and the perception of the paramedic’s role.

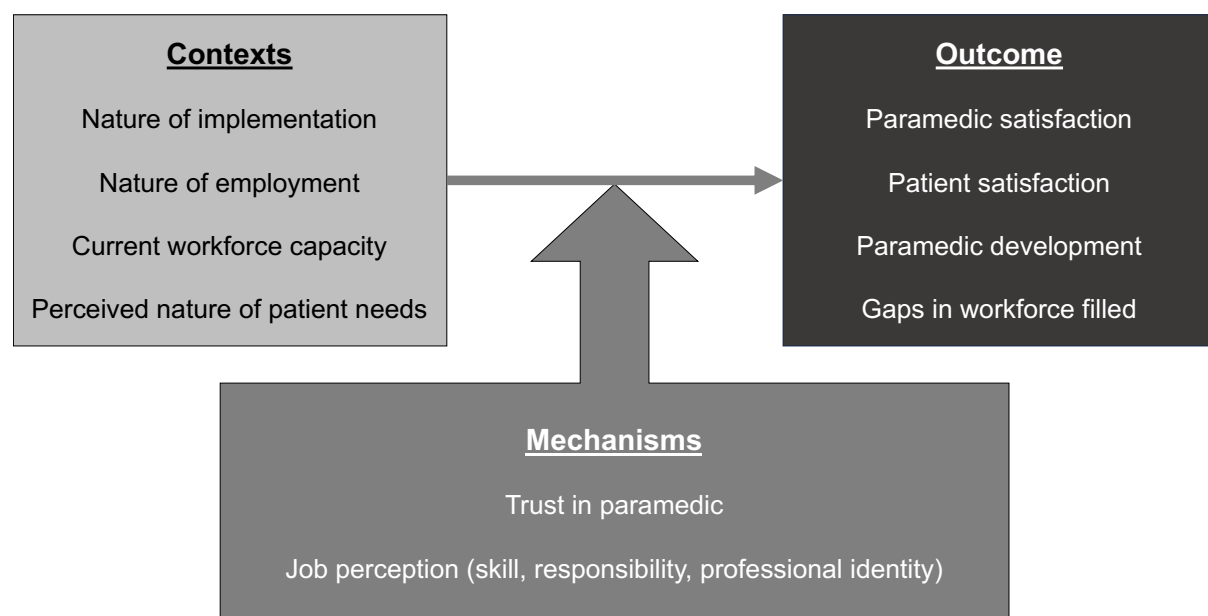


Figure 1. Initial programme theory

3.2 Objective and focus of the review

Beginning with this theory, discussions were held with the patient participation group and representatives from key stakeholder groups, including the College of Paramedics, the Health Foundation, the King's Fund, the Royal College of General Practitioners, NHS England Workforce Transformation and Education Directorate, and the Nuffield Trust. From these discussions, it became apparent which areas needed to be focused on to understand this complex intervention. This included the type of paramedic working in primary care, including their experience and education level. Such 'folk theories' (Pawson & Tilley, 2004) are useful where reviews seek to inform policy, as they enable researchers to unearth models that actors or stakeholders are implicitly using to describe and understand an intervention or phenomenon.

The overriding objective of this review was to understand the ways in which paramedics impact (or not) the primary care workforce.

3.3 Searching process

While UK paramedics were first known to be taking up positions in primary care in 2002 (College of Paramedics, 2021b), the previous systematic review (Eaton et al., 2020) found no empirical papers on paramedics in the UK before 2004.

Searches were built on those designed during the systematic review, which were piloted and refined with the help of an information specialist. The Cochrane Database of Systematic Reviews [29/01/2021], Medline (OvidSP) [2002-29/01/2021], CINAHL (EBSCOHost) [2002-29/01/2021], PsycINFO (OvidSP) [2002 -29/01/2021], Embase (OvidSP) [2002-29/01/2021], NHS EED and DARE via CRDWeb

(<https://www.crd.york.ac.uk/CRDWeb/>) (01/01/2002 to 29/01/2021), ERIC (ProQuest), Joanna Briggs Institute (<https://jbi.global/>), EBP (<https://jbi.global/ebp>) and OpenGrey (<http://www.opengrey.eu/>) databases were searched using free-text keywords and subject headings for the two key concepts: paramedic and general practice/primary care. An additional search of Google (29/01/2021), was undertaken with adapted keywords, where the first ten pages of results were reviewed (**Appendix C**).

The citations of the screened articles were also reviewed for any new publications not found within the searches. Articles were searched from January 2004 to March 2019. The search strategy was repeated in April 2020 and January 2021 to determine the presence of any new articles following significant events for the paramedic profession, such as an independent prescribing legislation change in the UK in 2019 (NHS England, 2018a) and updates to the English *General Practice Contract* in 2020 (NHS, 2020).

3.4 Selection and appraisal of documents

Screening of articles was undertaken in two phases, first by title and abstract, and then by full text. The previous review was limited specifically to paramedics working in the UK (Eaton et al., 2020), and so this realist review was expanded to capture additional relevant papers authored in countries in which the paramedic profession is most similar to that of the UK (through either education or regulation) and where paramedics are working in community roles (Chan et al., 2019; Gregg et al., 2019; Leyenaar et al., 2018; O'Meara et al., 2016). Therefore, the inclusion criteria were as follows:

- Paramedics with professional registration or higher education (Australasia, Canada, UK, and USA)

- Situated in primary care (minor injury units, out-of-hours services, urgent care centres, walk-in centres, first aid units, general practice, family practice clinics)
- Written in English

Papers that were excluded were from countries where paramedics were not state-registered or educated to the same standard as the UK (Eaton et al., 2019).

Full-text articles assessed for eligibility were read and checked to see whether they contained relevant data that were of sufficient rigour (Pawson, 2006a). Data were considered relevant if they contributed to the development or testing of the emerging CMOCs within the programme theory.

3.5 Data extraction and organisation

Full-text documents were uploaded into NVivo (QSR International Pty Ltd. Version 12, Release 1.0, 2018) for data management and coding. Coding was initially inductive, classifying content into conceptual categories, such as education, scope of paramedic role, and perceptions of paramedics. From this, 10% of these initial codes were viewed independently by a member of the supervisory team, and no contradictions were identified.

3.6 Data synthesis

Following the sorting of data into abstract categories and (where possible) potential contexts, mechanisms, and outcomes within each category, a realist logic of analysis was applied to develop CMOCs that explain how an outcome was caused by the interaction between the context and mechanism (Papoutsi et al., 2017). This was repeated for all data found within each abstract category, enabling CMOCs to be built

that began to explain the factors affecting paramedics working in primary care (Ebenso et al., 2019; Shearn et al., 2017).

These CMOCs were presented to the patient participation group and representatives from key stakeholder groups. Discussion with individuals from these groups was used to confirm, refute or refine the CMOCs and to develop an understanding of how and where they fit into the programme theory.

3.7 Results

The combined searches outlined in **3.2** resulted in 4,446 articles after duplicates were removed via reference management software (Mendeley, Version 1.19.8). Document characteristics were extracted into an Excel spreadsheet (Microsoft 2021, Version 16.0). In total, 205 documents were included in the review, of which 20% were checked for consistency by a peer DPhil candidate. This prompted discussion about two articles regarding the rigour of the methodology used. Both articles were subsequently included in the final review. The selection process is outlined in Figure 2.

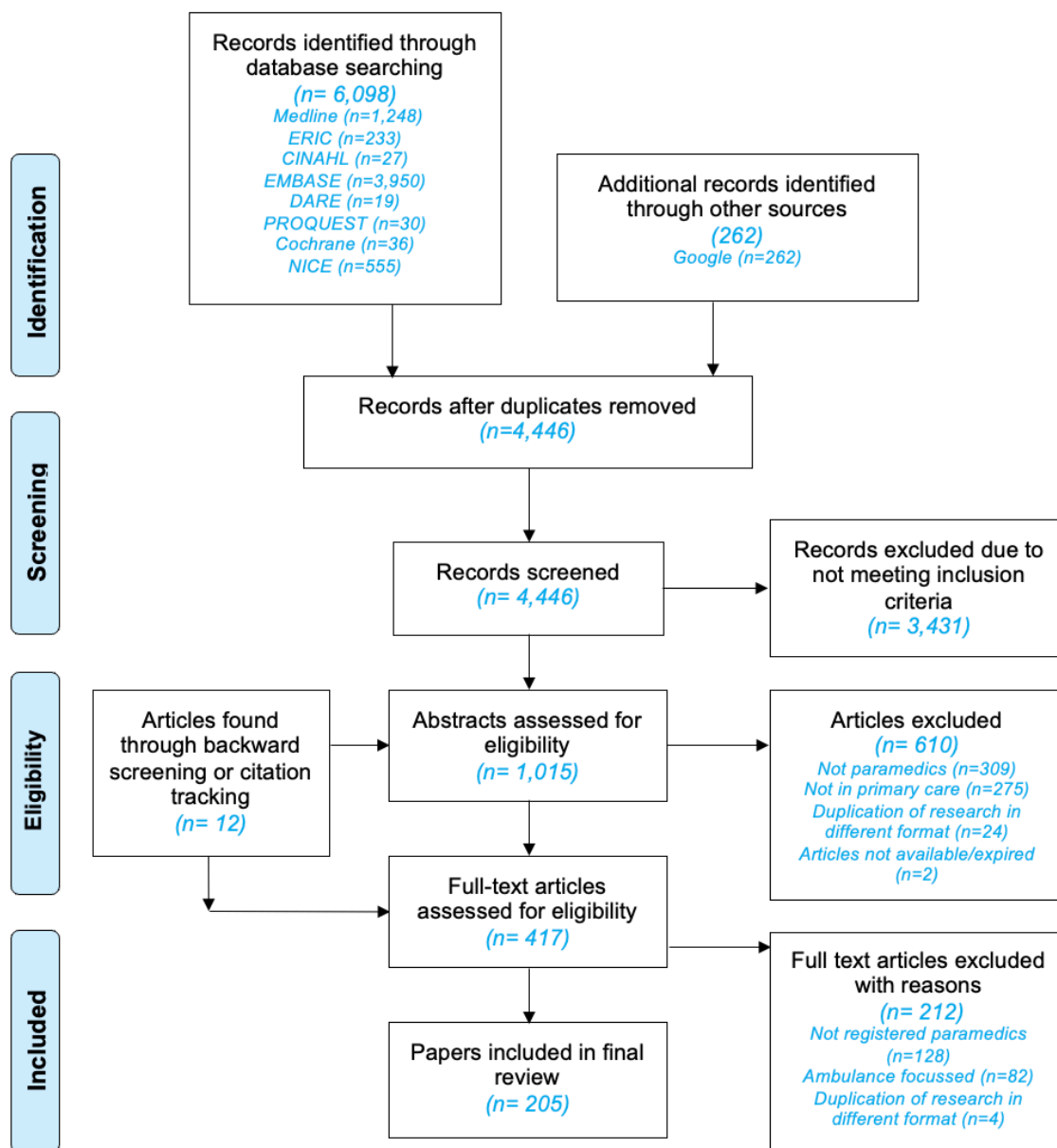


Figure 2. Document Selection and Appraisal Flowchart

These 205 documents were coded to refine the initial programme theory and develop the CMOCs. Included documents were published between 2004 and 2021, and covered paramedics working in primary care roles across Australasia, Canada, England, Finland, Scotland, the USA, and Wales. This table of documents is outlined in **Appendix D**.

Included documents in the review were varied, with the most commonly occurring being case studies (n = 24); interviews (n = 13); ethnographies (n = 5); job advertisements (n = 43); news articles (n = 20); opinion pieces (n = 10); randomised controlled trial (n = 5); systematic reviews (n = 7); and workforce plans (n = 5). Figure 3 outlines the range of documents retrieved from the database searches.

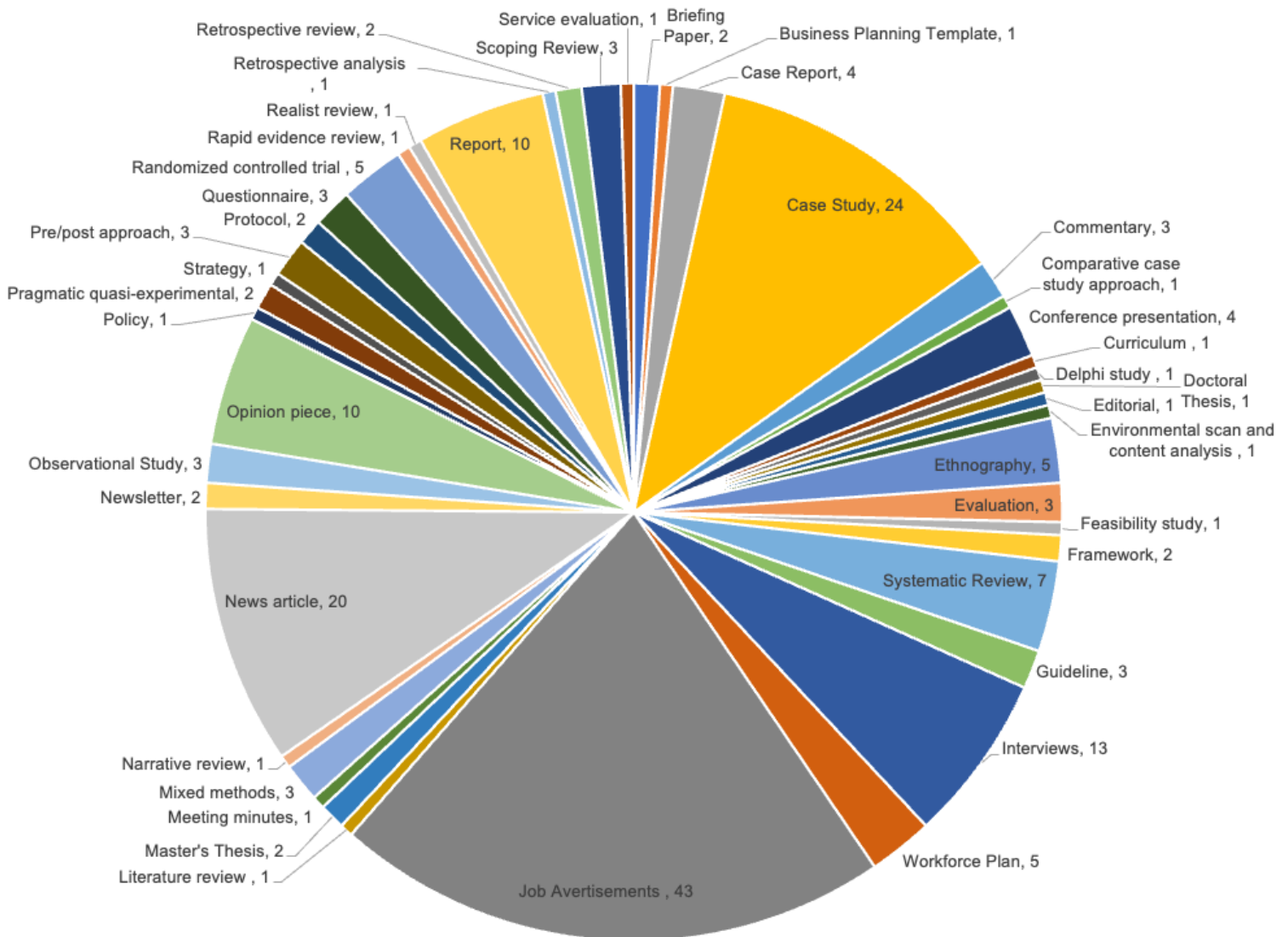


Figure 3. Types of Document Pie Chart

3.8 Main findings

These 205 documents were used to develop the 28 CMOCs (**Appendix E**) that made up the middle-range programme theory regarding how paramedics work in primary care. This section provides a narrative overview of the three concepts within which these CMOCs are classified and will go on to explain how these are brought together along with substantive theory to produce a middle-range programme theory about how paramedics work in primary care (see Section 3.10).

Concept 1: Expectations of paramedics working in primary care

While the paramedic role may be well established within some systems, such as the UK's NHS, understanding the expectations of how paramedics may contribute to and work within primary care was considered to be important within the literature. These expectations were considered in the light of patient perspectives and professional perspectives from GPs and paramedics, as well as framing the contribution of paramedics within local workforces.

Patient perspectives (CMOCs 1–6)

Patients may view the role of the paramedic in primary care favourably after being informed of it by a trusted source, such as their own GP or national communications from the health system. Uncertainty exists when the role of the paramedic is not made clear to patients, or their expectations are not met if they attend an appointment with a paramedic when they believe they are seeing their usual GP.

In some reviewed literature, patients expressed their initial confusion at being seen by a paramedic in the primary care setting, as this raised their concerns that their problem

was considered to be an emergency by the provider. However, when patients became more familiar with the role, trusting the credibility of the paramedic due to their employment within primary care, high satisfaction rates were reported.

There was evidence to suggest that paramedics had a longer consultation time than their GP colleagues, and patients responded positively to this, as they valued the opportunity to discuss their problem with less time constraints.

GP perspectives (CMOCs 7–10)

Across each country included in this review, there was evidence of innovation within primary care, with GPs who could see the potential for paramedics in their traditional role to contribute to the primary care workforce. For these early adopters, paramedics were viewed positively by GPs and were associated with reducing their workload and saving time in patient access to appointments. Similarly, GPs who worked alongside their local paramedics (such as when referrals were made for patients to be reviewed by GPs following paramedic attendance through ambulance services) gained insight into an individual paramedic's capabilities and subsequently offered them employment, as they recognised that their skills were useful to the primary care team.

While there was much positivity when considering the paramedic in primary care from the perspective of the GP, in some reviewed literature, GPs saw paramedics as offering only an 'eyes and ears' approach. Using them for assessment-only roles, paramedics were not regarded as autonomous clinicians who would be able to diagnose and manage patients on their own, and thus required clinical oversight from a GP. Deployment of paramedics in such a way was unlikely to free up GP time and

often led to unintended consequences, such as patient frustration with the unnecessary duplication of consultations.

Paramedic perspectives (CMOC 11)

The literature outlined that paramedics perceive themselves as generalist clinicians who, by virtue of their work within ambulance services, need to respond to all types of patients, across all ages, with any presenting complaint. Due to their generalist nature, paramedics would seek opportunities to work in primary care, believing that their capabilities would fit well within this workforce.

Similarly, paramedics considered employment in primary care as an opportunity to develop their existing skillset within a structured, supported environment, which is in contrast to emergency service culture. The opportunity to build relationships with patients, rather than engaging in one-off episodes of care, was considered professionally fulfilling. Overall, working in primary care was associated with a better work/life balance in terms of no nightshifts and a community-focused working environment.

Contribution to primary care teams (CMOCs 12–15)

The idea that paramedics were pluripotential was considered a useful addition for primary care teams, where they had the capability to deal with a breadth of issues, as well as being developed to provide a more specific or narrower clinical focus, as demanded by the clinical setting. However, where the skills and competencies of the paramedic were not suitable for primary care (e.g., when urgent assessment clinics

were already being run by another discipline, such as nurses), paramedics were not considered a useful addition to the team.

There is evidence to suggest that paramedics working in primary care roles make a difference in environments where access to healthcare otherwise would not be available or delayed, such as in rural communities. Examples of this were typically found where paramedics were employed by ambulance services to manage first contact or urgent care centres, which could see the range of conditions associated with primary care, as well as more urgent presentations that would be more associated with work undertaken by ambulance services. Such workforce 'rotational' models were highly valued by commissioners, employers, paramedics working in them, and the patients who benefited from improved healthcare access.

Within the literature from England published after the introduction of the *Additional Roles Reimbursement Scheme* (ARRS) in 2020 (where primary care employers were financially reimbursed for the employment of paramedics), paramedics were more widely considered a credible addition to the local primary care workforce, as they were regarded as having been endorsed by trusted organisations (such as NHS England).

Concept 2: Transition from ambulance services into primary care roles

Some evidence suggests that paramedics can transition to primary care (particularly to advanced practice roles) when supported by primary care. Such support could take the form of formal education or clinical supervision within the workplace. Such a transition was successful regardless of whether the paramedic was employed directly

by primary care or worked in primary care on a rotational role from the ambulance service.

Education (CMOCs 16–17)

The need to build upon existing skills and competencies for paramedics to be more effective in primary care was considered across many of the case studies and evaluation literature. The clinical gaps that need to be filled for successful transition to primary care centred around biochemistry (for the understanding and interpretation of blood tests), pharmacotherapy (to support independent prescribing for long-term conditions or complex patient groups), and some technical skills such as wound care, urinalysis, and imaging.

Throughout the literature, higher levels of paramedic education were associated with a higher level of pay and an increased scope of practice and clinical responsibility. Such attainment was used as a marker to differentiate between advanced paramedic roles with master's level education and first contact/community/extended paramedic roles.

Supervision (CMOCs 18–20)

The success of the transition to primary care from ambulance services was linked to the provision of supervision to support paramedics' clinical development. Clinical supervision enabled paramedics to feel supported as they adjusted their skill set to a new clinical setting, and gave them confidence and satisfaction in their new role. Supervision also enabled GPs to build trusting relationships with the paramedics, which helped them to be accepted into the primary care team.

Where clinical supervision was not provided, or where there were difficulties in the supervisory relationship, paramedics reported feelings of isolation and lower satisfaction with the work in their role, opting to return to ambulance service employment.

Experience (CMOCs 21–22)

Throughout the literature, an arbitrary five years of post-registration experience within ambulance services was considered a requirement for paramedics entering primary care roles. Role consolidation was important for policymakers, employers, and paramedics, all of whom made links between the length of exposure to patients as an autonomous clinician within ambulance services and the successful transition into primary care.

Concept 3: Role And Responsibilities

When considering the factors that affect the integration of paramedics into the primary care team, the literature suggests that when the roles or responsibilities are unclear, there is dysfunction in the employment of paramedics in primary care.

Working in a team (CMOCs 23–26)

The need for integration into the primary care team was crucial to avoiding both role duplication and role substitution. Both were less likely to occur when the professional role boundaries of the paramedics in primary care did not overlap with existing healthcare professionals and where paramedics were aware of their own professional competencies. However, where role boundaries became blurred, or where the

paramedic was viewed as a *Johannes factotum* (Jack of all trades), the literature suggests that resistance to paramedic roles was due to a lack of trust from other healthcare professionals or other healthcare professionals feeling threatened or disempowered due to the implementation of these new roles alongside existing ones.

Interpersonal skills (CMOCs 27–28)

The ability of paramedics to build rapport and trusting relationships in a short amount of time (as required during emergencies) is considered an important component for replication in primary care. Patients were more satisfied when attended by paramedics with strong interpersonal skills and enthusiasm, citing their ability to connect with these healthcare professionals as a key marker of the success of their work in primary care.

GPs also saw these interpersonal skills as crucial to match the values held by the GPs and the employing practice, leading to the integration of specific interpersonal skills into the essential criteria of job descriptions advertising for the role. However, there was no information on how these skills were assessed during recruitment.

3.9 Integration with substantive theory

To develop the interpretations of realist mechanisms, substantive theories were studied to elaborate on these proposed mechanisms. Consideration was given to existing theories that related to the concepts drawn from the literature (as outlined above), and the most comparable were considered to be those relating to professional role boundaries, professional identity, and theories of transition (liminality). Integration of these with the CMOCs continued until the middle-range programme theory became more nuanced.

Professional role boundaries

Cultural sociologists suggest that group boundaries are shaped by institutionalised definitions of cultural memberships (Lamont & Molnár, 2002), thus enabling an understanding of how professions come to be distinguished from one another. The notion of a 'profession' originally emerged as a demarcation problem between 'superior' and ordinary occupations, where the former could be defined by their particular knowledge base, education, credentialling, and autonomy (Brante, 2011). Such a trait approach emphasises the monopolistic nature of social boundaries between different professional groups, where each profession is a clearly bordered unit developed from a functional specialisation, "*within which a formal body of knowledge and skill can develop, be nourished, practised, refined and expanded*" (Freidson, 2001, p. 202). While such closed models (e.g., between physicians and paramedics) exist, professions are also considered to exist in an interdependent open system whereby there is competition for jurisdictional monopolies and the legitimacy of the claimed expertise (Abbott, 1988). Applied within one setting (such as primary care), this leads to a constantly changing system of professions with disputes on the social boundaries between them. This was seen in the literature reviewed, where the concept of role substitution, rather than workforce addition, was a commonplace concern for GPs and other clinical staff within primary care. This was expressed around the clinical role and contribution paramedics should or could be undertaking and compared against other 'traditional' primary care healthcare posts, such as nurses.

Professional identity

In considering how paramedics view themselves and are viewed by patients and other healthcare professions, theories of professional identity from Freidson (2001) are relevant. While such a trait approach may now be considered an inappropriate way to define professions (Brante, 2011), it remains important due to the considerable contribution it has made to academic debate. It also highlights how professions have been viewed historically, which is important when trying to understand the attributes to which occupations may have been expected to aspire in order to become professions.

Knowledge, discretion, and the management of uncertainty (Freidson, 2001) are essential elements in the work of healthcare professionals, and trust in the cognitive authority of the paramedic is needed to enable them to be accepted into the primary care environment. This discretion is given to the paramedic based on trust that the paramedic will use their knowledge and skills in the best interest of the patient and that they are not only morally involved, but also involved as a registered healthcare provider. Within the literature we reviewed, paramedics were accepted into primary care workforces (or not) based on GPs' perceptions of their professional identity. Similarly, paramedics chose to enter employment in primary care when they were comfortable with their professional identity and the contribution they could make within the workforce team.

Liminal states

In the reviewed literature, difficulties were encountered for paramedics transitioning into primary care roles when there was a lack of understanding of the range, purpose,

or responsibility within the new role. Moving into primary care can be viewed as a threshold concept, where there are key changes to how the discipline is practised, and without an understanding of which the clinician cannot progress or transition (Meyer & Land, 2003). Until these threshold concepts have been grasped, paramedics span a precarious existence where they are no longer associated with their traditional role in ambulance services but have not yet made a full transition into primary care. This is best described as a state of liminality in which there is only a partial understanding of how they 'work' in their new role (Turner, 1970). This existed in instances within the literature that described a lack of empowerment for the paramedic to be autonomous in their practice, where they worked within a model of decisive medical oversight, rather than support.

3.10 Middle-range programme theory

These results have enabled the development of the initial programme theory to become a middle-range programme theory. These theories are considered "*close enough to observed data to be incorporated in propositions that permit empirical testing*" (Merton, 2007, p. 448). This theory, outlined in Figure 4, shows that patients are likely to be satisfied with a consultation by a paramedic when their expectations have been met, and they feel reassured by the level of care provided (CMOC 3). In order for patients to accept paramedics in primary care, the role and its implications for their care should be outlined by a trusted source (such as the primary care clinic); when this is done, it engenders support for these new roles (CMOC 1, 2). Both longer appointment times and a therapeutic relationship between paramedic and patient also led to a willingness to see the paramedic again (CMOC 4, 5). However, patients who

expect to be seen by their GP will not have their expectations met when seeing a paramedic, and are less likely to be willing to see a paramedic in the future (CMOC6).

Where paramedics are used in assessment-only roles, paramedics are less likely to be regarded as diagnosticians by GPs, as they are considered 'out of their depth' in primary care (CMOC 7). For GPs, perceptions regarding the usefulness of paramedics (CMOC 8) and whether they could be used to support the existing primary care workforce (CMOC 9) are mechanisms that determine active recruitment of paramedics (or not). Conversely, paramedics will actively seek employment in primary care if they perceive their role as generalist clinicians, and perceive they will enjoy working in this clinical setting (CMOC 11).

Paramedics were able to integrate well within primary care and ambulance services when they worked in a rotational role (CMOC 12). This was attractive from the point of view of personal professional identification, as well as of ambulance services, who otherwise would risk losing their most experienced and highly educated staff. A peripatetic approach may not enable paramedics to become sufficiently embedded or socialised into primary care to develop trusting relationships with patients or GPs. However, paramedics employed by ambulance services providing primary care services in remote settings were able to address healthcare access gaps and were embedded within local communities accessing these services (CMOC 15).

Paramedics are more likely to be effective in contributing to primary care workforces when supported to develop their knowledge through formal education (such as a postgraduate degree) combined with clinical supervision within the primary care

setting (CMOCs 16, 18–20). Supervision sessions enable trust building between the paramedic and GP and help the paramedic to find their role within the workforce, without threatening the contributions of other professions (CMOC 16, 23). Paramedics who are trusted to practise at their full potential are more satisfied working in primary care (CMOC 18-20), and this may contribute to the enthusiasm perceived by patients about their role (CMOCs 3-5). Paramedics with strong interpersonal skills are highly rated by patients (CMOC 28), and the development of a trusting relationship between patient and paramedic is not only paramount in meeting patient expectations but also for the acceptance of the role (CMOC 27).

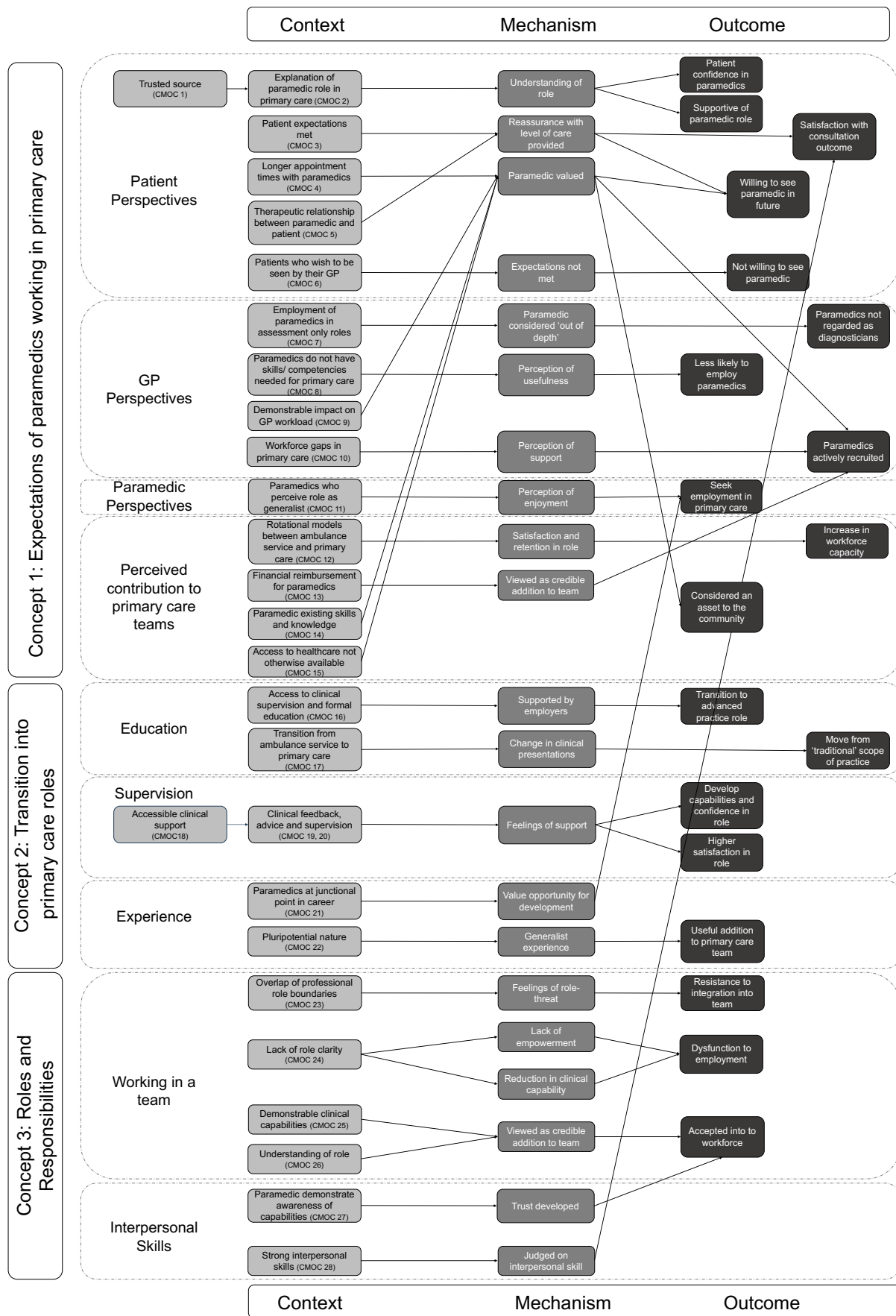


Figure 4. Middle-Range Programme Theory

3.11 Discussion

Over the last decade, paramedics across a number of countries have been establishing themselves in primary care settings. However, little was known about the mechanisms through which they can have desired impacts within this setting. This realist review of policy documents, workforce evaluations, case studies, and primary research suggests that benefits associated with paramedics working in primary care settings include an increased capacity for GPs to focus on more complex patients; better access to health assessment and care for patients; and career development for this group of professionals outside of their traditional ambulance service employer. This is the first published systematic synthesis of the literature using a realist lens to explore how this role can be implemented optimally.

This review has drawn on 205 documents to present a middle-range programme theory outlining how paramedics may currently be working in primary care, and the extent of their contribution in these roles. This middle-range programme theory proposes that paramedics entering primary care need to navigate complex professional role boundaries in order to establish their professional identity and contribute to the primary care workforce. Paramedics may be hindered by the liminal state as they transition across clinical settings and may be perceived as occupying roles already covered by other healthcare professionals, such as nurses. Desired outcomes, such as providing an addition to the primary care team (and perhaps reducing GP workload), may then transpire. For paramedics to work successfully as part of the primary care team, they need to transition effectively in these roles, supported through formal education to fill knowledge gaps and clinical supervision to build trusting relationships with GPs. For paramedics working in rotational roles

between primary care and the ambulance service, their peripatetic nature means that they may often practise on the periphery of both settings and consequently have a weaker connection to organisational or professional norms and values, limiting their development and contribution. This is where the concept of liminality is strongest. Guidance published by the NHS England Workforce Transformation and Education Directorate has produced a 'roadmap' for paramedics to follow as they transition into primary care roles (Health Education England, 2021). This is perhaps a step in addressing this liminality, as it helpfully outlines specific qualifications, skills, and aptitudes for two tiers of paramedics working in primary care: first contact practitioners and advanced practitioners.

The findings of this review offer additional dimensions for consideration. For example, while this review has found that the interpersonal skills of the paramedic are important, consideration of the patient perspective is also needed. This review highlighted the importance of patient understanding of this new role in primary care for building acceptance, trust, and confidence in being seen by clinicians other than their usual GP.

Strengths and limitations

This realist review was conducted systematically and transparently in accordance with RAMESES quality standards (Wong, Greenhalgh, et al., 2013). The CMOCs and programme theory were developed through discussions with patients and members of the public and representatives of key stakeholder groups. The programme theory and its embedded CMOCs have an analogy with three substantive theories.

Limitations include the analysis of publicly accessible literature, located through recognised research databases and searching the first ten pages of Google. While workforce reports and case studies were found through database searches, these do not account for similar documents that undoubtedly exist within organisations but that have not been made publicly available. Many of the documents found in this review were evaluations, case studies, or opinions. Where primary research was included, the reported studies were not without methodological limitations that affected either reliability or transferability of the reported results. Such data may not be considered reliable in a traditional hierarchy of evidence, but by drawing interpretations from data contained within multiple documents, we were able to develop explanatory theories that had plausibility (Wong, 2019). While this has enabled the formation of the knowledge claims set out in the programme theory, this should be interpreted with caution until additional primary data collection can confirm, refute or refine parts of this theory. Such data collection should address the gaps that this theory presents, such as the experience needed for the paramedic to contribute efficiently to primary care or whether standardisation of this role can exist within regulatory boundaries.

Lastly, some of the evidence from this review is authored from Australasia, Canada, Finland, and the Americas. While similar education and scope of practice exist between paramedics in these settings and their UK counterparts, there are differences in the standardisation of practice, regulation, and overall role contribution to healthcare. However, following interpretation of the literature reviewed, there are more similarities for paramedics working in primary care in these countries compared to the work they undertake in ambulance services. Hence, the inclusion of data from such documents contributed to the development of the CMOCs.

3.12 Implications

This review outlines mechanisms that are triggered when paramedics work in primary care roles, and the range of contexts that exist within these roles that trigger these mechanisms. A range of outcomes have been identified, some of which differ from the predicted desired outcomes that the implementation of paramedics into the primary care workforce seeks to have from a policy perspective, such as improving patient access in primary care and reducing GP workload (Oxford Primary Care Commissioning Committee, 2019). This has potentially important implications for England and wider afield, where the recruitment of paramedics into primary care roles is a key component of the proposed workforce strategy (NHS England, 2019b, 2021). Based on this realist review, the employment and integration of paramedics into primary care should consider the following, which is also summarised in Figure 5. There are plans for these findings to be adopted into the 'roadmap' for paramedics working in primary care (L. Baker, personal communication, 23 February 2023), as well as within the employer's guide for paramedics working in primary care, authored by the College of Paramedics (H. Beaumont-Waters, personal communication, 3 March 2023).

Clarity regarding the role and responsibilities of paramedics

For paramedics to be accepted by other healthcare professionals in primary care settings, clear expectations regarding their roles and responsibilities are crucial. When paramedics are not used to the best of their ability, patients may experience duplicate consultations, and paramedics are frustrated by a lack of autonomy. Understanding the role and responsibilities of the paramedic also needs to be in consideration of other

healthcare professionals employed in the setting to avoid repetition of workload or role-creep into other healthcare professionals' roles, such as nursing.

Patient acceptance of the paramedic role in primary care

Patients need to develop confidence and trust in seeing paramedics in primary care. There is a risk of confusion and frustration for patients who expect to see their GP but are seen by a paramedic instead, especially if patients do not understand the paramedic's role. Therefore, clear communication with patients as paramedics enter employment within primary care settings is crucial. This could be done at both a local or national level and needs to come from a respected source for patients to accept paramedics.

Self-awareness

Paramedics may be considered both health advocates and emergency experts. The ability to build rapport and trust with patients is a key component of emergency care that transfers well into primary care. Some of the criteria for paramedics being able to successfully embed within their new roles, contribute to the workforce capacity, and reassure patients include:

- A passion for engaging with people and communities
- Adaptability
- Ability to think outside the box
- Awareness of professional boundaries and ability to draw on the expertise of colleagues when required
- Good leadership and communication skills
- Willingness and motivation to develop as a clinician

Socialisation of the paramedic role into the primary care team

To contribute effectively to the primary care setting, paramedics need to be embedded within the workforce. Understanding the individual paramedics' scope of practice is important, as this impacts how the additional role can most effectively contribute to the delivery of patient care, even if this differs slightly between employers. Being embedded within the workforce also fosters trust between paramedics and other healthcare professionals, as GPs can trust the clinical consultation undertaken by the paramedic. When this occurs, paramedics are more likely to be satisfied with their role, as they feel a valued member of the primary care team. This is imperative for paramedics who are employed in rotational models between two clinical settings (such as ambulance services and primary care) to ensure they can become effective team members within both settings.

Support for transition into new roles

While paramedics are generalist clinicians, this is in the context of emergencies. Paramedics will need support to apply their existing knowledge and skills to lower-acuity or complex case presentations. Support for transition into primary care roles could be in the form of formal education (such as a master's degree) and/or the provision of clinical supervision to support their practice development. Equally, paramedics need to have an awareness of personal and professional limitations in order to seek support when required to benefit patient care.



Figure 5. A framework to support the implementation of paramedics in primary care

Implications for research

The middle-range programme theory has highlighted areas requiring further investigation in order to determine the contribution paramedics can make to primary care. These include:

- How a paramedic can best transition into primary care roles from ambulance service, and the education they require to fill in knowledge gaps and to work efficiently in this new practice setting.
- The duties undertaken by paramedics working in primary care, without causing duplication, substitution, or boundary disputes with existing primary care roles.

- Whether paramedics maintain their existing professional identity as they move into primary care, and whether this is required for them to work in primary care.
- Exploration of which specific patient groups paramedics may best support when working in primary care.

This realist review highlights the complexity surrounding the introduction of paramedics into primary care roles. As a complex intervention, the work that paramedics undertake in primary care should have a strong theoretical underpinning that can account for how they work, why they work, and for whom they work best in order to guide practical deployment. This review has enabled the development of a middle-range programme theory for this purpose and highlighted areas requiring further research, which will be addressed in **Chapters 4, 5 and 6**.

Chapter 4: Realist Evaluation Phase I - A Cross-sectional Survey

Realist evaluation is a form of theory-driven evaluation that is based on a realist philosophy of science (Pawson, 2013b) and assumes that programmes or interventions are ‘theories incarnate’ (Greenhalgh et al., 2015, p. 2). During realist evaluation, data are collected to develop and test (confirm, refute, or refine) the theories underpinning a programme (such as the CMOCs and middle-range programme theory developed in **Chapter 3**) in order to gain a deeper understanding of the intervention as a whole (Pawson & Tilley, 1997).

This chapter is the first of three phases within the realist evaluation component of this project, and is reported following the RAMESES publication standards for realist evaluation (Wong et al., 2016). A protocol was published and registered with OSF Registries (10.17605/OSF.IO/YKDA7) and the findings were subsequently accepted for publication (Eaton et al., 2022). This chapter summarises the methods, results, and main findings of phase I of the realist evaluation.

4.1 Objective and focus of the research

The realist review outlined in **Chapter 3** highlighted that for paramedics to work successfully as part of a primary care team, transition into this workforce needs to be supported through a combination of formal education, clinical supervision, and socialisation. NHS England Workforce Transformation and Education Directorate has provided a framework that addresses these concepts in the form of a ‘roadmap’ for

paramedics to follow as they transition into primary care roles (Health Education England, 2021). This 'roadmap' outlines the qualifications, capabilities, clinical skills, and case presentations paramedics are expected to encounter while working in primary care. This is the only published document from any UK nation that has outlined an indicative scope of role for paramedics working in this clinical setting.

The overriding objective for this work package was to understand the existing ways in which paramedics work in primary care within the NHS (in fulfilment of **Research Question 3**), explored in the context of the 'roadmap' as the only form of guidance for this work at the time.

4.2 Stakeholder engagement

Discussions were held with representatives from the NHS England Workforce Transformation and Education Directorate, as the author of the 'roadmap' and a key stakeholder in the research project, as well as the College of Paramedics and the Royal College of General Practitioners. From these discussions, it became apparent that understanding the extent to which paramedics practised the clinical skills and saw the case presentations listed in the 'roadmap' was important.

Further discussions were also undertaken with the patient participatory group. The patient participatory group thought the information raised by the stakeholder group was important, as it would help to outline the clinical role of paramedics in primary care, enabling patients to be informed about whether they would be seen by a paramedic in primary care, or another primary care professional such as a GP, depending on their symptoms. They were also interested in understanding the

perceptions paramedics had regarding the difference their work made to patients and subsequent patient satisfaction.

This study was designed with a focus on examining these 'folk theories' (Pawson & Tilley, 2004) that developed through these discussions with stakeholders and patient and public representatives, through testing the middle-range programme theory and CMOCs described in **Chapter 3**.

4.3 Study design, materials, and procedure

A cross-sectional survey approach was deemed the most appropriate method to capture the contemporaneous work of the paramedic workforce in primary care. The survey was designed as a novel instrument, following the process advised by Creswell (2017). The survey was split into five distinct sections:

- Section 1 focused on gathering background information about paramedics working in primary care throughout the UK, with questions seeking respondent demographics.
- Section 2 related to the type of activities paramedics undertook in their role, using a continuous variable. These activities were mapped directly from the core capabilities of the 'roadmap' (Health Education England, 2021).
- Section 3 asked respondents to rate the regularity in which they saw clinical presentations listed in the 'roadmap' (Health Education England, 2021). These were rated using a continuous scale.

- Similarly, Section 4 asked respondents to rate the regularity in which they undertook clinical investigations and procedural skills listed in the ‘roadmap’ (Health Education England, 2021), again using a continuous scale.
- Section 5 concluded the survey with a series of short-answer attitudinal questions that sought to understand the perspectives of the respondents about their role, their enjoyment of their work, and their contribution to the primary care team.

Piloting

The survey was first piloted with paramedics within the stakeholder group and refined based on this feedback. This pilot primarily aided in refining the question sequencing within sections and the presentation format of questions and provided an estimate of the time required for completion, which was later incorporated into the participant information. The final survey was presented using Jisc online surveys (<https://www.onlinesurveys.ac.uk/>) (**Appendix F**).

Sampling

Details regarding workforce data for paramedics in primary care are reported for England (NHS Digital, 2022) and Wales (Welsh Government, 2022), but were not available at the time for Northern Ireland or Scotland. Based on the available data in England and Wales, it was estimated that approximately 1,500 paramedics worked in primary care roles across the UK in August 2021. Therefore, a sample size of 306 respondents was required for a confidence interval of 95% and margin of error of 5% for statistical analysis (Gomm, 2008).

Recruitment

The distribution of the survey was initially via internal communications within the College of Paramedics (the professional body for paramedics across the UK). This convenience sampling frame was chosen as it was felt to give the best access to the intended population across each UK nation (De Vaus, 2012), though it was recognised that this would only draw participants who were members of the professional body and who engaged with the College's communications (Gomm, 2008). The survey was subsequently shared across the College of Paramedics' social media platforms. This resulted in a snowball sampling strategy, which was intended to access paramedics working in primary care who may not be members of the College of Paramedics.

Data collection took place over three months, between 1 September and 30 November 2021. This three-month period was chosen deliberately to avoid the busy winter periods that occur in primary care (Scobie, 2018), and which might otherwise have impacted the response rate.

4.4 Ethical considerations

This study was approved by the Central University Research Ethics Committee (MS IDREC Ref: R64129/RE001) at the University of Oxford (**Appendix G**). Respondents were free to decide whether to participate, and informed consent was obtained at the start of the survey. Compensation was offered after completion of the survey, in the form of a £10 Amazon e-voucher. All data processing and storage complied with the UK General Data Protection Regulation and the UK Data Protection Act 2018.

4.5 Data analysis

Quantitative data were analysed using descriptive statistics (mean, SD, and frequencies) and non-parametric tests (chi-square test of independence, Kruskal–Wallis test, Mann–Whitney test, Spearman’s rho correlation) in IBM SPSS Statistics, Version 28 (IBM Corp., Armonk, N.Y., USA). Bonferroni correction was used to counteract problems where multiple comparisons occurred in order to control the family-wise error rate (Field, 2013). Qualitative free-text responses were analysed using semantic level inductive thematic analysis (Braun & Clarke, 2022) in NVivo v.12.

Quantitative and qualitative data were initially analysed separately, then merged using a convergent coding matrix and interpreted (Zheng, 2015). Finally, to synthesise the two data sources, the data were interrogated through a realist logic of analysis. This analysis focused on understanding and explaining identified patterns in the survey data by drawing on existing conceptual frameworks developed through a review of the literature (Eaton, Wong, et al., 2021). The analytical process sought to understand and explain patterns existing in the data (Brousselle & Champagne, 2010) to refine the programme theory. This will be outlined in Section **4.8**.

4.6 Results

A total of 341 participants responded to the survey, of whom 90.6% were paramedics working in primary care in England (n = 309). Based on workforce data published for the period within which the survey was undertaken (September–November 2021) (NHS Digital, 2022; Welsh Government, 2022), these respondents represented 33% of the population of paramedics in primary care for England and Wales separately. All respondents answered all the questions in the survey. Table 1 outlines descriptive

characteristics of survey respondents according to age range, country of work, and gender.

Table 1. Participant demographics from the cross-sectional survey					
Age Range	n	Gender	n	Country of work	n
18–24 years old	4	Female	126	England	309
25–34 years old	98	Male	215	Northern Ireland	6
35–44 years old	113			Scotland	16
45–54 years old	96			Wales	10
55–65 years old	30				

4.7 Main Findings

This section provides a narrative overview of the main findings of the study and will go on to explain how these were brought together to refine the existing middle-range programme theory from **Chapter 3** (see Section **4.9**).

Experience as a paramedic prior to working in primary care

Most respondents had 3–5 years (n = 93) or 6–10 years (n = 93) of experience working as a paramedic before working in primary care. When questioned about their reasons for opting to work in primary care, a better work/life balance stood out as a key factor influencing their decision. This was referred to in relation to avoiding unsocial working hours in favour of those in primary care, which were considered family friendly, and a move away from the unsustainable workload in the ambulance service. Other factors that influenced paramedics to take up employment in primary care included a clinical interest in holistic and preventative medicine associated with general practice, the opportunity for clinical development, and increased job satisfaction associated with

increased autonomy and an enhanced clinical skill set required to work in primary care.

Job title

Job titles for paramedics working in primary care were varied and inconsistent, confirming the findings from the previous reviews (**Chapter 1** and **Chapter 3**). Inconsistency in job titles was suggested to contribute to discrepancies in scope of practice and understanding of the role of other health care professionals in primary care, as suggested in this comment from one of the survey respondents:

“I still feel that there is a lack of understanding, or clear delineation between roles... I am unsure if those at my surgery are aware of the difference between a paramedic practitioner and advanced clinical practitioner...” (RID 305; advanced clinical practitioner).

There was also concern regarding patients’ understanding of the job title:

“I don’t think [my job title] reflects my role and is unclear to patients.” (RID 150; emergency care practitioner)

Paramedics who held a more senior job title were more likely to make a diagnosis during a consultation ($H(3)=15.73$, $p<.001$), manage medical and clinical complexity ($H(3)=15.73$, $p<.001$), and undertake leadership and management ($H(3)=10.507$, $p=.015$) as part of their role. Length of time in primary care also differed with job title ($H(3)=14.145$, $p=003$), where more senior job titles (such as advanced paramedic) were associated with having a longer period of employment in primary care.

Furthermore, specialist and advanced paramedics had more experience working in primary care than standard paramedics.

Level of education

The majority (52%) of respondents were educated to at least one postgraduate module, with more than half of these educated to postgraduate certificate (n = 90). The need for additional knowledge to work in primary care was articulated throughout the free-text comments; respondents reported a “*constant pressure to study*” (RID 118; emergency care practitioner) and a sense of being overwhelmed by the volume of academic work alongside their clinical workload. Both a lack of protected time to study and an absence of funding from primary care employers for paramedics to undertake education qualifications were highlighted as barriers to development in primary care.

Clinical supervision

Of the respondents, 85.6% (n = 292) received clinical supervision within their role. When asked to what extent clinical supervision meets their needs, 7% (n = 25) reported a clinical supervision model that was regular and structured. Other experiences of supervision were “*very poor due to limited time with supervisor*” (RID 51; Paramedic Practitioner).

“I don’t feel the GPs really understand the role yet or have the time to support it in a way that would meet the expectations set out by the... roadmap.” (RID 199; paramedic practitioner)

While a trend was seen concerning the provision of clinical supervision and the extent to which clinical presentations were seen and clinical examinations undertaken, this failed to reach statistical significance (Eaton et al., 2022).

Effect of the HEE roadmap

For 12% (n = 42) of respondents in England, the 'roadmap' (Health Education England, 2021) was viewed to assist in the standardisation and supervision of the role, but was often poorly executed at an employment level due to ease of fulfilment of the 'roadmap', lack of clarity in the roadmap's requirements (6%; n = 21), or uptake by employer (6%; n = 21). 16% (n= 57) of respondents reported that the roadmap had no influence on their employment or practice in primary care:

"I'm not ARRS funded, so doesn't impact me. I'm aware of the roadmap, but my surgery isn't pressuring me to complete it. They know my skill set." (RID 327; paramedic practitioner)

Salary

The most common salary bracket was between £33,222 and £43,041. Significant associations were found between salary and job title ($X^2(15) > 51.137$, $p < .001$), prescribing status ($X^2(5) > 118.190$, $p < .001$), highest qualification ($X^2(30) > 72.589$, $p < .001$), length of time as a paramedic ($X^2(40) > 101.212$, $p < .001$), and length of time in primary care ($X^2(25) > 112.780$, $p < .001$). These associations demonstrated that salary increased for paramedics with senior job titles, ability to prescribe, higher levels of education, increased time as a paramedic, and increased time as a paramedic in primary care. There was no significant association between

salary and gender ($X^2(5) = 11.936, p=.036$), or salary and region within the UK ($X^2(15) = 28.589, p=.018$).

Core capabilities of paramedics working in primary care

Positive relationships existed between the extent to which the core capabilities of primary care set out within the roadmap (Health Education England, 2021) formed part of a respondent's role against employment type, length of time registered as a paramedic, length of time in primary care, level of education, hours worked, job title, independent prescribing status, and salary. These results are outlined in **Appendix I**.

As paramedics take up more senior roles in primary care (such as 'advanced paramedic'), their scope of role increases in relation to clinical examinations performed, and the clinical presentations they attend. Such an increase in scope could be due to their ability to independently prescribe and undertake postgraduate study. Independent prescribing is typically undertaken by 'advanced paramedics' who have completed (or are working towards completion of) a postgraduate degree (College of Paramedics, 2021a). Advanced paramedics are more likely to make a diagnosis during consultation and manage medical and clinical complexity. This contrasts with 'paramedics' or 'first contact practitioners', who may have a similar scope of clinical examination, but a reduced scope in relation to managing clinical complexity and making a diagnosis (**Appendix I**). This supports previous findings where such paramedics are employed in an 'eye and ears' approach only (Eaton et al., 2021).

There was a strong correlation between advanced and consultant-level roles and undertaking activities related to leadership and management in primary care

(**Appendix I**). However, some respondents experienced frustration regarding their progression within these core capabilities:

“Keen to undertake a leadership role, but don’t see this being an option. Very much bums on seats.” (RID 92; advanced clinical practitioner)

There was no correlation between undertaking research activities and job title (**Appendix I**). This indicates that research activities are less accessible to paramedics in primary care despite being a pillar of advanced practice, matching previous research findings (Fothergill et al., 2022).

Clinical examination and procedural skills

To understand the breadth and frequency of clinical work undertaken, respondents were asked the extent to which they saw the range of clinical presentations and undertook the clinical examinations outlined in the ‘roadmap’ (Health Education England, 2021).

Relationships between clinical presentations existed between length of time as a paramedic, length of time in primary care, hours worked in primary care, highest qualification, job title, and prescribing status (**Appendix J**). Relationships between clinical examinations undertaken also existed between length of time in primary care, hours worked in primary care, highest qualification, job title, and prescribing status (**Appendix K**) (Eaton et al., 2022). Generally, length of time in primary care, higher levels of education, and status as an independent prescriber all contribute to an increase in the scope of the role for paramedics in primary care.

Blood tests

The request and interpretation of blood tests by paramedics in primary care was positively influenced by prescribing status, the receipt of clinical supervision, increased salary, hours worked (full time), and higher levels of education; however, these results largely failed to meet statistical significance. There was no correlation between the request and interpretation of blood tests and length of time as a paramedic or length of time in primary care. These results are outlined in **Appendix L**.

Emergency skills

Significant correlations were found between level of education and the undertaking of emergency procedures ($r = -.156$, $p < .004$), where respondents with lower qualifications undertook emergency procedures to a greater extent. A similar correlation was found between the level of education and attending emergency presentations such as cardiac arrest ($r = -.106$, $p = .049$), catastrophic haemorrhage ($r = -.119$, $p = .028$), shock ($r = -.173$, $p = .001$), cardiovascular adverse signs ($r = -.120$, $p < .027$), and limp children ($r = .125$, $p = .021$), again where respondents with lower qualifications attended these presentations to a greater extent. This was also reflected in the free-text comments, where some paramedics “*do not feel challenged by only dealing with same-day emergency consultations.*” (RID 14; paramedic).

Free-text comments highlighted that respondents who had been employed for a longer time in primary care missed the opportunity to attend higher acuity patients, and also reported a loss of paramedic identity without the opportunity to practise their emergency skills.

Patient groups not seen

Despite the generalist background of paramedics, this survey highlighted patient groups commonly not seen by those working in primary care. The most common clinical presentations not seen by these were those relating to women's health (n = 189). This could be due to a creep into the paramedic role of nursing policy, which emphasises that nurses should refer women who are pregnant to midwifery or physician care if they are not dual-registered in this area (Royal College of Nursing, 2021). Other common patient groups not seen by paramedics included children, particularly under the age of two (n = 114). This may be due to a lack of clinical exposure in this area in the ambulance service. Clinical practice guidelines for paramedics in ambulance services are to convey all children under the age of two to emergency departments, and children under the age of five must be seen by a physician if non-conveyed (National Ambulance Service Medical Directors, 2021). In addition, respondents saw clinically complex patients, chronic conditions, and presentations relating to mental health and palliative care less than other patient groups.

Prescribing status

125 respondents (36.7%) were independent prescribers, with a further 57 (16.7%) undertaking the course at the time of the survey, and a further 137 (38.7%) wishing to undertake the course in the future. Inability to prescribe frustrated 20 (5%) respondents when asked about the frustrations in their role.

Significant associations were found between prescribing status and clinical assessment skills, in which independent prescribers were more likely to undertake

additional clinical examinations when compared to paramedics who could not prescribe. These findings are outlined in Table 2.

Table 2. Associations between prescribing status and clinical skills assessments in primary care			
	Value	df	Asymptotic significance (2-sided)
Clinical assessments			
Digital rectal examination	68.059	4	.215
Eye examination	24.228	4	<.001
Imaging	15.861	4	0.003
Lymphadenopathy	28.75	4	<.001
Mental health examination	14.886	4	0.005
Otoscopy	21.312	4	<.001
Referrals to specialism or specialist services	14.886	4	0.003
Skin samples	37.529	4	<.001
Sputum samples	31.322	4	<.001
Stool samples	24.25	4	<.001
Swabs	32.213	4	<.001

Perceptions of the role

Attitudinal questions towards the end of the survey asked respondents specifically about their perceptions of their role.

Patients' satisfaction

Respondents used positive feedback and/or return consultations to indicate whether patients were satisfied with the care they provided. This patient satisfaction was attributed to the comprehensive consultations undertaken by paramedics, which respondents reported as benefitting from increased time slots, and the discussion of medical conditions in a simple language patients could understand. Indeed, paramedics viewed their interpersonal skills as one of their greatest strengths regarding patient satisfaction:

“For the most part, people are happy to see a professional that listens to them, treats them with respect and dignity and is competent. I think a lot of paramedics offer this in primary care.” (RID 135; advanced clinical practitioner)

Experiences of patient dissatisfaction following consultation by a paramedic in primary care were also reported. These occurred when patients were disappointed that the consultation was not with a GP, and where there was a lack of understanding of the paramedic role, leading them to question the clinical expertise paramedics could offer.

Role gratification

Just under half of the respondents felt their role in primary care increased workforce capacity (n = 161, 47%). This was in the context of freeing up time *“for GPs to manage complex conditions”* (RID 9; advanced paramedic practitioner), facilitating multi-disciplinary team working, and being able to capitalise on their unique paramedic skills:

“Our clinical knowledge with the ability to make autonomous safe decisions with the ability to recognise ‘big sick/little sick’ quickly means that we are a strong spoke in the wheel of general practice.” (RID 303; specialist paramedic)

Role frustrations

Short appointment times and the volume of patients within the day contributed to a high workload and feelings of frustration about their role in primary care. General system frustrations were also reported regarding the structure, organisation, and funding of primary care. In addition, the impact of the ongoing global COVID-19

pandemic on the working practices of respondents caused frustration, with experiences of an increase in telephone consultation, for which there had been little training.

Respondents reported frustration when faced with restrictions in practice, commonly due to an inability to prescribe Schedule 2 controlled medicines (outlined in The Misuse of Drugs Regulations 2001) or to provide patients with a Statement of Fitness for Work. Other restrictions to practice included fitting contraceptive devices, as well as certain procedural skills, such as undertaking an intimate examination.

Another frustration reported was a lack of understanding of the capabilities of paramedics in primary care, particularly from colleagues:

“Sometimes there are major misconceptions about what paramedics can and can’t do. Most management have no idea about the role of a paramedic.” (RID 326; first contact practitioner paramedic)

Development of the profession

Respondents considered their role in primary care in relation to promotion and understanding of the profession, which *“shows that there is so much more than being a paramedic on the back of an ambulance”* (RID 144; paramedic practitioner). Other respondents considered this in relation to the development of the profession as a whole:

“I feel as though the level of autonomous clinical decision making, management of complex cases, referrals and medicine management we are practising is at a much

higher level than a large amount of the profession. I think it sets a good example to other paramedics and other medical colleagues alike that paramedics can be pushed beyond traditional roles and expectations and can prove to be a valuable part of the clinical team.” (RID 202; advanced paramedic)

The impact of their paramedic role in primary care was also acknowledged in the context of the wider healthcare workforce. Respondents outlined this both in terms of leaving the ambulance service to undertake roles in primary care, as well as rotational working between ambulance services and primary care settings. This was considered to have benefit regarding the transferability of clinical knowledge and skills from one clinical setting to the other:

“My rotational role increases understanding between ambulance and primary care, increases my knowledge and understanding which I can pass on to colleagues and increases visibility, trust and understanding of the profession throughout primary care and the lay community.” (RID 36; specialist paramedic)

4.8 Refinement of realist programme theory

It has been reported in previous studies that survey methodology can provide scant relevant data for the *de novo* creation of CMOCs (Kerr et al., 2020), and the results can be more useful for refinement. This was the case in this study, where, of the 28 CMOCs that made up the middle-range programme theory presented in **Chapter 3**, Figure 4 (**Appendix E**), data from this study supports ten of these existing CMOCs, with one being refined further. The remaining 16 CMOCs from the original programme theory could not be confirmed or refuted by the survey data. As this survey was completed by paramedics, CMOCs related to the expectations of paramedics working

in primary care from the perspective of the patient and GPs were not able to be developed. However, an additional eight CMOCs have been developed from this new data, two of which expand the concept of roles and responsibilities to include the paramedic clinical role.

During the development of the initial middle-range programme theory, established substantive theories were critically examined, and concepts pertaining to professional role boundaries, professional identity, and theories of transition (liminality) were identified to underpin elements of the initial programme theory (as outlined in Chapter 3). These substantive theories are supported by the findings from this chapter.

Appendix H outlines the CMOCs that support this refined programme theory from this work package; this is visually presented in Figure 6². Within this figure, CMOCs that could not be refined due to the data collected, but may still be relevant, are denoted with a transparent (grey) effect. The single CMOC that has been refined from the previous middle-range theory is denoted by a dashed outline. New CMOCs are denoted by a solid, bold outline, as is the addition of a new conceptual category.

Based on the insights gathered from paramedics' perspectives, this theory validates several findings from the realist review. It reaffirms that patients who anticipate seeing their GP may find their expectations unmet when encountering a paramedic, potentially leading to a reduced willingness to consult with a paramedic in the future (CMOC 6). Additionally, it supports the idea that paramedics are inclined to pursue

² Please note the change in numerical order of the CMOCs in Figure 6 and Appendix H (compared to Figure 4 and Appendix E), accounting for the development of new CMOCs within the relevant concepts.

opportunities in primary care when they view their role as that of a generalist clinician and foresee satisfaction in working within this clinical context (CMOC 11, 28). This survey develops this latter outcome further, outlining that paramedics seek employment in primary care in pursuit of an improved work/life balance, and dissatisfaction with work in the ambulance service (CMOC 26). Paramedics found effective integration within both primary care and ambulance services when they worked in rotational roles (CMOC 13). Building on the findings of the realist review, data from this survey indicated that such roles facilitated the transfer of knowledge and skills between these areas, ultimately affirming high job satisfaction among paramedics (CMOC 12) and their perceptions of improved patient care.

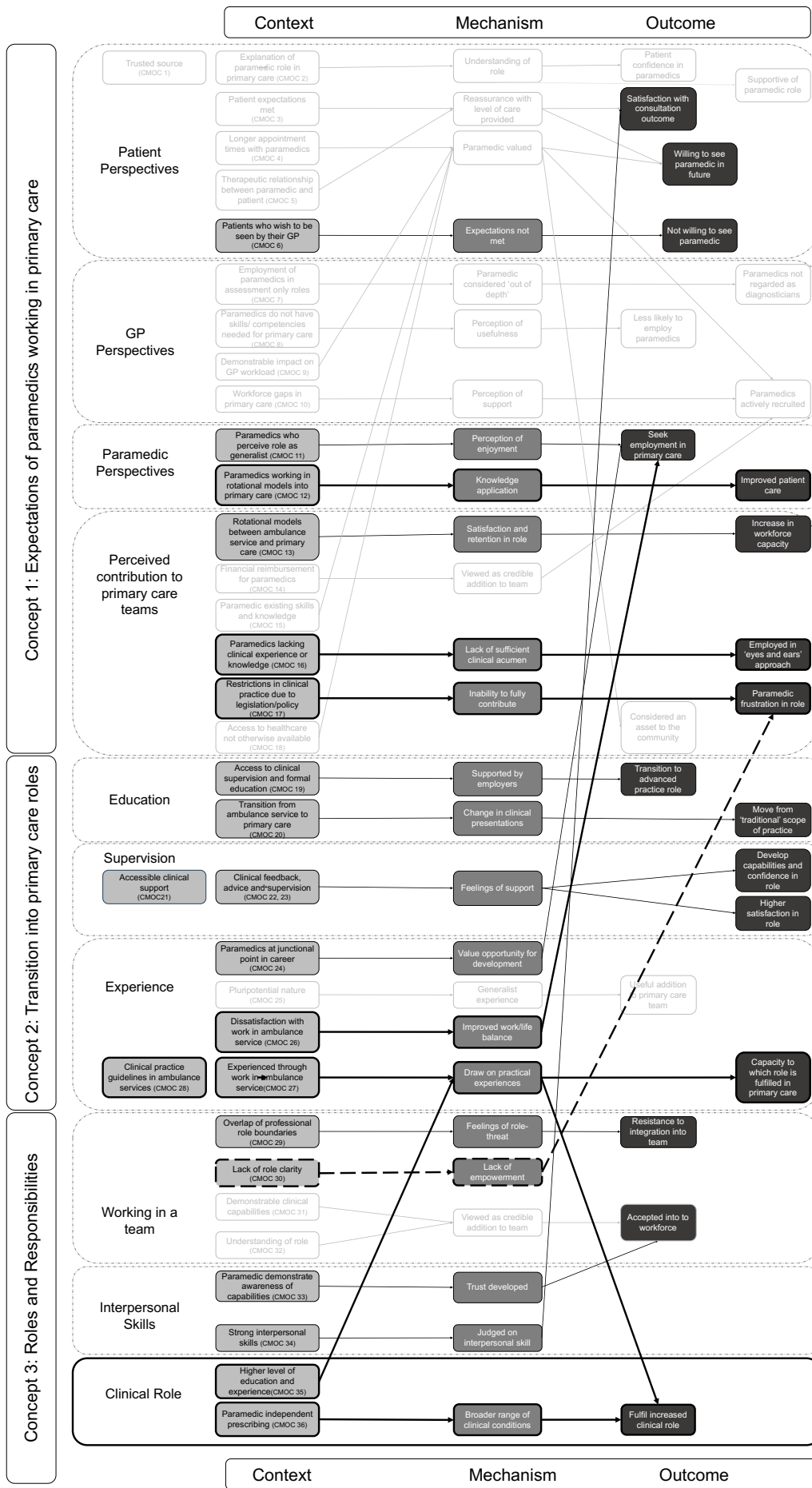


Figure 6. Refinement of realist programme theory from results of the cross-sectional survey

When considering their contribution to primary care teams, paramedics can be effective in contributing to primary care workforces when supported to develop their knowledge through formal education (such as a postgraduate degree) combined with clinical supervision within the primary care setting (CMOCs 19–20). This survey demonstrated that when paramedics have a lack of clinical experience or knowledge, their ability to develop sufficient clinical acumen to work in primary care is decreased and they are subsequently employed in an assessment-only role ('eyes and ears approach'). (CMOC 16). The development of paramedics in primary care is contingent upon clinical supervision within the primary care setting, which supports paramedics in developing their clinical acumen. Survey data showed that paramedics who receive clinical supervision feel better supported, are satisfied with their job, and have a demonstrable increase in their clinical scope of role (CMOC 16, 21–23). However, frustrations occur when legislation or policy prevents paramedics from being able to fully complete certain aspects of clinical consultations, such as prescribing controlled medicines or issuing a Statement of Fitness for Work (CMOC 17).

This survey provided an opportunity to revisit a CMOC identified in the realist review, which highlights that paramedics may face frustration when they lack the empowerment necessary to fulfil their roles, often stemming from ambiguity in their employment arrangements (CMOC 30). Additionally, it reinforces the notion that paramedics may encounter resistance when integrating into primary care teams, particularly when their professional roles overlap with those of other clinicians in the primary care setting (CMOC 29).

Lastly, within an additional conceptual sub-category that highlights the clinical roles paramedics undertake, two new CMOCs have been developed from the primary data outlined above, suggesting that paramedics can fulfil an increased clinical scope of role in primary care when they have additional experience by virtue of their work in the ambulance service and a higher level of education (CMOC 35). An increased clinical scope of role is also seen when paramedics have completed the relevant education to independently prescribe medicines (CMOC 36).

4.9 Discussion

This research confirms previous publications that noted variance in a) job title reported by paramedics working in primary care; b) the clinical work and examinations undertaken by paramedics in this setting; c) background in terms of clinical experience and education to work in primary care (Eaton et al., 2020; Eaton, Wong, et al., 2021).

The findings outline that length of time in primary care, higher levels of education, and status as an independent prescriber all contribute to an increase in the scope of the role of paramedics in primary care. Indeed, an inverse association was also observed, where paramedics with lower educational qualifications attended emergency presentations within primary care to a greater extent than those who had undertaken higher education. This outlines that while a paramedic may transition into primary care by virtue of their generalist background, their productivity in primary care may be influenced by further education and feedback regarding their clinical experience in this setting.

Despite their generalist background, this survey also outlines that there are patient groups commonly not seen by paramedics in primary care.

While the 'roadmap' for paramedics to follow as they transition into primary care roles (Health Education England, 2021) may have been a step in addressing the issues with liminality outlined in **Chapter 3**, the results of this survey indicate that there is dysfunction in its implementation into practice in England. While the concept of the 'roadmap' is admirable, its application is limited by its complexity, resulting in issues in its uptake and use. The main barriers to engagement with this 'roadmap' indicated by the survey results were competing workload pressures affecting the delivery of clinical supervision and uptake of this framework by primary care employers. Such inconsistency contributed to frustration and demotivation among paramedics, who were concerned about their clinical development in this setting.

Strengths and limitations

This is the first national cross-sectional survey that provides insight into the types of paramedics currently working in UK primary care and their clinical scope of role. The survey was conducted systematically and transparently in accordance with STROBE quality standards (von Elm et al., 2007). A realist logic underpinned the analysis and has been applied to the main findings to enable the evolution of CMOCs and the middle-range programme theory developed through the realist review (**Chapter 3**).

The survey was, first, limited by its sampling methodology. While the survey was distributed across each UK nation, this was either through the College of Paramedics, or on social media; therefore, paramedics not members of their professional body, or not on social media, may not have had access.

A second limitation is the response rate. The sample size was relatively small, although well powered for the analyses undertaken. At best, the surveyed respondents constitute one third of the paramedic workforce in primary care; hence, results may not be generalised to the entire population of paramedics working in primary care. In particular, paramedics from Northern Ireland and Scotland may have been underrepresented, as survey responses from paramedics in these nations were much lower than in England and Wales. Since the paramedic role is currently not captured in workforce data for these nations (Northern Ireland Statistics and Research Agency, 2020; Public Health Scotland, 2021), the actual number of paramedics in primary care in these countries is unknown. However, there was no variation by region reported in the clinical work undertaken, indicating that paramedics are working in a similar way across the UK.

Lastly, multiple statistical tests were undertaken to interpret the quantitative data. While adjustments were made to control the family-wise error rate, it is possible that some of the marginal results produced are not robust.

4.10 Implications

This study indicates the demographic range of paramedics working in primary care and offers insight into the clinical scope of the role undertaken in this setting. It highlighted that relationships exist between paramedic clinical exposure in primary care, level of education, and ability to independently prescribe medicines and the extent to which clinical presentations are seen and examinations performed. While these results identified the duties undertaken by paramedics working in primary care, the extent to which this is achieved without role duplication, substitution, or boundary

disputes with existing primary care roles still needs to be determined. This study also identified which specific patient groups paramedics are consulting during their work in primary care and the associated knowledge gaps these patient groups may represent.

The refined middle-range programme theory highlighted areas requiring further investigation to determine the contribution paramedics can make to primary care.

These include:

- How a paramedic can best transition into primary care roles from the ambulance service.
- The extent to which paramedics are integrated into the primary care workforce to enable the best utilisation of their skills and abilities.
- Whether paramedics maintain their existing professional identity as they move into primary care, and whether this is required for them to work in primary care.

While this study goes some way towards answering how paramedics work in primary care, why they work and for whom they work best, further evidence needs to be generated to test the responses to these questions (highlighted in the refined middle-range programme theory). This further research will be addressed in **Chapters 5 and 6**.

Chapter 5: Realist Evaluation Phase II - Analytic Auto-netnography

The first phase of the realist evaluation in **Chapter 4** identified the need for further investigation regarding: a) how paramedics are integrated into the primary care workforce to enable the best utilisation of their skills and abilities; b) whether paramedics maintain their existing professional identity as they move into primary care; and c) if this is required for them to work in this clinical setting. Given the paucity of literature regarding these areas (highlighted from their absence within **Chapter 3**), consideration was given regarding how empirical data could be captured to address these gaps and best prepare for the observations and interviews planned for the last phase of the realist evaluation (**Chapter 6**).

This chapter is the second of three within the realist evaluation component of this project and is reported following the RAMESES publication standards for realist evaluation (Wong et al., 2016). A protocol was published and registered with OSF Registries (10.17605/OSF.IO/BJQXP).

5.1 Objective and focus of the research

Since realist approaches seek to explain the deeper causal powers that shape the observable (as outlined in **Chapter 2**), capturing cultural understandings of contexts is paramount. This cultural focus is also important if an empathetic sense of *verstehen*³

³ *Verstehen* is the German word for "to understand", but it is used as a term to signify a specific type of profound and empathetic comprehension. Max Weber introduced this concept to sociology, where it

is to be obtained (Finke & Sökefeld, 2018). This is especially pertinent where the researcher is part of the community under focus, being a paramedic in primary care herself (as outlined in section **5.8 Personal reflections**), To address the gaps made evident within the first phase of the realist evaluation and to prepare for the final phase of the project, further understanding of paramedics' perspectives of the culture and context of primary care was needed.

In some methodological approaches (such as interviews), discussions around culture and meaning can take on a disembodied and abstract quality. While it is impossible to get inside someone's head to understand how they see themselves, it is possible to seek to understand a person's view of the world, their motivations, and concrete circumstances or situations they have experienced (Fricke, 2003). Indeed, the prosaic nature of identity, and the space within which this identity is discussed, can be understood through anthropological approaches that have their basis in conversations between members of the community under examination (Finke & Sökefeld, 2018).

Given the research objectives and the requirement for an approach that revolves around community conversations, the most suitable methodology was deemed to be netnographic research. Netnography is a qualitative research method that aims to gain insight into the cultural experiences embedded within and manifested through social media networks (Kozinets, 2015). For the researcher-as-practitioner, this approach was deemed particularly appropriate, as it allows for conversations among primary care paramedics to facilitate a "*new mapping of reality*" (Kozinets, 2015, p. 25) that

pertains to the ability to perceive the world from the perspective of others. It encompasses the kind of valuable, authentic insights that can be gleaned through participant observations.

had not been found within the reviewed literature on this subject (Eaton et al., 2020; Eaton, Wong, et al., 2021). In doing so, it offers an opportunity for a sense of *verstehen* to be obtained, exploring the problem beyond the researcher's personal experiences.

The benefits of studying people in the realm of social media are twofold. First, conversations between members of communities of interest become accessible by virtue of them taking place in online public forums (Kozinets, 2010). As paramedics would typically work for different providers in geographical isolation from each other (due to the nature of primary care within the UK), social media forums are one of the few spaces where paramedics in this clinical setting may come together. The second benefit of studying people in the social media realm is that patterns of behaviour online may coincide with behaviour in reality. As a research source, social media behaviour is often dismissed because of its orientation towards performance (Tavakoli, 2016), but as people lead more omnichannel lives, the distinction between online and offline lives is becoming harder to discern (Hartnett, 2016). Acknowledging that performance behaviour may be an extension of fully formed individual thought (Goffman, 1956), netnographic methods provide an opportunity to gain insight into pertinent details that may not otherwise be discussed. Indeed, given the dearth of literature pertaining to the research objectives outlined in the realist review (**Chapter 3**) and the first phase of data collection within the realist evaluation (**Chapter 4**), this study was primed to ensure that the interviews planned within phase III (**Chapter 6**) would ask appropriate questions of the participants.

The overriding aim of this phase of the realist evaluation was to understand the perceptions paramedics have regarding their role in primary care (in fulfilment of **Research Question 1**).

5.2 Study design and procedures

Netnography does not adhere to a specific methodological framework, but instead employs a rigorous and systematic adaptation of an anthropological approach. This adaptation is specifically tailored to account for the complexities of online behaviour and interaction while upholding ontological, ethical, and legal standards (Kozinets, 2015). The study design followed the process set out by Kozinets (2019) through five procedural movements, as discussed below.

Initiation

The objective was to gain insight into the issues that matter to paramedics in primary care in the course of their work and the perceptions of their role, going beyond the researcher's own experiences as a practitioner in this field. Therefore, an approach that highlights the role of the researchers' own experiences of their online conversations was vital. In this regard, an auto-netnographic approach was undertaken, which *"captures and documents these experiences through the careful personal observation of online participation, autobiographical attention to the interrelation of various experienced 'worlds'—both online and off/real—reflexive field noting... and first-person narratives which make their way into the final representation carried in the netnographic text"* (Kozinets & Kedzior, 2009, p. 12).

To ensure integrity in any approach that would inherently be reflexive, and in consideration of the realist philosophical approach underpinning the DPhil, an analytical framework with an emphasis on theoretical analysis was required. Inspired by Andersons' (2006) analytical auto-ethnography, the auto-netnography undertaken for this part of the DPhil integrated theoretical reflexivity, enabling a connection of the findings with substantive literature. The study design was therefore an analytic auto-netnography, following a similar approach outlined by Howard (2018).

Investigation

Mapping out the investigative space of the project was inspired by the results of the realist review. Online searches (using Google) within the realist review (**Chapter 3**) found posts on the social media platforms of Facebook, Reddit, and Twitter (which is now known as X) where the terms 'paramedics' and 'primary care' were discussed. These posts were excluded from the review, due to uncertainty regarding their ethical or legal suitability for inclusion at the time. However, it was clear that online communities existed on these platforms, where paramedics in primary care conversed about their role.

The differences between these three social media platforms meant that each attracted its own range of participants. Facebook is a social networking service that enables users to connect with others online, Reddit is a website comprising user-generated content in a bulletin board system, and Twitter serves as a platform for individuals to connect and communicate by exchanging messages within a restricted character limit. The availability of content from these sites via internet search engines, such as Google, depends on the privacy settings chosen by individual users or groups.

However, to engage in interactions, users are required to create a profile on each of the respective sites. Of these three data sites, only Facebook requires identity validation during the registration process. In contrast, Reddit is renowned for allowing users to maintain anonymity when posting, while Twitter occupies a middle ground by giving individuals the option to represent themselves authentically or to adopt a pseudo-anonymous approach (given that registration is still necessary to create a Twitter account). In this manner, these social media sites will appeal to different users, and potentially facilitate different conversations. As open platforms that prioritise user anonymity, Reddit and Twitter provide opportunities to discuss sensitive or stigmatised topics (Kozinets, 2019). In contrast, Facebook is primarily geared towards building personal networks by connecting profiles with 'friends' and facilitating the formation of common-interest groups. It serves as an extension of one's personal identity into the online social space (Vara, 2007) in a way that neither Reddit nor Twitter can achieve.

Given the variety of potential conversations available, and the different reasons for the use of different social spaces, this analytic auto-netnography focused on Facebook, Reddit, and Twitter. Legal and ethical considerations regarding this approach are outlined in Section 5.3.

Immersion

Netnographic immersion involves the implementation of data collection and indexing strategies. As the methodological focus was autobiographical, reflexive fieldnotes (termed an *immersion journal* by Kozinets (2019)) in response to posts within these online social spaces were made by the researcher in relation to the research objectives. The immersion journal was written using a first-person performative writing

style (Worden, 2014), and focused on the researcher's reflections in order to see beyond the limit of her experiences to understand the perceptions of the wider paramedic workforce in primary care.

As this chapter seeks to explore the professional identity of the paramedic in primary care, an identity that is shared by the researcher, the active voice is more prominent in the results section **5.4**. It maintains this approach throughout this section before transitioning to a more formal academic style when summarizing the findings and refining the realist programme theory in section **5.6**.

Interaction

One of the central tenets of Kozinets' approach to netnography is the interaction between researcher and participant within the study site. Interaction occurs as the researcher navigates through different social media platforms (dubbed *data site* by Kozinets (2019)), searching them, observing them, and writing about them. It can also occur in a more overt manner, where the researcher actively engages with the participants at the data site. However, embracing a complete membership role may have led to potential misunderstanding and stigmatisation, both for the researcher and the methodology (Dwyer & Buckle, 2009).

Given the shared identity, language, and experiences between the researcher and the participants, the researcher (a paramedic in primary care) was considered an "insider" within the participant group (Asselin, 2003). However, since the primary focus of this research was to gain insight into the perspectives of other paramedics in primary care in relation to the researcher's own, adopting a peripheral membership approach was

deemed appropriate (Adler & Adler, 1987). Peripheral membership refers to a state where an individual is not fully integrated or actively participating as a core member of a particular group, but still has some level of connection or involvement.

Adopting an unobtrusive research approach facilitated a naturalistic element of the study. This approach enabled the researcher to observe and reflect on the participants' perspectives without imposing any undue influence. Therefore, the interaction (titled *data operations* by Kozinets (2019)) within these spaces was through observation only, with the immersion journal (in which the researcher recorded her reflections after reading posts online) providing the primary source of data for analysis. Data recorded in the journal were *cloaked* (Kozinets's term for full anonymisation), as outlined in section 5.3.

Integration

Within this procedural stage, the sought-after depth of cultural understanding was achieved through the analysis of the data. The immersion journal was subjected initially to content analysis to generate a thematic understanding of the data at a semantic level, following the approach outlined by Braun & Clarke (2022), using NVivo v.12. These data were then reviewed within the existing CMOCs underpinning the programme theory from **Chapter 4** in order to refine, or refute, existing CMOCs, as well as develop new ones that assist in answering the overall research questions.

5.3 Legal and ethical considerations

Kozinets's (2019) research ethics process flowchart was utilised to guide the study. Within this flowchart, the data operations outlined above are considered suitable to be

undertaken without formal informed consent procedures, subject to ethical audit. This study was approved by the Central University Research Ethics Committee (MS IDREC Ref: R77299/RE001) at the University of Oxford (**Appendix M**).

Considering this lack of informed consent, data collection in netnography requires an understanding of social media user rights in terms of compliance with platform policies, data rights, and privacy considerations (Kozinets, 2019).

Platform policies

This phase of the realist evaluation was developed in 2021 and conducted in 2021/2022. Therefore, the policies in operation at the time were followed. On Facebook, public groups are viewable by any member of the platform, visitors to the group, or participants within the group. Private groups can be visible (searchable on the platform) or hidden (not searchable on the platform). Facebook's *Terms and Policies for Pages, Groups, and Events* applies to all groups on Facebook (whether public or private, visible or hidden), and all posted content is considered "*public and can be viewed by anyone who can see the page*" (Facebook, 2021). On Reddit, public subreddits are publicly available to visitors or members of the platform (Reddit, 2021), but only members of the platform can engage with posts. Twitter offered users either a public or a protected profile (Twitter, 2021). Only members of the platform can engage with public posts, and the owner of a protected profile can decide who engages with their tweets from their list of followers. Both Facebook and Reddit have the option to create group rules to outline how members engage with the group or the Reddit; these are outside the privacy policies of these platforms (Facebook, 2021;

Reddit, 2021), and are discussed further in the sub-paragraph on *privacy considerations*.

Data rights

The European Union's General Data Protection Regulation (GDPR) (Regulation 2016/679)⁴ continues to be the default standard governing global research data rights (at least for the current time). Under GDPR, research occupies a privileged position, where the collection of public data is permitted for research by legitimate researchers who are processing data for the public interest, as long as the researcher acts in accordance with the standards for scientific research. If appropriate safeguards are in place regarding privacy, then these guidelines suggest that public data can be used by social media researchers.

Privacy considerations

There is a balance between using publicly available social media posts and protecting a user's right to privacy. Privacy considerations must ensure reasonable compliance with the platform, as well as the specific site where social interactions are occurring (Kozinets, 2019). The British Psychological Society Code of Ethics and Conduct (2018) outlines that "*observational research is only acceptable in public situations where those observed would expect to be observed by strangers*". As posts by members on Facebook, Reddit, and Twitter are considered public, it is reasonable that they are expected to be observed by strangers. However, some members of the groups may have expectations of privacy (even if that is counterfactual to the platform

⁴ Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) [2016] OJ L 119/1

policy). In consideration of this, when the researcher requested to join a group, the group rules were reviewed to determine the presence of any rules pertaining to privacy. Individuals become part of these groups, and engage in discussions within them, following the privacy-related rules set forth by the group membership. While no such rules were in existence in the groups that were joined, had any such rule existed, then the researcher would not have joined the group.

Both Facebook and Reddit have the option of having administrators or moderators for their groups. Administrators or moderators are users who volunteer to preside over the content posted within the group as well as grant access to prospective members. When joining groups with such voluntary gatekeepers, researchers are expected to explicitly ask and gain permission to join the group to gather data (Kozinets, 2019). This does not devolve decisions regarding informed consent to moderators or administrators, as this is the underlying function of ethical review boards. Instead, it enables the person with authority in the group to consider and advise on the reasonableness of the request to undertake research within the group.

In recognition of the community of participants and the relationship with the researcher in that community (outlined further in section **5.8 Personal reflections**), safeguards to conceal the presented identity of social media posters and the precise contents of their posts were implemented. Data were 'cloaked' as they were recorded in the immersion journal: The social media platform under observation was mentioned, but names, identifiers and verbatim were not recorded in order to prevent identification or 'backtracing' through the use of internet search engines (Kozinets, 2019). This cloaked condition suited the autobiographical nature of the immersion journal, which

emphasised the significance of the conversations' content rather than attributing statements to specific individuals.

Researcher disclosure

Kozinets outlines that *“there is no prevarication in reasoning why a netnographer would want to deceive online”* (Kozinets, 2019, p. 199), so netnographers must disclose their real identity when conducting research online. The nature of the immersion in online spaces within this research phase was such that there was no direct contact with the users of the online spaces observed, save for the permissions requested of a moderator or administrator to join groups. Otherwise, entry to the online spaces was by virtue of group membership (as a paramedic in primary care), rather than any expressed disclosure that research was being undertaken. Arguments outline that overt entry endangers unobtrusiveness when studies seek to establish concepts occurring in online communications (Wu & Pearce, 2014). There is also a potential risk that researchers who disclose their identities within online communities may encounter personal contempt directed towards them (Hewson, 2020). However, ethical principles of autonomy demand that research participants should be as aware of the possibility of research being undertaken. To balance the need for disclosure against the potential impact of disrupting the social space, and in consideration of the overall research goal for the researcher to see beyond her own perspective, disclosure took the form of a debriefing statement. At the end of the data collection period, the researcher posted a debriefing statement on the social spaces that had been observed, outlining the research purpose and process alongside contact details for the researcher. Such an approach is an accepted practice in ethnographic methods

where there has been no consenting procedure or where participants cannot be contacted individually (Agar, 1980; Allen, 2017).

5.4 Results

Embracing the 'auto' component of auto-netnography, from this section until the refinement of the programme theory in section 5.7, I present "myself". By adopting a first-person narrative approach in describing the results and main findings, and by considering them alongside substantive theory in the discussion, I will demonstrate the importance of introspection obtained through the reflexive immersion journal that served as the foundation for this research phase. Through this method, I aim to showcase the significance of personal reflection and its contribution to overall research outcomes.

Between 1 December 2021 and 28 February 2022, I spent a culminative total of 253 hours on social media. My time on social media channels per week was broadly the same on average (7 hours 59 minutes on Facebook, 6 hours 50 minutes on Reddit, and 6 hours 42 minutes on Twitter). The extra hour on Facebook could be explained by the fact that I joined more groups on that platform, and it is where I found much of the chatter between paramedics in primary care. Computer data recording my access to each social media site recorded 983 logins and a combined total of 160 notifications from Twitter and Facebook each week. I penned 24,950 words in my immersion journal from which my main findings were derived.

5.5 Main findings

This section provides a narrative overview of the main findings of the study, with italics used to indicate direct quotations from my immersion journal. These findings are considered within the conceptual sub-categories of the existing programme theory. In section 5.6, I will outline how these main findings contributed to the development of a new mechanism within the programme theory.

Paramedic perspectives

Through immersion across these channels, it was apparent that paramedics working in primary care were invested in their role, and proud when they were integrated within the primary care team. Stories were shared regarding how the employment of paramedics had increased workforce capacity, particularly around Christmas time, when demand outstripped available resources. In response to these rescue narratives, I noted that *I'm not sure where I sit with the hero mentality here ... that these additional roles are banded as saviours, but they can't help if they don't know how to*. This aside, paramedics wrote about their inclination to help. Twitter, specifically, proved to be a valuable resource where paramedics demonstrated *a keenness and willingness to learn, far in advance of anything I have seen when working in the ambulance service*. It seems that paramedics are far more motivated to develop and integrate into primary care than they are with the ambulance service culture.

There also existed discourse portraying those who were not part of this group of paramedics in primary care (policymakers, clinicians and non-clinicians in primary care and paramedics working in the ambulance service) as 'the other', with the creation of an 'us versus them' mentality, which seemed to be taken for granted

because it was accepted and not commented on by other members in the group. I am abashed when reviewing my responses in my immersion journal to these comments, outlining *I get it! ... Am I part of the problem?*

Education

An observation that struck me early in my engagement with these social platforms was the general conformity among members across these channels. This phenomenon was most notably evident within the Facebook groups, which operated as a *virtual crew room*; these social media communities seemed to function as a *community of looking out for each other*, with members involved in different threads of conversation synchronously. Members used these groups to validate aspects of their clinical practice and to seek guidance on integrating their roles into the broader primary care workplace. For the most part, these conversations were characterised by positivity, with responses to queries being supportive and encouraging. A significant portion of the assistance provided revolved around matters such as applying for jobs in primary care, negotiating salaries with practices, structuring working days and hours, developing clinical examination and procedural skills, and obtaining support for independent prescribing. The focus was on working together to achieve the best possible conditions for the paramedic to work in within primary care. I outlined in my journal that, in certain respects, this *dynamic reminded me of the unionised ambulance service workforce that I had encountered in the ambulance station crew rooms during the early part of the last decade (2010-2019), with a clear 'us and them' narrative between the paramedics and their employing practices.*

Reflecting on my immersion journey, it seems that there is a fatalistic sense that the role of the paramedic in primary care is not recognised by the wider primary care workforce. Part of this illegitimacy seemed to be around the lack of a curriculum, and a lack of buy-in to the single framework (the 'roadmap') that existed. I respond to this in my journal by outlining that the much-needed standardisation of education *lands at the feet of policymakers and politicians who have no real-world understanding of what it means to work as a paramedic in primary care.*

It is perhaps unsurprising, therefore, that I found paramedics were calling for more ownership within their profession in the primary care space, and that the single current scheme (the 'roadmap') that supports paramedics to work in primary care *could be a really promising framework had there been more engagement with paramedics in its construct.*

Experience

Since practice is "*knowledge-laden*" (Edwards, 2010, p. 5), it is unsurprising that much of what I observed related to the disconnect between the formal curriculum and knowledge that occurred during praxis (within vocational, applied, exposure within primary care). Outside of the 'roadmap' for paramedics in primary care in England (Health Education England, 2021), the lack of a curriculum framework caused frustration in discussions. There was general acceptance that further education is a necessity to work in primary care, but a lack of time within a busy primary care role made it difficult for paramedics to access these opportunities. In this case, enrolment in formal education was viewed as mandatory, but required negotiation for completion. This pushed most knowledge generation to occur experientially, which was

subsequently influenced by the hidden work when working in primary care. Hidden work in primary care is broadly outlined as non-patient-facing work, which is required in order for patients to receive safe and co-ordinated care (Spooner & Hubmann, 2023). Such hidden work, including reporting blood test results and other clinical administrative tasks, was typically frustrated by these paramedics, particularly concerning the challenges of effectively managing both the complexity of patient presentations and time. I was reflective of the latter in my immersion journal: *My clinical days inevitably ended late. I often could not join the debriefing offered to medical students in the practice while I caught up on notes, cleaned, or supported colleagues to plan for the following day...*

Towards the middle of my immersion, I journaled in response to a long, clinically focused thread offering an impressive variety of education resources to support knowledge development amongst the group: *Once again, I'm reminded of the importance of this community for sharing resources and building learning. However, for paramedics in primary care not on Facebook, what communities of practice do they belong to? How do they share learning and training opportunities?*

Working in a team

Some of the discussions made attempts to reconfigure the paramedic's professional identity. Some members stated that they felt they were no longer a paramedic, as *they bring no unique skills to market in primary care when compared to physiotherapy and nursing. They propose that they do the same role as a GP, at a fraction of the cost, with nothing of the same level of experience or training and subsequently doing a worse version of it.* Alongside this, one post gained traction as the member proposed

resigning their paramedic registration to become a physician associate, which they felt more accurately denoted what they did in primary care: assisting the GP, rather than acting as an autonomous healthcare professional. *Interesting*, I note in my journal that *I hadn't considered this*. A later comment is upvoted to replace the first, the respondent outlining that despite working in primary care environment, *their roots are as a paramedic, and that is in their heart too*. In my journal, I document: *I really resonate with this, paramedics are not giving up their identity and substituting for other healthcare staff – it's the origins of paramedics that enable them to work in an advanced practice capacity and be effective at it*.

Clinical role

Despite the general coherence prevalent in the observed spaces, there were occasions when direct challenges emerged. An ongoing theme was the prescribing rights of paramedics, which often ignited debates in the posts. My journal documents my astonishment at the dismissive nature of certain responses to inquiries, both from others and from myself as a paramedic researcher: *It feels like there is a protectiveness here, which I see – if a person is not sure of the process, have they been adequately trained to undertake it?*

5.6 Refinement of realist programme theory

This phase of the realist evaluation focused specifically on paramedics and their perceptions of their role. Therefore, CMOCs related to the expectations of paramedics working in primary care from the perspective of the patient and GPs could not be developed. Data from this study supports 12 CMOCs from the refined programme theory presented in **Appendix H (Chapter 4)**, with an additional 7 CMOCs developed

from new data generated as part of this study. **Appendix N** outlines the CMOCs that support this refined programme theory (visually presented in Figure 7)⁵. Within this figure, CMOCs that continue to be relevant in the context of this new data are presented in colour. CMOCs that could not be refined due to the data collected, but may still be relevant, are denoted with a transparent effect. New CMOCs are denoted by a solid outline.

⁵ Please note the change in numerical order of the CMOCs in Figure 7 and Appendix N (compared to Figure 6 and Appendix H), accounting for the development of new CMOCs within the relevant concepts.

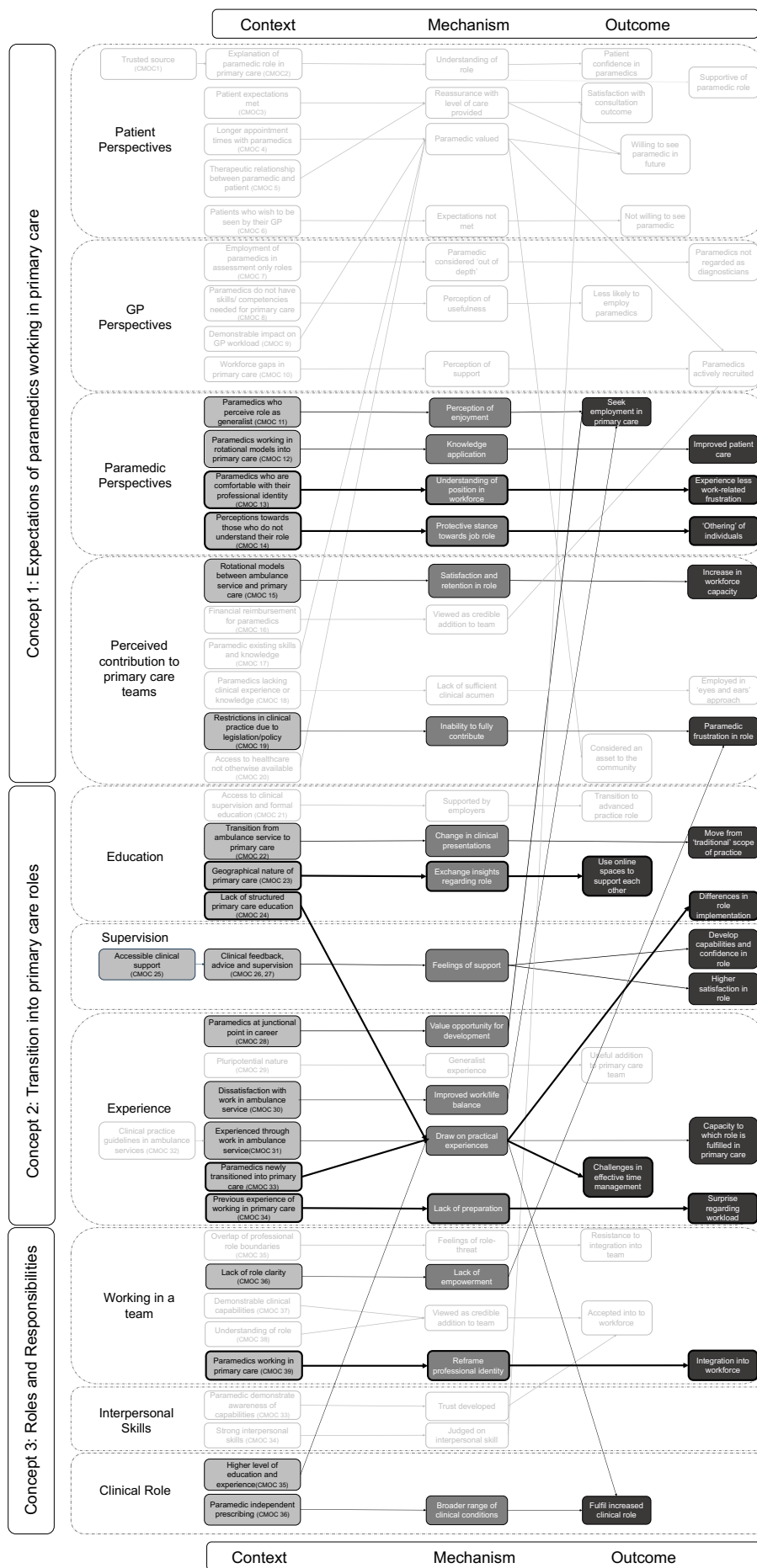


Figure 7. Refinement of realist programme theory from results of the analytic autonetnography

Insights generated during data collection within this study validate several findings from phase I of the realist evaluation, for example, the idea that paramedics tend to be more attracted to pursuing roles in primary care when they view their role as that of a generalist clinician, value the opportunity to develop themselves, and foresee satisfaction and an improved work-life balance within this clinical context (CMOC 11, 28, 30). However, data from this part of the DPhil took understanding of this area a step further by emphasising that paramedics must have a strong sense of their professional identity to mitigate work-related frustration or stress in primary care (CMOC 13). Additionally, working in primary care requires paramedics to reframe their professional identity to facilitate their integration into the workforce (CMOC 39). Furthermore, paramedics working in primary care exhibit a protective stance towards their professional roles, resulting in the “othering” of individuals they perceive as lacking a comprehensive understanding of their responsibilities or those who do not conform to the majority’s interpretation of the role (CMOC 14).

This analytic auto-netnography has provided an opportunity to revisit a CMOC identified in phase I of the realist evaluation, which highlights that paramedics experience frustration when regulations or policies hinder them from completing specific aspects of clinical consultations fully, such as prescribing controlled medications or providing a Statement of Fitness for Work (CMOC 19). Data from this phase also confirmed that paramedics who receive clinical supervision feel better supported, are satisfied with their job, and have a demonstrable increase in their clinical scope of role (CMOC 22, 25-27). This study also confirmed the importance of clinical experience, where they can fulfil an increased role in primary care when they

have practical experiences to draw upon from the ambulance service (CMOC 31, 42). However, paramedics who are inadequately prepared for primary care work often find themselves bewildered by the extent and nature of their responsibilities (CMOC 34) and encounter challenges in effectively managing their time (CMOC 33). Both higher levels of education and the ability to independently prescribe medicines also contribute to an increased clinical role (CMOC 42, 43), which supports CMOCs developed from primary data in phase I.

5.7 Discussion

During the development of this middle-range programme theory, established substantive theories were critically examined. It remains clear that theories of liminality and professional role and boundaries continue to be relevant to underpin the elements of the proposed theory. Professional identity continues to remain relevant as a broad substantive theory, but a shift is noted in the sociological theories that underpin this domain. Whereas exploration of this domain was initially underpinned by the work by Freidson (2001), the knowledge generated in this study indicates that paramedics are proactively reshaping their professional identity while working in primary care in order to effectively integrate into this workforce. Therefore, the integration of paramedics in primary care hinges on their level of comfort with their professional role within this workspace, and their capacity to align their clinical practice with the requirements of their role.

According to O'Meara (2011), the adoption of a theoretical framework that encompasses 'doing, knowing, being, and becoming' has the potential to facilitate the development of a distinct professional identity for paramedicine. This perspective

suggests that paramedicine could establish its identity within primary care by drawing on these dimensions. Across these communities, the influence of agentic contributions – the things that paramedics *do* to operationalise their work in primary care and their engagements within the dynamic components of their surroundings – played a crucial role in shaping paramedics' perceptions and comprehension of their role. Over three months, I observed how paramedics placed importance on the provision of formal education in facilitating integration into primary care. This distinctly Vygotskian perspective indicates that these paramedics see education as a route to successful integration into primary care: the more they know, the more patients they can see, and the more effective they would be in primary care (Vygotsky, 1987).

The exchange of insights related to clinical practices, daily work routines, and assistance for members seeking guidance regarding their experiences showcased how these social media platforms served as tools to aid members in navigating and attaining proficiency in their clinical work in primary care. This social interaction appears to be fundamental to their cognitive development (Vygotsky, 1987). While this was predominantly within the group-based platforms of Facebook and Reddit, similar posts were also found by paramedics on Twitter, demonstrating the different methods by which paramedics would access, and operate within, a community of practice using these networks (Lave & Wenger, 1998). Indeed, Lave and Wenger characterised learning as contextually grounded, a perspective that aligns with a realist ontology of learning (Harré & Madden, 1975). In a community of practice, learning occurs through social interactions rather than being confined to individual cognition (Lave & Wenger, 1998). Considering this within the concept of praxis and experiential learning, it appears that these spaces play a crucial role in the anticipatory socialisation for

paramedics to enter the primary care workspace (Becker et al., 1977). However, a community of practice should have standards by which the community develops, such as professional examinations or a curriculum.

I suggest that the absence of formal educational framework to support the training for paramedics working in primary care has shifted these online communities of practice to become a practice of communities (Gherardi, 2009). Within the practice of communities, the practical experiences encountered by individual paramedics exchanged on these social platforms have been turned into general principles for all paramedics working in primary care. Underpinning this is Goffman's theory of 'frame alignment' (Goffman, 1974), which refers to the process by which individuals adjust or align their mental frames, or cognitive structures, with those of others in a social interaction or communication context. This alignment is essential for achieving a shared understanding and effective communication. Nevertheless, the use of alignment strategies (which individuals employ to close gaps between divergent viewpoints and enhance more fluid communication, according to Goffman (1974)) poses a potential danger: the emergence of groupthink, characterised as "*a deterioration of mental efficiency, reality testing, and moral judgment that results from in-group pressures*" (Janis, 1972, p. 9). What I find especially resonating with my findings is what Janis goes on to say: "*The more amiability and esprit de corps among the members of a policy making in-group, the greater is the danger that independent critical thinking will be replaced by groupthink, which is likely to result in irrational and dehumanising actions directed against out-groups*" (1972, p. 13). Indeed, the concept of 'othering' was prolific in some of the conversations I observed, where paramedics would distance themselves from other members of the primary care team, as well as

paramedics working in ambulance services, creating a situation in which 'other' paramedics are seen as a separate profession and potentially inferior. Considered within the practice of communities, paramedics working in primary care may define their identity through the different environments in which they work.

Tsakissiris (2016, p. 25) claimed that the "*relationship between occupation/profession and identities explains the significance of 'what we do' for our sense of 'who we are'*", adding that it creates a psychological attachment between an individual and a particular workspace within which their profession is practised. Identity can be seen as a relational phenomenon in which the sense of 'self' is primarily defined in relation to 'other'. That paramedics in primary care view their identity as so significantly different from their ambulance counterparts as to 'other' them, but similar enough to retain the *vestigia* of paramedicine, is an unexpected paradox.

An inherent aspect that paramedics seem to bring with them into the primary care environment is the idea of a saviour (as observed within the rescue narratives I noted in my immersion journal) (Smith, 2002). It is possible that paramedics will reconcile the internal dualism of thrill-seeking traits with those of caregivers (Donnelly et al., 2015) as they seek to harmonise their *blue-collar* trade with autonomous professionals in primary care (McCann, 2022). Nevertheless, this reconciliation does little to produce a stable professional identity. The pursuit of professional growth and expanding autonomy in a setting not commonplace within the paramedic profession carries the

potential to trigger an identity crisis, akin to a state of Kierkegaardian existential uncertainty⁶ (Kierkegaard, 1843).

As paramedics move from a *blue-collar* ambulance-based role into a professional workspace such as primary care, this immediately brings into tension the expectation paramedics bring within them about their role and how that role should be practised (Granter et al., 2018). Role identity arises from an individual's engagement and integration within their environment (such as primary care), as well as their community of practice (such as these online spaces) (Stryker, 1980). Therefore, the formation of role identity requires an equilibrium between social structures and individual agency (Archer, 1995). This resonates with the notion that paramedics are actively redefining their professional identity while working in primary care to integrate with the context of this work environment.

However, role dissonance arises when the envisioned notion of the work and the practical execution of work are in conflict (Hollnagel et al., 2015). This disparity occurs due to the inadequate preparation of paramedics for the practical intricacies of primary care, compounded by the absence of a formal education pathway. Indeed, perhaps those paramedics who were able to articulate their identity in primary care within these online social spaces have been able to reconcile this dissonance, enabling an understanding of their role within this workspace (Mausz et al., 2022).

⁶ Derived from the philosophy of Søren Kierkegaard, this refers to a profound sense of unease that arises from the awareness of the inherent uncertainties and choices that come with existence, or in this case, a role. For paramedics in primary care, it may be associated with fear of the clinically unknown and the understanding how their role is practised in this new environment.

Strengths and limitations

Auto-netnography is a uniquely personal endeavour for each researcher, offering a methodological avenue that empowers individuals to scrutinise their practice, their existence, and their role within the context of their study (Kozinets & Kedzior, 2009). While researchers working within their own communities have been accused of bias in regard to their work (Serrant-Green, 2002), my reflections are that my professional role added to this research. By engaging in observational data collection within a reflexive immersion, I have gained insights about both myself and my role as a paramedic in primary care that surpass what I could have discovered solely through my own introspection or observation of others alone – a point supported in other work (Dwyer & Buckle, 2009; Sidebotham, 2003; Yeo & Dopson, 2018).

While Kozinets may advocate that researchers do not engage in identity deception when being part of an online community (2019), this does not mean that other members of the community will share this view. It is important to note that just because members were part of online communities for paramedics in primary care, this does not mean that they were paramedics working in primary care. However, since the opinions expressed across these data sites were reconcilable with my own experiences as a paramedic in primary care, I find it unlikely that members who participated in these forums were not paramedics in primary care.

Finally, the observation of online social spaces takes place asynchronously, happening after the conversation has concluded, unlike synchronous participation as an active contributor to the discourse. The value of the insights acquired is inherently linked to the quality of the interactions witnessed within these spaces. Consequently,

this aspect can present difficulties when attempting to extend findings to groups beyond those directly observed. Nevertheless, by using three distinct data sites, each with unique operational characteristics and thus catering to a diverse array of individuals, it is believed that this limitation has been effectively addressed.

5.8 Personal reflections

From its outset, my immersion journal highlighted the unease I felt while attempting to embrace my genuine identity (by using my real name) on social media. While Twitter had functioned as my 'professional' online presence for quite some time, Facebook remained the platform where I employed my married name, and which I used primarily for interactions with family and close friends. This was in direct contrast with Reddit, where my username lacked the veil of anonymity that most others (and I) had previously enjoyed on the platform⁷.

Across the fifty pages of my journal, I documented my apprehension in joining my first groups on Facebook and Reddit, the reassurances I gave to some moderators who questioned my request to join, and my dismay at those groups without a moderator (dolefully termed 'abandoned communities'). There are times when I am in complete agreement with the majority on the topic under discussion – *I so get this!* – and at other times incredulous: *no wonder we're not viewed as professionals with attitudes like this!* Upon revisiting this journal, a heightened awareness emerged regarding my dual role: that of a paramedic engaged in primary care and simultaneously a researcher delving into my own professional domain. Reflexivity brings forth self-awareness and agency

⁷ When you sign up for Reddit, you are asked to create a username. Individuals can use their real name (as I changed mine to), but the vast majority of Redditors choose a name that represents them, without revealing who they are – alluding to a sense of anonymity.

to the notion of identity, recognising that identities inherently require a certain degree of conscious reproduction.

In addition to the responses to the aims of this phase of the realist evaluation, I also documented my experiences with engaging with the methodology. I would like to think Kozinets would approve of this⁸. As time progressed, my journal demonstrated the evolution of my thinking and approach. Early on, I documented my annoyance that *this non-participative research means I can't ask [clarifying questions of members]! Definitely something to consider in the future and reflect on within the thesis – this being the second time I needed interaction and only 10 days in!* Later on, in response to some queries from moderators about the research, I recorded (somewhat aloofly, in retrospect): *The answer was positive, though I don't know if that's because they understood my answers to their questions or not. I can't help but think that the gap concerning research design and methodology is made wider by the lack of teaching – and considerations – given to moral philosophy [within the profession].* In the penultimate days of data collection, I wrote: *This methodology suits me. Much of the conversation I have observed is 'safe'; there's conflict between respondents, but not much. Very little controversy, and certainly nothing that would jeopardise anyone's fitness to practise. Yet. And, indeed, nothing did. However, this does raise some interesting considerations regarding the dissenting voices that are present (or not) in these communities.*

⁸ He is vocal in his texts that full immersion requires an engagement with the *process* of undertaking the research, as much as generating results (Kozinets, 2019).

Considering my results, while the topics covered were what I expected (given my experience of primary care as well as ambulance service crew rooms), there were some surprises. Education was a key component found in the systematic scoping review, the realist review and the first phase of the realist evaluation (Eaton et al., 2020; Eaton, Mahtani, et al., 2021; Eaton, Wong, et al., 2021). While I was not surprised that this continued to be a core concept uncovered in this study, I was surprised by the frequency with which education was discussed by paramedics within these social spaces. I had (pretentiously, perhaps) thought they would not be that interested in this topic. I was equally taken aback by the discussions surrounding identity – the fact that paramedics continued to perceive themselves as such within the realm of primary care, even when they were not performing distinctly paramedic tasks such as life-saving interventions. I think this is due to my own sense of identity in this space: I see myself as a paramedic in the etymological sense (alongside medicine), but not necessary in terms of the clinical responsibilities I undertake in primary care. The most significant revelation throughout this DPhil journey has been the invaluable understanding I have gained from delving into conversations about others' perceptions of identity and their positioning within the realm of primary care. With this knowledge, I have been able to review the substantive literature that underpins one of the conceptual categories of my programme theory and develop further CMOCs that seek to explain paramedics' understanding of their professional identity in primary care.

5.9 Implications

This study confirms some of the findings within the programme theory developed so far, namely, that paramedics are more likely to be effective in contributing to primary

care workforces when supported to develop their knowledge through formal education combined with clinical experience within the primary care setting. It also confirms the frustrations experienced by paramedics who are not able to work to their full scope of role due to restrictions placed on their practice through legislation or policy. This study has been able to build on this further to outline that where formal education is not provided, paramedics learn through a combination of praxis, clinical supervision, and a community of practice network facilitated by other paramedics in primary care.

While this study contributes to understanding how paramedics perceive their role and work in primary care, the refined middle-range programme theory (Figure 7 and **Appendix N**) has highlighted three areas requiring further investigation to contribute to understanding for whom they work best. This includes:

- How paramedics can best transition into primary care roles from ambulance service.
- The impact of paramedics working in primary care on primary care teams.
- The experiences of patients who have a clinical consultation with a paramedic in primary care.

Therefore, further evidence needs to be generated to test the refined programme theory in Figure 7 and to answer these questions. This exploration will be undertaken in **Chapter 6**.

Chapter 6: Realist Evaluation Phase III – Focused

Observations and Interviews

Primary data from the preceding phases has focused on exploring paramedic perspectives regarding their perceived contribution to the primary care team, their transition to primary care roles, and their roles and responsibilities when working in primary care. The previous phase of the realist evaluation in **Chapter 5** identified the need for further investigation regarding: a) how paramedics can best transition into primary care roles from the ambulance service, b) the impact of paramedics working in primary care on primary care teams, and c) the experiences of patients who have a clinical consultation with a paramedic in primary care.

This chapter is the final of three within the realist evaluation component of this project and is reported following the RAMESES publication standards for realist evaluation (Wong et al., 2016). A protocol was published and registered within the NIHR Central Portfolio Management System (PID16039).

6.1 Objectives and focus of the research

The objective of this final phase of the realist evaluation is to improve understanding of the ways in which paramedics impact (or not) the primary care workforce. This will be addressed by answering the overarching research question: What is the perceived impact of paramedics working in primary care teams on the working practices of other professionals in primary care and the experiences of patients?

6.2 Stakeholder engagement

In addition to presenting the research findings up to this research phase, discussions took place with representatives from the College of Paramedics, NHS England Workforce Transformation and Education Directorate, and the Royal College of General Practitioners. From these discussions, it became apparent that understanding the impact of paramedics working in primary care teams should include primary care workforce representatives (e.g., from a range of clinical and non-clinical roles) and that any findings should be generalisable to the UK as a whole. There was also a desire to investigate models utilised in nations with well-established initiatives of paramedics operating in primary care, such as community paramedic programmes. The aim was to determine whether any insights gained from understanding how community paramedics function within primary care settings could be brought back to enhance patient care and workforce organisation within the NHS.

Further discussions were also undertaken with the patient participatory group. The patient participatory group wanted to ensure that the voices of patients who had been seen by paramedics, as well as their carers or relatives, were captured in order to understand the wider impact of paramedics working in primary care teams.

Continuing to pay attention to these 'folk theories'⁹ from the patient participatory group and key stakeholders (Pawson & Tilley, 2004), this study was designed to develop CMOCs within the conceptual categories of expectations of paramedics working in primary care. This emphasis primarily centred on patient and GP perspectives, as well as the experiences of paramedics as they transitioned to primary care roles.

⁹ As outlined in Chapter 2.

6.3 Study design, materials, and procedure

The study design consisted of focused observations and semi-structured (realist) interviews with paramedics working in primary care, patients who had received a consultation with the paramedic, and healthcare professionals and administrative staff working with the paramedic.

Where conducting long-term ethnographic fieldwork over an extended period is impractical due to time and resource constraints, focused observation can provide a practical and viable approach for studying sub-cultures within complex spaces (Atkinson & Hammersley, 1998). Described as “*the study of shared experiences of a more confined, predetermined phenomenon*” (Rashid et al., 2015, p. 3), focused observation can swiftly gather context-sensitive and culturally relevant data in a practical manner. This can be particularly effective when the researcher is an ‘insider’ – situated within the participants’ natural setting and therefore sharing some of the participants’ experiences – but not known to the participants. Practitioner research is defined as a research method carried out by applied practitioners with the objective of deepening comprehension of the societal context in which the research is undertaken, and broadening the perspective outside of the researchers’ own experience (Champ et al., 2020; McLeod, 1999).

Pioneers of ethnography introduced the practice of employing semi-structured interviews with local key informants (Emerson et al., 2001). This approach involves gathering data through observations, recording field notes, and engaging directly with study participants. These semi-structured interviews are more akin to conversations

than formal interviews and are often described as 'controlled conversations' with pre-set open-ended questions and thus are widely employed in research on different healthcare professionals (Fielding & Thomas, 2016). Given the ontological framework within which this DPhil was undertaken, it was pertinent to adopt a realist interview approach within these controlled conversations. Hence, existing programme theories are outlined to the participants for them to comment on, with a view to providing refinement (Manzano, 2016). By capturing the participants' stories about the programme, their experiences can assist in the refinement (and abnegation) of various parts of the programme theory or its constituent contexts, mechanisms, or outcomes. Throughout this iterative process, an understanding of the real world is also refined. This fluid teacher-learner approach, as described by Pawson (1996), facilitates the transition from programme theory refinement to consolidation, which is apt for the final study phase within this DPhil project.

An interview guide was developed based on the existing programme theory (**Appendix O**). This outlined the indicative question areas for each participant group and was able to promote the 'teacher-learner' conversations¹⁰ that underpin realist interviewing (Manzano, 2016).

Comparative research approach

In consideration of conversations with stakeholders, a comparative research approach was adopted. A study is considered comparative when research is undertaken on

¹⁰ In realist interviewing, 'teacher-learner' conversations refer to interactions where the interviewer serves as a teacher, providing information or context, and the interviewee acts as a learner, seeking to understand and share their insights. These conversations facilitate the exchange of knowledge and experiences, helping the interviewer uncover the interviewee's perspectives and generate context-mechanism-outcome configurations (CMOCs) in realist research.

specific issues or phenomena in two or more countries, with the explicit goal of contrasting how these issues manifest in diverse sociocultural contexts (Hantrais, 1995). These contexts may encompass variations in traditions, value systems, lifestyles, language, and applications of the role.

Comparisons between different programmes in different countries, or continents, have the potential to engender fresh insights and a deeper understanding of issues that are of central concern in different countries. They can lead to the identification of gaps in knowledge and may point to possible directions that could be followed and about which the researcher may not have previously been aware (Hantrais, 1995).

The realist review in **Chapter 3** established that there were a variety of programmes across Australasia, Canada, and the USA where paramedics were working in primary care. Given the longevity of one such programme and the substantial body of literature associated with it, the County of Renfrew Paramedic Service in Ontario, Canada, was selected as the comparative data site. Since 2008, the County of Renfrew Paramedic Service has formally endorsed a community paramedic programme aimed at addressing healthcare system gaps (Moreau & Barber, 2020), similar to how paramedics in the UK are utilised to enhance primary care workforce capacity.

Therefore, a comparative study approach was devised between the County of Renfrew Paramedic Service in Ontario, Canada, and across the four nations of the United Kingdom.

Sampling

To include a representative sample of the primary care team, participants were paramedics, general practitioners, patients who had previously had a consultation with a paramedic, and other clinical or administrative members within the primary care team. Each paramedic was considered a 'case', around which further data (from other participants) were collected.

In the UK, the sampling framework was purposive, with a maximum variation approach (Patton, 2015) in order to sample individuals who differed in terms of factors relevant to the emerging programme theory, such as length of time as a paramedic, length of time in primary care, job title, and level of education.

In Canada, paramedics working within the County of Renfrew Paramedic Service community paramedic programme were convenience-sampled by the Chief Paramedic and Director of Emergency Services in the County of Renfrew against the eligibility criteria in Table 3.

Inclusion Criteria	Exclusion Criteria
Participants who can converse in English.	Participants who cannot converse in English.
Participants are willing and able to give informed consent.	Participants under the age of 18.
They will fit one of the following three profiles: <ul style="list-style-type: none">• Paramedics employed in primary care within the UK or Canada.	Adult patients experiencing significant psychosocial difficulties that would make it unreasonable to invite them to take part in the research

<ul style="list-style-type: none"> • Adult patients in the UK or Canada who have had contact with a paramedic within a three-month window before the start of data collection around the case. • Healthcare professionals and administrative staff employed in primary care in the UK or Canada who work alongside a paramedic. 	
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Previous work investigating the roles of healthcare professionals in primary care in England (Drennan et al., 2014) has outlined that 12 cases can provide rich enough data to explore role implementation. However, as this study was UK-wide, a sampling framework of up to 15 cases (paramedics) was considered more suitable to demonstrate the breadth of practice across the UK (Malterud et al., 2016) and contribute to the programme theory. In Canada, for pragmatic reasons (such as time in country and eligibility of access), three cases (paramedics) were considered a sufficient sample.

Recruitment

In the UK, 15 paramedics working in primary care were purposively sampled from participants responding to the cross-sectional survey (**Chapter 4**) who had given consent to be approached for involvement in future research. In addition, adverts were sent to primary care teams by clinical research networks (CRNs) in England, health boards in Wales, the Northern Ireland Clinical Research Network (NICRN), and regional health boards in Scotland¹¹. Paramedics who participated were considered

¹¹ These groups coordinate and support the delivery of research within their geographical locality, and act as a gateway to research for health services within that locality.

as cases that would enable the connection to other data sources (e.g., patients, and healthcare professionals in primary care). Individuals who expressed an interest in taking part were contacted by email to confirm their willingness to participate and their eligibility regarding the sampling criteria (Table 3), and to arrange the initial conversation with them and their primary care employer. Recruitment of other healthcare professionals and administrative staff for semi-structured interviews, such as GPs, nurses, pharmacists, and administrative staff, followed a snowballing approach initiated through contacts with the participating paramedics (cases). Recruitment of patients for semi-structured interviews was among the patients who had received care from the paramedics during the focused observations of their practice and who wished to be interviewed. Alongside this, the primary care provider sent a letter (including the participant information sheet) to eligible patients inviting them to be part of the study. Patients who were interested in participating contacted the DPhil student for an initial conversation and then arranged a date to be interviewed.

In Canada, three paramedics working within the County of Renfrew Paramedic Service community paramedic programme were convenience-sampled by the Chief Paramedic and Director of Emergency Services in the County of Renfrew against the eligibility criteria in Table 3. Paramedics who expressed an interest in taking part were contacted by email to confirm their willingness to participate. Once paramedic recruitment had been confirmed, these participants were encouraged to share the study with colleagues who met the inclusion criteria to identify clinical and non-clinical colleagues who would be interested in being interviewed. The community paramedic programme within the County of Renfrew Paramedic Service also sent

communications to eligible patients inviting them to be part of the study. Patients who were interested in participating contacted the DPhil student for an initial conversation, and then arranged a date to be interviewed.

Data collection took place from 14 to 24 June 2022 in Canada, and from 4 May 2022 to 20 January 2023 in the UK.

6.4 Ethical considerations

This study was approved to be undertaken in the United Kingdom by the Central University Research Ethics Committee (22/NW/0097) at the University of Oxford and the Health Research Authority (22/NW/0097) (**Appendix P**). This study was approved to be undertaken within the County of Renfrew Paramedic Service, Ontario, Canada by the Oxford Tropical Research Ethics Committee (OxTREC Reference: 524-22) (**Appendix Q**), which was also accepted as valid by the County of Renfrew Paramedic Service and Fanshawe College, London Ontario.

Respondents were free to decide whether to participate, and informed consent was obtained at the start of the focused observations and the interviews. Compensation was offered upon completion of involvement in the research. This differed between participant types, as outlined in Table 4, and was comparable (using the exchange rate of Canadian Dollar to Pound Sterling at the time) for participants on both sides of the Atlantic. The reimbursement approach chosen was in the form of compensation for the time given and any inconvenience incurred through participation in this research, following the principle of fairness in compensation within research (Draper

et al., 2009). This follows the terminology set out by the Central University Research Ethics Committee (2020).

Participant Type	Compensation for UK participants	Compensation for Canadian participants
Paramedics	£75 Amazon eVoucher	CA\$120
Patients	Interview only: £25 Amazon eVoucher	Observation of consultation and interview: CA\$35.72
	Observation of consultation and interview: £30 Amazon eVoucher	
General Practitioners/physicians, nurses, pharmacists, other healthcare professionals and administrative staff	£30 Amazon eVoucher	CA\$50.00

All data processing and storage complied with the UK General Data Protection Regulation and UK Data Protection Act 2018. All audio recordings were deleted once transcribed, and all transcripts and consent forms were stored on a password-protected computer.

6.5 Data analysis

The interviews were audio recorded, deidentified, and transcribed. Transcriptions and field notes from the focused observations were analysed using semantic level, inductive thematic analysis (Braun & Clarke, 2022) in NVivo v.12. The data were then interrogated through a realist logic of analysis. The analysis focused on understanding and explaining identified patterns in the data (Brousselle & Champagne, 2010) by drawing on existing conceptual frameworks developed through the refinement of the

programme theory, as outlined in **Chapters 5 and 6**. The refined programme theory is outlined in section **6.8**.

6.6 Results

In the UK, fifteen focused observations were undertaken of paramedics working in nine clinical research networks (CRNs) in England, two health boards in Scotland, two health boards in Wales, and one health board in Northern Ireland. This included a range of settings encompassing rural, urban, and coastal locations, which led to significant variations in social deprivation indicators. Sixty interviews with participants (as shown in Table 5a) were conducted. Observations lasted a maximum of one session (4 hours), and interviews lasted on average 23 minutes (ranging from 5 to 58 minutes).

Participant Type		Number
Paramedic	Advanced paramedic	1
	Advanced paramedic practitioner	3
	Home visiting paramedic	1
	Paramedic	2
	Paramedic practitioner	6
	Specialist paramedic	1
	Urgent care practitioner (paramedic)	1
Patients	Patient	13
	Patient carer	2
General practitioners	GP partner and trainer	1
	GP partner	3
	GP trainer	2
	Salaried GP	9
Other healthcare	Administrative support staff	1
	Advanced nurse practitioner	3

professionals and administrative staff	Clinical pharmacist	1
	Healthcare assistant	1
	Home-visiting district nurse	1
	Practice manager	4
	Practice nurse	1
	Receptionist	3

International comparison

In Canada, three focused observations were undertaken of community paramedics working in three different geographical areas of the County of Renfrew Paramedic Service. Eleven interviews were conducted with twelve participants (as shown in Table 5b), as one community paramedic supervisor and one operations lead were co-interviewed by request. Observations lasted a maximum of six hours, and interviews lasted, on average, 42 minutes (ranging from 11 to 67 minutes).

Table 5b. Canadian participant demographics from focused observations and interviews		
Participant Type		Number
Paramedic	Community paramedic	3
Patient	Patient	3
Other healthcare professionals and support staff	Community paramedic supervisor	2
	Nurse practitioner	1
	Operations lead	2
	Physician	1

6.7 Main findings

This section provides a narrative overview of the main findings of the study undertaken in the UK and Canada. These findings are considered within the conceptual sub-

categories of the existing programme theory, and section 6.8 will outline how these main findings contributed to the development of the programme theory.

Patient perspectives

In the UK, of the 15 patients interviewed, 10 were not informed beforehand that they were seeing a paramedic for their consultation in primary care. However, all reported that they were made aware during the consultation that they were seeing a paramedic.

In Canada, all three patients knew they would be seeing a community paramedic, as they were already enrolled in the community paramedic programme, and their consultations with the community paramedic were routine appointments.

Escalation of care

When paramedics refer a patient to a GP, this is called an 'escalation of care' because care is escalated to a senior healthcare professional. Instead of perceiving duplication within the consultation, the patients responded positively when paramedics sought advice or guidance from a GP. This elevation of decision making engendered a feeling of confidence and trust in the paramedic among patients:

"You know she'll go and ask if she needs help, you know, without a doubt."

(UK104: Patient)

"But both times that she has had to ask the GP, she's come back and has been correct in what she's asked for and she hasn't had to add anything else. Which also gives me trust in [the paramedic] that she knows what she's doing."

(UK503: Patient)

Within the community paramedicine model in Canada, the role of the community paramedic was to report back to the referring physician for any decision making. For the most part, the interaction with the community paramedic was a routine part of their medical care; however, they also responded to urgent calls in the community. A reaction to an escalation in clinical care was observed during one of the focused observations in this country:

[The community paramedic] was honest, he hadn't seen blisters like this before. Before [the patient] had the chance to be alarmed, he reassured her – while he may not know the answers, he did know someone who would. The CP made a telephone call to arrange a consultation for the patient with the local sexual health service, and she was subsequently booked in for an appointment shortly after. She thanked him with earnest relief in her eyes (CN1: Fieldnotes).

Improved access

There was a sense that paramedics working in primary care increased the availability of appointments for patients to be seen, resulting in improved overall access. This was discussed by patients requiring physical appointments within primary care:

"I thought to be honest it was a really good addition to my GP surgery because I know that GPs are few and far between due to the number of patients that need them. So it was great to have her as an asset, really.

(UK602: Patient)

Likewise, it was discussed in relation to home visits:

"I thought we weren't gonna be able to get anybody, and my son doesn't leave the house, so I was worried he wouldn't be able to access the blood test

that he needed because I didn't think I'd be able to get him to the surgery... I guess when paramedics go into people's houses regularly... so he came in and was not fazed by the situation I suppose." (UK404: Patient carer)

This was also relevant in Canada, where one patient outlined:

"We don't get to see our doctor – I can't even really get him on the phone and, if I call in for prescriptions, we have to wait for a long time before he'll get back to the pharmacy. We just don't have that contact, but we do have it with the paramedics. We can call the paramedics right away and get an answer – something will be done right away – we rely on that." (CN202: Patient)

Increase in the time available

Patients perceived that paramedics in primary care afforded more time to their consultations when compared to other clinicians in the same practice:

"I had two problems and he said he'd be willing to discuss both of them in the quarter of an hour." (UK1402: Patient)

This was also the case for patients seen by community paramedics in Canada, who simply noted *"they're not in as big a rush"* (CN104: Patient) in comparison to nurses and physicians.

Interpersonal skills

It became apparent during the focused observations that the paramedics observed across all sites were quick to build rapport with the patients they saw:

I get the sense that the paramedic is very integrated both within the practice and the local community. One thing I noted during every patient encounter was how patients remarked on his interpersonal skills – he was friendly, a listening ear, professional, kind, understanding. He is accepted in his role, and the community (UK2: Fieldnotes).

The CP has an informal, relaxed approach as he enters the property, observing the angst in the voice of the patient's wife. His body language is open and engaged. He sits himself at the dining table, where the patient has his breakfast laid out, and leans towards him. No one matters more to him right now than the patient in front of him. (CN3: Fieldnotes)

During each interview, patients consistently emphasised the importance of the paramedic's interpersonal skills during their consultation. Important interpersonal skills included listening, empathy, rapport building, and a holistic approach to the individual:

“He's got a great manner, he's got great interaction, especially for Mum who's older and loves a bit of craic. Even when she's sick she likes a bit of a joke. He's always smiling and that means a lot.” (UK204: Patient carer)

“We've always liked [the community paramedic], not just because he asks us the right questions. He's always trying to find out how we're feeling – how our whole health is.” (CN202: Patient)

Understanding the paramedic's role

Across both countries, there was a perception among patients of paramedics being well educated, trained, and knowledgeable about a range of things because of their experience with emergency situations from the ambulance service.

Patients combined their understanding of the role with trust:

"I trust 'em, because they're very well educated – what they do – and they're kind." (CN202: Patient)

There was also a perception that paramedics were also *"very, very knowledgeable"* (UK104: Patient), *"very highly trained"* (UK204: Patient) and that *"paramedics do everything"* (UK1303: Patient). On being told they were seeing a paramedic in primary care, one patient outlined their *"very first reaction was slight panic that there should be something to worry about. But then the fact that I was reassured was fantastic."* (UK602: Patient).

Given their perceptions of the role of the paramedic, patients reflected that paramedics handle complex and severe medical and traumatic problems regularly, implying that work in primary care may be considered comparatively less complex:

"I think you think of the serious stuff and you think, well, if they can deal with that, a throat infection, which is a sore throat, spots on tonsils and raised glands in the neck and probably a temperature and all of that sort of stuff, that's presumably... surely easier to diagnose than some of the other really horrendous things that paramedics have to..." (UK602: Patient).

Alongside this, one patient considered instances where a paramedic may be less effective:

“I think the other side of it – where I feel that they wouldn’t be so sure – is say as a female and you want to get your breasts checked or you have gynaecological problems or something. I think that then is out of their league. Personally, as for me, I would say that I’d need a GP for that side of things.”

(UK804: Patient)

GP perspectives

Accountability

Despite paramedics being a state-registered profession in the UK, there was a sense amongst GPs that *“the overall responsibility lands with the doctor, not with the paramedic”* (UK304: GP partner). Indeed, regardless of paramedic registration, *“a doctor’s responsibility’s greater”* (UK903: Salaried GP). Conversely, in Canada, community paramedics were not formally registered as a profession, which meant that their accountability was tied to the liability of physicians:

“If I’m [remotely] managing or if I’m dictating the directions that they go, on an official capacity, I’m responsible and then my regular medical insurance doesn’t cover me” (CN103: Physician).

Due to these insurance-related concerns, physicians were hesitant to provide clinical oversight to community paramedics.

Clinical support

During interviews with GPs in the UK, the provision of clinical support and supervision of paramedics was considered fundamental to facilitate the treatment of patients, as well as the development of the paramedic working in primary care:

“Because, actually, the last thing I’d want is anybody working on their own, not being supported and making bad clinical decisions; so we want them to [seek advice].” (UK102: GP partner)

Effective clinical support and supervision were facilitated by the time being allocated to the GPs to undertake this during their practice hours:

“Having that time blocked out is really valuable, I think, to enable us to support them. I would say, definitely, the support that is needed has reduced over the last year that we’ve had her in practice” (UK603: Salaried GP).

Indeed, as paramedics developed more experience in primary care, their clinical support needs decreased:

“If you put in enough work with them to start off with, you’ll get a lot out of them, it’s just having the patience to do it.” (UK1302: GP trainer)

However, community paramedics in Canada lacked the benefit of clinical support or supervision, primarily due to the constraints of physician insurance, which did not extend to covering these activities.

Preparation to work in primary care

Across all GPs interviewed in the UK and Canada, there was a consensus that working in the ambulance service prepares paramedics well to work in primary care:

“Because of their training, and because of why they went into being a paramedic, they’re very good with dealing with fast-paced environments, which general practice is, so they’re good with working under pressure – they’re good with dealing with urgent cases.” (UK1002: GP partner)

Indeed, one GP outlined the paramedic’s role in ensuring the readiness of medical equipment and their ability to respond to medical emergencies, highlighting this as an asset to the primary care team:

“I guess, ‘cause they started out in the ambulance service, they are highly trained in things like resuscitation, dealing with medical emergencies. So it’s just reassuring for the whole of the team really to have a person like that on site. So if a patient collapses at the desk, [the paramedic] is the person you get. He keeps an eye on things like keeping the resuscitation trolley up to date, checking the resuscitation bags, and the portable stuff that we carry out. He also does home visits to administer vaccinations.” (UK1502: GP partner and trainer)

Length of time as a paramedic was considered advantageous to paramedics entering primary care:

“If you look at the [community paramedics] who have three or four years under their belt, they’re exceptional clinicians. When... they have their

educational sessions and do case reviews, how they present and what they know and what they ask is very good. It's exceptional." (CN103: Physician)

"I would want a paramedic plus ACP training on the top or a paramedic who's been working for a good five or ten years, you know, on the ambulances, so has had lots of experience." (UK304: GP partner)

Equally, lack of experience as a paramedic was considered an important barrier for paramedics to work in primary care:

"Other paramedics who would be coming straight from, say, training in the ambulance service would be much more limited in their ability when they first arrive." (UK102: GP partner)

Understanding the paramedic's role

GPs viewed the paramedic profession primarily in the context of delivering emergency care, understanding that their education and training would be focused on this:

"They are more than welcome to join in and give a hand, but it is not really what they have been trained to do in particular, which is the response to 999 and emergency medical care. That happens rarely in primary care..."

(UK1104: Salaried GP)

This training was perceived to result in restrictions on the breadth of paramedics' knowledge:

“Paramedics haven’t gone through medical school and don’t necessarily have the breadth and the depth of knowledge that doctors have.” (UK502: Salaried GP)

GPs also believed that these limitations in a paramedic’s knowledge base would hinder their capacity for critical thinking when making clinical decisions, especially when dealing with complex patient cases:

“They obviously haven’t had the training of a GP... our paramedic often comes to me with cases where – and I don’t want to sound rude when I say this – but they haven’t got that thinking process of sometimes bringing it all together, so they can often deal with one condition, say, but maybe can’t bring all of it together without support... I think it’s probably the experience and the lateral thinking positively, and they haven’t had the training and support that we’ve had.” (UK1002: GP trainer)

Trust

Developing a trusting relationship was crucial for GPs working with paramedics in primary care in the UK. This trusting relationship was developed when the paramedic was considered autonomous, and their autonomy was crucial in order for them to contribute to the primary care workload and increase workforce capacity:

In reality, if [the paramedic] sent me ten prescriptions in a day, I can’t see those ten patients myself. It completely invalidates the point of having her. So, we know that on the ground you’ve kind of got to put an element of trust into the person you’re working with.” (UK503: Salaried GP)

GPs who reported not having this trusting relationship noted that paramedics would “*bring some work to you as well*” (UK304: GP partner), which was the antithesis of what such additional roles were posited to contribute.

The development of trust between physicians and paramedics was slightly different in Canada, where it was directly linked to the propensity of the community paramedic to escalate care when they needed further clinical support:

“I would rather have a [community] paramedic looking after my parents at home than a family physician, because they have good care, on the whole, and when they don’t know something, they go to people to find out how to understand it better.” (CN103: Physician)

However, this could be because community paramedics in Canada are not regulated as a professional group, and so do not have the same autonomy as their UK counterparts.

Paramedics’ perspectives

Accountability

Paramedics also discussed accountability in primary care, noting that “*the level of responsibility is quite different, remarkably different*” from the ambulance service (UK1301: Advanced paramedic practitioner). Many discussed this in relation to needing to “*err on the side of caution*” (UK301: Specialist paramedic), particularly with coroner’s court in mind.

He finds he writes far more than his GP colleagues, explaining his use of pertinent negatives so that the coroner can see what has been considered. He recites the old idiom, 'if it hasn't been written down, it hasn't been completed', and says GPs can get away with writing less, as they are less likely to lose their registration. Everyone trusts a doctor, he tells me. (UK3: Fieldnotes)

Considering this latter point, many of the paramedics interviewed suggested that their sense of accountability was developed from their previous experiences in the ambulance service:

"It's drilled into you when you do your training that every person that you leave at home you need to be sure because it's your responsibility, it's your pin number, if it goes wrong it's your fault and it's very much focused on you in that way, which is why I think so many people have got such a negative view... because they don't want to risk their registration." (UK601: Paramedic practitioner)

Paramedics anticipated that their salary would reflect their increasing responsibilities in primary care, especially when independent prescribing was part of their role:

"[The practice] want us to do our prescribing and I do want to do it, but for me, that's a lot of responsibility and I feel like there should be a bit of pay incentive to do it because there is that responsibility or I kind of think, well, I can just not do it and I'll get paid exactly the same, and I don't have the responsibility." (UK501: Paramedic)

Accountability was viewed differently by community paramedics in Canada. While one outlined that “[the service] gives us a very long, long, noose to hang ourselves with” (CN101: Community paramedic) in regard to the procedural skills they can undertake, their lack of regulation and work to clinical protocols resulted in a “*beat the sheet*” approach to patient care: “*basically just memorising a script, saying everything and not being able to think about what you're hearing*” (CN101: Community paramedic). This lack of responsibility was a source of frustration for each community paramedic interviewed.

Education

Across both the UK and Canada, paramedics noted the need for additional education to work in a primary care environment:

“I kind of feel like there needs to be a community paramedic educational standard developed. That would be like base education delivered through the programme, or whatever.” (CN3: Community paramedic)

In Canada, the lack of structured education was considered a barrier to the development of the community paramedics, reporting that “*sometimes we are forced to just roll things out and then you learn as you go.*” (CN201: Community paramedic)

However, UK paramedics noted that structured education on its own was not enough and that any additional education needed to be supported by experiential learning in primary care:

“Academia is one thing, experience is another, and the thing that will make a clinician brilliant is the experience.” (UK1201: Advanced paramedic)

In the UK, 10 out of the 15 paramedics interviewed benefitted from regular opportunities for direct clinical supervision, with the remaining 5 having access to indirect supervision in terms of access to support when needed. Paramedics also linked the provision of clinical supervision to the development of a trusting relationship with the GPs with whom they worked:

“When we first started, and I was having to debrief – that’s how they built their confidence in me.” (UK901: Paramedic practitioner)

Community paramedics in Canada did not receive clinical supervision from physicians due to the constraints of physician insurance. There was evidence of peer supervision from senior colleagues, who were also community paramedics. Such supervision activities consisted of *“auditing of their documentation as well as going on ‘ride-alongs’ with each one of my community paramedics just to ensure that the clients are getting the most out of everything”* (CN303: CP supervisor). However, the community paramedics interviewed did not recognise that these activities correlated with clinical supervision; instead, they viewed them as development appraisals only.

Perceived patient satisfaction

When considering the satisfaction of patients they saw, the paramedics outlined that *“feedback has been positive”* (UK401: Paramedic) regarding their role in primary care, with some of this put down to their interpersonal skills:

“A few of them have actually said, ‘Thank you for caring,’ which I find fascinating; they say, ‘Thank you for treating me as a person and not just as a patient.’ ... It’s looking at that whole picture and treating them holistically.”
(UK601: Paramedic practitioner)

In Canada, success regarding patient satisfaction was linked to the successful integration of CPs in the community, who were perceived to be “*really happy with what we’re doing and they do respect us a lot.*” (CN101: Community Paramedic)

Professional trademarks

When asked about their professional trademark, or unique selling point, within primary care, paramedics outlined that their clinical experience in the ambulance service was important in developing an intuition, referred to as a “*sixth sense*” (UK301: Specialist paramedic; UK101: Paramedic practitioner), within their clinical gestalt.

Paramedics believed that their skills, which had developed through their experience in emergency ambulance services, not only prepared them for primary care, but also represented the distinctive qualities of their profession. They saw skills such as “*critical thinking and balancing risk, risk management*” (UK1001: Paramedic practitioner) as attributes that made them highly proficient in primary care. Additionally, their ability to assess the social environment and conduct social assessments, gained through “*experience of going into people’s houses and picking up on the social environment*” (UK1401: Advanced paramedic practitioner), were regarded as hallmark features of their profession.

Transference of skills from emergency services to primary care

Similar to the perceptions of GPs, all paramedics interviewed in the UK considered that their experience in the ambulance service was vital to preparing them for work in primary care:

“I think there is definitely something about being a good core paramedic before transitioning into another environment, like primary care or MIUs [minor injury units] or hospital. I think you’ve got to know what your profession is and where you’ve come from to be able to do it.” (UK1101: Advanced paramedic practitioner)

As well as clinical experience, skill acquisition was also important for some roles, particularly those associated with the ‘see and refer¹²’ approach:

“No matter what we see them for, we’ll always do the basics – blood pressure, pulse, oxygen saturations, temperature – but, yeah, cannulation helps with taking bloods. History taking – I think – probably, in the ambulance service, you bring into this – you’re normally quite good at history taking...” (UK701: Home visiting paramedic)

“I felt really good and confident about my knowledge and abilities when I was working as an advanced care paramedic¹³. So, at the time of starting as a community paramedic, I still feel those skills were good and heightened and prepared me well for this role.” (CN201: Community paramedic)

While there was a transference of some skills, primary care was considered “a massive learning curve” (UK1501: Paramedic practitioner). Paramedics were said to

¹² The "see and refer" approach in healthcare typically refers to a process where a healthcare professional, in this case a paramedic, assesses a patient's condition and refers them to a GP or another specialist healthcare provider for further evaluation, diagnosis, or treatment.

¹³ The Canadian title of ‘advanced care paramedic’ matches broadly to ‘paramedic’ within the UK NHS.

“*have to adapt and make it work*” (UK901: Paramedic practitioner), which itself was considered to be another paramedic skill.

Work/life balance

When considering their work/life balance, paramedics in the UK enjoyed working social hours during the weekday, reporting being “*much happier and feeling much healthier in myself. Having a regular sleep pattern has made a huge difference*” (UK401: Paramedic). Although some reported that they would work late if their clinics over-ran, this was not to the same degree as the late finishes they experienced in the ambulance service.

While Canadian community paramedics also expressed a similar preference for working shifts without night hours, two of the three individuals interviewed specified that they would remain in the local area for the duration of their shifts and return home after each block. Although this assisted in their ability to separate work from life, it also resulted in extended periods away from their family.

All paramedics reported the need to use their free time to undertake “*professional development – knowledge acquisition*” (CN301: Community paramedic), especially when undertaking additional courses:

“*I did study in the evenings, but when you sign up to these things, you know you’re gonna have to put a bit of your own time into it.*” (UK1001: Paramedic practitioner)

Focused observations outlined that there was a limit to the extent to which some of the paramedics would undertake study in their own time, especially when they lacked interest in the subject:

She's frustrated with the roadmap – she sees it as a tick-box exercise, with a large amount of work that is superfluous to patient care and developing her competency in that area. Her GP colleagues are confused about it too, and that gives her little-to-no impetus to devote further time to it, especially since this would be over her allocated four hours of study time... why should she devote it to primary care now she has a work/life balance that works for her. (UK5: Fieldnotes)

Perceived contribution to the primary care team

In the UK, paramedics have taken on roles in primary care under various employment models. These include direct employment within the primary care practice, placement within the primary care network (PCN), or rotation between the ambulance service and primary care when the ambulance service acted as the employer. Only three practices in England accessed ARRS funding to facilitate paramedic employment. However, one paramedic in the UK expressed concerns about job security as their position was funded as part of a pilot scheme. This anxiety led them to seek employment at a local university in case their clinical contract with the primary care provider was terminated abruptly. All community paramedics in Canada had substantive employment posts within the paramedic service; thus, job security was not an issue they experienced.

Facilitating patient access to healthcare

Paramedics felt they were able to contribute to the primary care team by reducing the workload on other professionals in the practice:

“You see how much work I’m taking. The workload, that’s off the GPs, off the nurses. I’ve got two home visits sat there, that’s two home visits that the GP doesn’t have to do.” (UK801: Urgent care practitioner paramedic)

This sentiment was also echoed by a GP working at the same site:

“When [the paramedic] takes home visits off us – it’s physical time. When he takes patients, we probably still end up seeing as many patients ourselves, but it improves patient access and patient satisfaction, which has a massive impact on morale day-to-day.” (UK802: Salaried GP)

A GP at another site, where their paramedic was used in minor illness management, made a similar comment:

“I’d say it’s had a positive impact, actually. It’s great to have the on-the-day access that we get with [the paramedic]. Again, for a lot of these acute problems where somebody rings up and they need an appointment that day, that’s really beneficial for us.” (UK502: Salaried GP)

In Canada, the COVID-19 pandemic served as a catalyst, bringing attention to gaps in the healthcare system. In response, community paramedics adapted by modifying their roles in healthcare provision:

“The pandemic, I think, has highlighted all the gaps that we can fill and how we can work together, and how there’s more than enough work – more than what all of us have the capacity for...” (CN203: Community paramedic supervisor)

However, while the paramedic's role was generally accepted well by GPs in the UK, there were concerns about the ethos underpinning the implementation of the role:

"The government are using paramedics as a sticking plaster to replace GPs, and I don't think that works. They should be there to complement the role we do, and obviously over time they can deal with as many complex cases as a GP can with the right training. They can be as good as GPs, but I don't think they're a replacement. I think patients would probably agree with me as well."

(UK502: Salaried GP)

Integration into the primary care team

GPs generally felt that paramedics were "very valuable to general practice" (UK1002: GP trainer), where several practices found "it's got to that point where we notice when [the paramedic is] off, you know, and I think that's the greatest compliment that you can get" (UK203: GP partner).

Indeed, some of the other clinicians outlined that they "personally prefer it when she's here" (UK1103: Clinical pharmacist) and "think it's the best thing that they ever came up with" (UK703: Home visiting district nurse).

Practice managers and receptionists noted that paramedics were well integrated into their primary care teams, offering valuable support beyond clinical tasks:

"He's forever helping out the reception teams or some of their queries..."

(UK303: Practice manager)

This was also observed during the focused observations in both the UK and Canada: *He's greeted in the office with joviality, and some gentle banter (aimed at the paramedic) runs through the conversation. He turns to me partway through, smiling as he tells me that he has as much grief here as he did in the ambulance service. I smile, understanding what he means: This is playful banter...* (UK15: Fieldnotes)

The nurse practitioner works with the [family physician] to whom the second patient was registered. She eyes the sample bags as he gives her a quick update regarding the expanded sample set and his concerns. They're jovial with each other as they discuss some of the other patients on their joint lists. She calls him a 'paramagic' for his work. (CN03: Fieldnotes)

A similar sentiment was also expressed amongst the clinical team members, who outlined that the paramedic was “*part of our normal team*” (UK1504: Practice nurse), with an appreciation for the contribution of the profession to primary care:

“A really vital part of our team – we really enjoy working with her – partly because we looked at things a little bit differently. It's always good to open the mind and just have those conversations.” (UK604: Advanced nurse practitioner)

Wider community integration was also noted during the focused observations in Canada:

Before long, we're under the canopy outside the emergency department and then winding our way through various hospital corridors. It's much like any cottage hospital in the NHS... We meet various clinicians, assistants, and patients, all of whom

acknowledge the CP by name, and all of whom he shakes hands with and briefly enquires about their day before moving on. (CN01: Fieldnotes)

This was also verbalised by the non-clinical roles working alongside the community paramedic programme in Canada:

“One of the beautiful things that I love about community paramedicine is that it fills the gaps, so it can be different in every community depending on what the needs of that community are.” (CN204: Operations lead)

There was also a sense that community integration was facilitated by the length of time as a paramedic, particularly in the Canadian community paramedic’s role:

“CP staff is usually a more experienced paramedic that has been working for us a little bit longer, and they have some relationships with our community members – they know a lot of people – they have some spoken knowledge of the Cree language, and they fit the role a bit better.” (CN303: Community paramedic supervisor)

Within both Canada and the UK, successful integration was partly attributed to the interpersonal skills of the paramedic, where it was not just *“the foundational knowledge, but attitude, which I think is a key component”* (CN102: Operations lead):

“It always depends on the personality of the person as well. I mean he’s very keen, he’s very happy to have a go at things and to learn.” (UK802: Practice manager)

One of the clinical team members also made the link between successful integration and experience as a paramedic:

“I don’t think somebody who’s newly qualified as a paramedic would... have the skills that [our paramedic has] got – by far. They need that ground out on the road, and we need paramedics out on the road. We don’t need them all in primary care.” (UK1504: Practice nurse)

In addition to integration with primary care teams, integration with fellow paramedics in primary care was also considered. In the UK, paramedics expressed a sense of isolation in primary care, with one paramedic practitioner stating that it *“be a lonely existence”* (UK1504: Paramedic practitioner), due to infrequent interactions with other paramedics in the same clinical setting. In contrast, Canadian community paramedics had daily check-ins with their colleagues:

In the hour before clinical work starts, he also attends a 30-minute Zoom conversation with other CPs on that day – called a batch start – where they review their allocated tasks and discuss any pointers for patients known to particular CPs, as well as reallocate tasks if the workload (considering geography) is too high. (CN1: Fieldnotes)

Limitations of the paramedic’s role

While the paramedic’s role was acknowledged to be beneficial, limitations in the role were also outlined, particularly around patient groups the paramedic would typically not see, including women’s and men’s health, palliative care, assessment of infants, and specific long-term conditions. However, this was generally viewed positively as an opportunity for further development or for triaging such patients to other healthcare professionals within the primary care team.

In the UK, the single biggest limitation reported by GPs, clinical and non-clinical staff, surrounded the ability of paramedics to prescribe medications:

“I think it would be beneficial for her as well if she could do the prescribing rather than having to keep asking people” (UK604: Advanced nurse practitioner)

However, even when paramedics could prescribe, limitations in their prescribing scope resulted in some frustration when it impacted other members of the primary care team:

“It’s certain medications – obviously because, if he wants controlled drugs, he can’t prescribe CDs – so that has to be with the GP.” (UK902: Practice manager)

In Canada, the biggest limitation for community paramedics is their professionalisation. As paramedics are not a state-registered profession, there was recognition that the *“entire paramedic field needs more autonomy”* (CN303: CP supervisor) and the need for a *“regulatory college”* (CN203: CP supervisor) as *“from a regulatory perspective, it’s still the Wild West and that’s problematic on a bunch of levels.”* (CN102: Operations lead)

Understanding the paramedic’s role

While the paramedic’s role was generally viewed positively, both clinical and non-clinical staff in primary care displayed limited understanding of the paramedic

profession, with their knowledge largely shaped “*from seeing Casualty¹⁴ or something*” (UK103: Receptionist).

However, as they worked alongside paramedics in the primary care setting, both clinical and non-clinical staff exhibited growth in their comprehension of the paramedic’s role. They frequently expressed surprise at the depth of the paramedic’s knowledge, which extended beyond acute care or emergencies, and were impressed by their experience:

“You know, you don’t realise how qualified and how, you know, knowledgeable they are with health and basic practice, you know.” (UK202: Healthcare assistant)

¹⁴ “Casualty” is a long-running British television series that falls under the medical drama genre. The show primarily revolves around the lives and experiences of doctors, nurses, paramedics, and other hospital staff as they provide emergency medical care to patients at the fictional Holby City Hospital’s Emergency Department (ED).

6.8 Refinement of realist programme theory

This phase of the realist evaluation focused on understanding the impact of paramedics working in primary care teams through understanding the perceptions of patients, GPs, other health professionals, and administrative staff working in primary care. This enabled CMOCs to be developed across each conceptual category within the programme theory. Data from this study support 20 CMOCs from the refined programme theory presented in **Appendix N (Chapter 5)**, with three further CMOCs refined, and an additional 12 CMOCs developed from new data generated as part of this phase of the realist evaluation. **Appendix R** outlines the CMOCs that support this refined programme theory, and this is visually presented in Figure 8¹⁵. Within this figure, CMOCs that continue to be relevant based on these new data are presented in colour. CMOCs that have been refined are denoted with a dashed outline. CMOCs that could not be refined based on the data collected, but may still be relevant, are denoted with a transparent effect. New CMOCs are denoted by a solid outline.

¹⁵ Please note the change in numerical order of the CMOCs in Figure 8 and Appendix R (compared to Figure 7 and Appendix N), accounting for the development of new CMOCs within the relevant concepts.

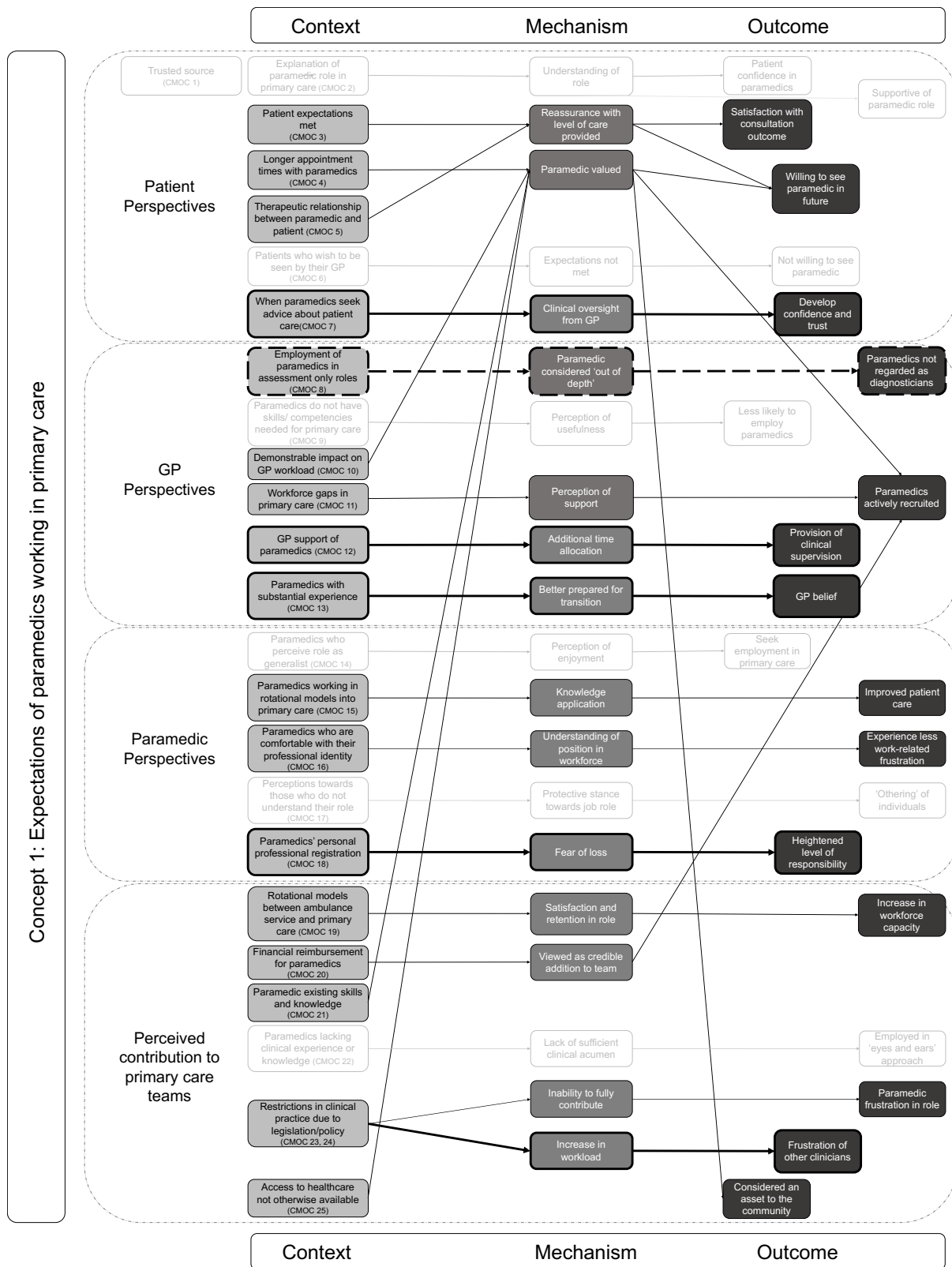


Figure 8. Refinement of realist programme theory from results of the focused observations and interviews

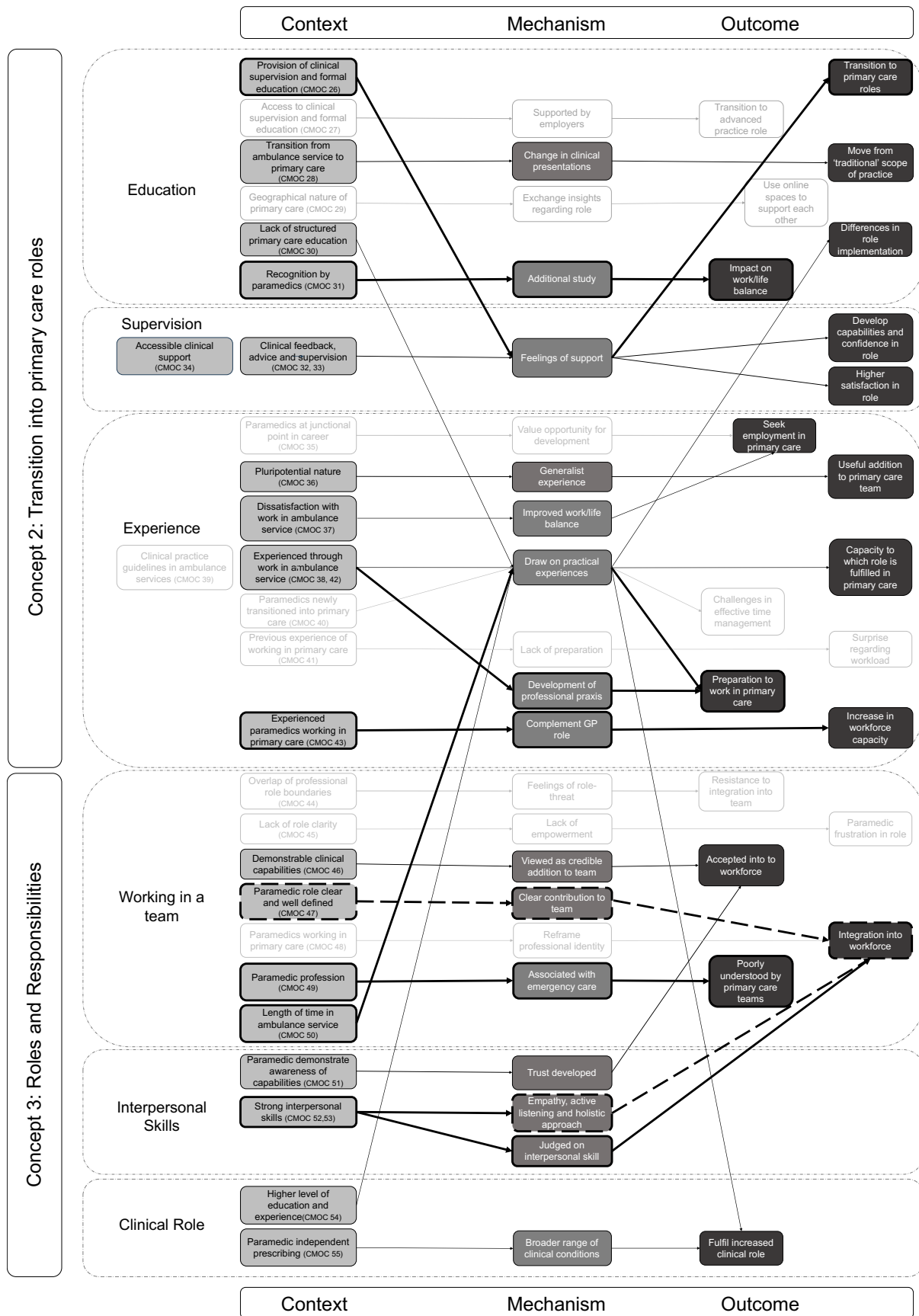


Figure 8. Refinement of realist programme theory from results of the focused observations and interviews

Insights generated during data collection within this study confirm and support several of the findings observed in phases I and II of the realist evaluation. For instance, information obtained through patient interviews validated that when their expectations are met, when they have longer appointment times, or when they establish a therapeutic rapport with the paramedic, patients experience reassurance regarding the quality of care received. This, in turn, leads to satisfaction with the appointment and a willingness to consider future appointments with the paramedic (as seen in CMOC 3, 4, and 5). Data from this study informed the understanding of patient perspectives further by highlighting that patients also develop confidence and trust in the paramedic when they believe the paramedic will seek advice from a GP if necessary (CMOC 7).

In addition, interviews with GPs confirmed that trust was a key mechanism through which GPs considered paramedics as diagnosticians (CMOC 8), expanding an initial CMOC from the realist review (**Chapter 3**). These interviews also affirmed the paramedics' value when they were able to visibly reduce GP workload (CMOC 10) and were seen as capable of filling workforce shortages in primary care (CMOC 11). Both of these factors were considered instrumental in the decision to actively recruit paramedics for primary care roles. Interviews also supported the creation of two new CMOCs: CMOC 12 describes how GPs can support paramedics in primary care through additional time allocated to them to provide clinical supervision, and CMOC 13 outlines the belief held by GPs that paramedics require substantial experience in the ambulance service to prepare them for transition to the primary care patient load.

However, the interviews did not provide a clear definition of what qualified as 'substantial experience'.

Although interviews with paramedics constituted a substantial portion of this phase of the realist evaluation, only one additional CMOC emerged from their perspectives. CMOC 18 pertains to their expectations and focuses on their increased responsibilities when working in primary care; they exercised increased caution to safeguard their professional registration.

Interviews with various members of the primary care team verified the existence of three pre-existing CMOCs (20, 23, and 25) regarding the contribution of paramedics to primary care teams, and led to the creation of a fourth CMOC. This new CMOC (24) centres on the repercussions on clinical members of the primary care team when paramedics face limitations in their clinical practice due to legislative or policy constraints, inevitably leading to an increased workload for the team.

The combination of education and clinical supervision was outlined as a significant concept for supporting the transition of paramedics into primary care (CMOC 26). This indicates that the absence of structured education results in a lack of standardisation of the role within this setting due to the need for individual experiential learning (CMOC 30). A new CMOC (31) was developed from interviews with paramedics, highlighting the impact on their work/life balance when they are required to spend additional time studying to develop in primary care. The provision of supervision also continued to remain important (CMOC 32, 33, 34).

Experience continues to be important in supporting the transition to primary care roles, with data confirming CMOCs 36, 37, and 42. Data from this study outlined that paramedics can increase workforce capacity in primary care when used as a complement rather than as a replacement for the GP role (CMOC 43).

In the process of examining the perspectives of primary care staff, emphasis was placed on the significance of paramedics' interpersonal skills. This emphasis led to the revision of an existing CMOC (52) and the formulation of a new one (CMOC 53). These CMOCs emphasise that integration into the primary care workforce is accomplished through the demonstration of particular interpersonal skills (such as active listening and empathy), serving as a mechanism for this integration. Data from this phase of the realist evaluation also confirmed that higher levels of education and the ability to independently prescribe medicines also contribute to an increased clinical role, which supports CMOCs 54 and 55, developed from primary data in phase I (and which were ratified in phase II).

6.9 Discussion

Findings from this final phase of the realist evaluation outline that paramedics working in primary care roles broaden the healthcare available to patients through increasing workforce capacity. However, for this to occur, paramedics need to be well integrated within the practice.

The realist review (**Chapter 3**) found that transitioning into primary care can be seen as a threshold concept signifying fundamental changes in the practice of the discipline. Understanding these changes is essential for clinicians to progress effectively (Meyer

& Land, 2003). Paramedics transitioning into primary care roles can occupy a state of liminality in which there is only a partial understanding of how they can 'work' in their new role (Turner, 1970). Data from this study develops an understanding of this concept further, outlining that for paramedics to move through this state where they are neither in their old role in ambulance services nor fully integrated into primary care, they navigate this state of ambiguity by seeking clinical support, particularly from GPs. This correlates with Bridges's transition theory (Bridges, 2009), which highlights the importance of support, learning, and adaptation during the process of transition. Set across three distinct stages, Bridges's theory emphasises that paramedics must let go of their previous ways of 'doing' and identity (ending phase), navigate a period of ambiguity and adjustment (neutral zone), which is supported by colleagues in primary care, and ultimately embrace their new role and identity (new beginnings) as they build relationships and integrate into the workforce. It is clear that if individuals are not supported through these three transition stages, then their transition will fail (Bridges, 2009). Clinical support and supervision featured heavily in the perspectives of the paramedics and GPs interviewed, with an appreciation for their importance in the development of the paramedic in primary care. This can therefore be seen as a crucial component of the transition process. However, the Canadian community paramedic programme receives neither formal education nor clinical support, but is remarkably is very well integrated within their community. This might be attributed to their 'see and refer' or 'eyes and ears' approach, driven by restrictions on their autonomy. However, as this requires regular clinical discussion with other healthcare professionals, this approach also fosters relationship building.

In Bridges' transition theory, the progression between stages is sequential rather than cyclical, meaning that an individual must successfully navigate and complete one stage before advancing to the next stage (Bridges, 2009). While Canadian community paramedics do not receive clinical support from physicians, they have a well-established community of practice within their profession – as demonstrated in their daily conversations and regular input from supervisors. This demonstrates that support-seeking behaviour to aid transition does not need to be limited to a formal supervision structure from physician to paramedic, but can also be provided amongst peers who navigate together the challenges and differences in their new environment (Arrowsmith et al., 2016). The development of a community of practice, or practice of communities, was a central finding of phase II (**Chapter 5**), and data from this research demonstrates this can be a helpful activity to support the transition of paramedics into primary care spaces.

Data from this study also enabled further consideration to be given to the importance of professional role boundaries, and the impact of paramedics working in primary care on primary care teams. Interviews with GPs and other clinical staff outlined that there were no concerns regarding role substitution or conflict, which was a key finding during the realist review (Eaton et al., 2021). There was a sense that paramedics were being used to complement the GP role. This viewpoint was echoed by the different nurses and clinical pharmacists interviewed, who considered that the paramedics worked well as an additional role within their teams, without duplicating or infringing upon their clinical role. From a conceptual perspective, this emphasises that theories of team processes may contribute to how professional role boundaries are navigated in primary care. Team processes refer to how team members harness their individual

resources, effectively coordinating their knowledge, skills, and efforts to address the demands of the task at hand (Kozlowski et al., 1999). The functions of these team processes contribute to overall team effectiveness.

Team effectiveness encompasses performance assessments by external parties, member satisfaction, and overall team viability. It emerges as a dynamic outcome that unfolds across different levels (from individual to dyadic to team) and evolves over time (Kozlowski et al., 1999). Team members and work teams operate within a broader organisational system and task environment that significantly shape task difficulty, complexity, and pace. This interaction is reciprocal, with team performance addressing external demands and potentially influencing the external context (Kozlowski et al., 2001). As this context can evolve unexpectedly, it's vital to understand the systemic context and interconnections across multiple levels (individual, team, organisation) as key factors driving team challenges and necessitating coordinated team processes.

The extent of a team's integration with each other within the dynamic task environment can vary depending on the task environment (Kozlowski & Ilgen, 2006). For example, primary care is an environment characterised by constant change, fluidity, and complexity – and this results in corresponding task demands for teams. To address these demands, team members must engage in a coordinated process that integrates their cognitive, motivational, emotional, and behavioural resources in order to work effectively, a process that is cyclical and reciprocal (Kozlowski & Ilgen, 2006). Data from this study outlined the reciprocal nature of the paramedic's role in primary care, thus demonstrating their integration.

Recent work considering primary care workforce composition has highlighted that GP satisfaction at work does not increase with skill mix changes (Gibson et al., 2022). Considering such findings alongside the data from this phase of the realist evaluation and in the context of the theory of team processes, it is posited that when team processes align with task demands driven by the environment (for example, the paramedic can contribute to the increasing patient demand by assessing patients and providing treatment or necessary referrals), the team operates effectively. Conversely, when they do not align (for example, if the paramedic is not able to undertake their role autonomously, resulting in increased workload for the GP), the team's effectiveness is compromised. The positive perception regarding the integration of paramedics into the primary care teams interviewed in this research could be attributed to how the team effectively utilised their individual resources (clinicians) within the practice to meet the demands of the task at hand (enhancing workforce capacity for patient care).

Patients who had experienced a clinical consultation with a paramedic in primary care expressed consistently positive opinions. This aligns with the paramedics' own perceptions of patient satisfaction, which were initially identified in the cross-sectional survey (**Chapter 4**) and subsequently reinforced by the interview data presented here. This is in sharp contrast with the annual GP patient survey for England published in the same year that data collection took place, which outlined that patient satisfaction with GP services has fallen dramatically, particularly regarding the ease of getting an appointment (Ipsos Mori, 2022). It is perhaps the ease of access to primary care that paramedics provide (as noted in the interview data from both Canada and the UK) that contributes to the levels of satisfaction seen within this study. In addition, primary care

providers who can employ paramedics may do so due to increased funding available to them, which has also been associated with an increase in patient satisfaction (L'Esperance et al., 2021). For example, English practices can benefit from the ARRS (NHS Confederation, 2021), and the community paramedic programme in Canada benefits from specific provincial funding (Moreau & Barber, 2020).

Patients consistently commented on the paramedics' interpersonal skills. In the English GP patient survey (Ipsos Mori, 2023), patients are asked to consider their last appointment in the context of how well they were listened to, how well they were treated with care and concern, and their confidence in the healthcare professional. The patients interviewed in this study highlighted each of these components as being part of their experience during their consultation with the paramedic. It is evident that patients desire to be listened to, treated with respect, and cared for. The significant positivity expressed by patients in these interviews can be attributed to the paramedics' effective utilisation of these essential interpersonal skills.

Strengths and limitations

While other studies have examined the overall influence of ARRS roles on the primary care workforce in England (Baird et al., 2022), the research presented in this chapter focused on one professional group within this funding scheme, but who are employed across the whole of the UK (including the devolved nations where ARRS does not reach). Comparison between the UK workforce and a well-established community programme in Canada enabled conceptual understanding regarding how the integration of the professional group has been achieved to enable continued growth and development.

One of the strengths of this phase of the realist evaluation lies in the potential transferability of the results to different regions, as participants were sampled from across the UK as well as in three different geographical areas in Canada. Furthermore, the diversity of this sample, encompassing various social deprivation indicators, also reinforces the applicability of the results.

This research is limited first by its case-based approach, which captures a snapshot of the practices of paramedics across 15 UK sites and three Canadian sites – and therefore may not be representative across the entire paramedic workforce in these countries. However, the consistency found in the working practices of paramedics across these sites is encouraging. Second, despite efforts made to ensure that patient recruitment was not via the paramedic, all patient interviews expressed a favourable view of the paramedic's role in primary care. In addition, patient interviews were the briefest among all the interviews conducted, both in Canada and in the UK. This could be attributed to the fact that patients were questioned about events that occurred within a shorter time frame (the length of a consultation), in contrast to the broader scope of their overall life experiences. Interviews with other primary care staff members were selected from those who had the most interactions with the paramedic. This approach has the potential to include staff members who had positive working relationships with the paramedic and were thus more inclined to participate in this study.

While the comparative research approach to explore the two countries within which paramedics were integrated into primary care was helpful, it became apparent during

data collection in Canada that community paramedics were not as similar to UK paramedics as envisaged. In the province where data collection occurred, there is no system of state registration for paramedics working in that region. Additionally, the educational requirement for paramedics is limited to a college diploma, which is roughly akin to post-secondary education in the UK (comparable to sixth form or college), as opposed to the requirement of a higher education university degree in the UK. However, the community paramedic programme observed remains one of the most well-established programmes globally. While comparing paramedics in the UK and Canada may be like comparing apples with oranges, in that they undertake the same function but from vastly different foundations, gathering international data has provided a broad perspective that contributes relevant data to develop the programme theory further.

6.10 Implications

These findings validate prior conclusions drawn from earlier phases of the realist evaluation around the perspectives of patients regarding the paramedic's role in primary care, and the contribution of paramedics to primary care teams. The data collected in this study also provided insights into how the successful transition and integration of paramedics into the primary care workforce can be achieved when considered in conjunction with relevant theoretical frameworks on the subject.

Data from this phase of the realist evaluation has facilitated the refinement of the realist programme theory, further enriched through the application and development of substantive theory. **Chapter 7** consolidates and synthesises the findings and insights gathered throughout the evaluation process (as outlined in **Chapters 4, 5,** and

6) to present the final programme theory relating to the overarching research question:

What is the role of paramedics working in NHS primary care?

Chapter 7: Overall Synthesis of Findings

An exploratory systematic review of the literature (Eaton et al., 2020) established an initial programme theory to explain how paramedics work in primary care (Figure 1). In **Chapter 2**, this initial programme theory was extended using data from 205 documents to become a middle-range realist programme theory (Figure 4). This middle-range programme theory was subject to further empirical testing in phase I of primary data collection (**Chapter 4 – Cross-sectional survey**), which supported the development and expansion of the programme theory within two conceptual categories (Concept 2, transition to primary care; and Concept 3, roles and responsibilities) and expanding them further (Figure 6). These conceptual categories were subsequently advanced using primary care data collected in phase II (Figure 7, **Chapter 5 – Analytic autonethnography**). The third and final phase of empirical testing (**Chapter 6 – Focused observations and interviews**) was able to refine all conceptual categories within the middle-range programme theory, as outlined in Figure 8.

This chapter will give a brief overview of the evidence supporting each conceptual category within the programme theory. **Appendices S–U** provide more detail on the development of each context-mechanism-outcome configuration (CMOC) and contain information on the data sources drawn from every stage of the project that support the development of each CMOC, derived from each work package. This chapter will concentrate on the CMOCs that have had to be substantially changed based on interpretations of the entire dataset. This overall synthesis of findings aims to present

a fully refined programme theory that outlines the role of paramedics working in NHS primary care.

7.1 Concept 1: Expectations of paramedics working in primary care

Derived from the findings of the realist review, this conceptual category encompasses four sub-categories that focus on the expectations of paramedics working in primary care from the viewpoints of patients, GPs, and paramedics. Within each perspective, the perceived significance of the paramedic's contribution to primary care teams was so substantial that it warranted its own category.

Patient perspectives

Patient perspectives are a fundamental aspect of patient-centred care and are vital for the successful integration of new roles in primary care settings. Understanding the perspectives of patients has been demonstrated to contribute to better healthcare delivery, improved patient experiences, and overall primary care effectiveness (Edwards et al., 2019; Freeman & Hughes, 2010). It is not surprising, therefore, that the perspectives of patients were found both in the secondary literature analysed in the realist review, and intentionally gathered during phase III of the realist evaluation.

Table 6 outlines the contribution of each work package to CMOCs that fall into the conceptual subcategory of patient perspectives; a '+' sign has been used in the table to indicate which parts of the DPhil contributed to which CMOCs within this conceptual subcategory. More details may be found in **Appendix S**.

Table 6. Patient Perspectives: Contribution of each data source type to the development of the final CMOC					
Initial CMOC	Realist Review	Realist Evaluation			Final CMOC
		Phase I	Phase II	Phase III	
CMOC 1	+	+		+	CMOC 1
CMOC 2					
CMOC 3	+			+	CMOC 2
CMOC 4	+			+	CMOC 3
CMOC 5	+			+	CMOC 4
CMOC 6	+	+			CMOC 5
CMOC 7				+	CMOC 6

As outlined in Table 6 above, the most obvious alteration is the merger of the original CMOC 1 and CMOC 2 to form a new CMOC. These CMOCs, as described in Box 1, have a common mechanism and outcome. They were derived from the realist review, which provided evidence that engaging with communities likely to encounter a paramedic in primary care was crucial for fostering understanding of the paramedic’s role. This understanding, in turn, led to increased confidence and support for the paramedic.

Box 1: CMOC 1 and CMOC 2

Initial CMOC 1: When the paramedic’s role in general practice is clear to patients (C) they understand how the role is appropriate in relation to their care needs (M), and so have increased confidence when they are treated by paramedics (O)

Initial CMOC 2: When a trusted source explains the role and value of seeing a paramedic (C), patients understand how the role is appropriate in relation to their care needs (M), and so are supportive of the introduction of these new roles (O) and have increased confidence when they are treated by paramedics (O)

Discussion with the patient and participatory group associated with this research supported the CMOCs in Box 1. Members of this group outlined that information needed to come from somebody the patient trusts, such as the primary care provider, family, or friend, for the role to be accepted and understood. It was these 'folk theories' (Pawson & Tilley, 2004) that assisted in the development of CMOC 2 from the literature, in particular. Data collected from phase III further supported this context.

Data from phase I indicated the significance of understanding the paramedic's role as a mechanism; however, the inability to extract additional clarification on this mechanism during phase III patient interviews prevented further exploration of this mechanism.

Data from phase III did not refute the importance of the confidence patients had when treated by a paramedic in primary care, but indicated that this was more nuanced than simply having 'increased confidence' in the role. Instead, the idea that patients were receptive to the introduction of the paramedic working within a wider primary care team was more commonly expressed.

Based on the combination of these evidence sources, and the similarities between their shared mechanism and outcome, these CMOCs were combined to create a final integrated CMOC, which now reads as:

Final CMOC 1: When a trusted source explains the role of a paramedic in primary care (C), patients understand how the role may be appropriate to their

care needs (M) and are receptive to the introduction of paramedics into the primary care workforce (O).

GP perspectives

During the review of the literature relating to paramedic employment in primary care workforces, it was noted that much of this revolved around the perspectives of GPs (Eaton et al., 2020). This is unsurprising given that GPs are the central clinicians within primary care. Additional materials elucidating their perspectives were identified during the realist review and were actively solicited during phase III of the realist evaluation, which included interviews with GPs.

Table 7 summarises how each work package contributes to CMOCs within the GP perspectives subcategory, denoting their contributions with a '+' sign. Further details can be found in **Appendix S**.

Table 7. GP perspectives: Contribution of each data source type to the development of the final CMOC					
Initial CMOC	Realist review	Realist evaluation			Final CMOC
		Phase I	Phase II	Phase III	
CMOC 8	+			+	CMOC 7
CMOC 9	+				CMOC 8
CMOC 10	+			+	CMOC 9
CMOC 11	+			+	CMOC 10
CMOC 12				+	CMOC 11
CMOC 13		+		+	CMOC 12

It is clear from Table 7 that no data were collected during the realist evaluation to support or refute CMOC 9 (a reminder of which is outlined in Box 2).

Box 2: Initial CMOC 9

Initial CMOC 9/Final CMOC 8: When the employer does not consider the paramedic to have the skills and competencies relevant for their needs (C) employers may be less likely to employ paramedics (O) because they do not consider them to be useful.

This CMOC was developed from the results of the realist review, where the paramedic role was viewed to be in assessment, rather than diagnosis, and treatment roles, and their clinical skills (associated primarily with the provision of acute or emergency care) were not seen as suitable for primary care (Burns, 2018; Cameron & Carter, 2019; A. Martin & O'Meara, 2019; Mason et al., 2012; Moule et al., 2018; Sawyer & Coburn, 2017; Scott & Carney, 2004b; Wagstaff & Mistry, 2020) Additionally, where urgent assessment clinics were already being run by another discipline, such as nurses, little additional benefit was considered in employing paramedics (Barr, 2011; Imison et al., 2016; Long, 2017).

While no evidence was found to develop this CMOC during any phase of the realist evaluation, a limitation of this research design is that only primary care providers employing paramedics were included (see **Chapter 8**). Therefore, the perspectives of GPs who do not employ paramedics could not be gained.

Subsequent research published since the realist review reveals that the incorporation of paramedics into primary care has been motivated by the aim of releasing GP time, and that paramedics are commonly recruited into primary care workforces when a GP

cannot (Gibson et al., 2023; McDermott et al., 2022). This demonstrates a potential shift in perspective by GPs since the realist review undertaken three years ago (Eaton, Wong, et al., 2021), and questions the perceptions around 'usefulness' that underpin the mechanism of this theory. However, as additional primary evidence could not be collected, this CMOC was not further refined and remains in its original form.

Paramedic perspectives

Central to understanding how paramedics work in primary care is the perspective of paramedics who are working in this clinical setting. There was a general paucity of literature within the systematic and realist review regarding this, although case studies in the latter provided a rich source of information for the development of the first CMOC in this subcategory.

Throughout this DPhil, data collection has focused on capturing the perspectives of paramedics working in primary care, enabling the development of a further four CMOCs in this subcategory since the initial realist review (initial CMOCs 15, 16, 17, and 18). Capturing and understanding these perspectives has been vital to ensure that the researcher (as a researcher–practitioner) has been able to see beyond the contexts of her own experiences (Campbell, 2013) as a paramedic in primary care.

Table 8 provides a summary of each work package's contribution to the CMOCs in the paramedic perspectives subcategory, marked with a '+'.

Table 8. Paramedic Perspectives: Contribution of each data source type to the development of the final CMOC					
Initial CMOC	Realist review	Realist evaluation			Final CMOC
		Phase I	Phase II	Phase III	
CMOC 14	+	+	+		CMOC 13
CMOC 15		+		+	CMOC 14
CMOC 16			+	+	CMOC 15
CMOC 17			+	+	CMOC 16
CMOC 18				+	CMOC 17

No CMOCs within this subcategory required substantial amendment when considered within the entire data collected for this DPhil. The data underpinning the construct of each CMOC are outlined in **Appendix S**.

Perceived contribution to primary care teams

Perceptions regarding how paramedics contributed to primary care teams were prevalent in the viewpoints expressed by patients, GPs, and paramedics, prompting the formation of this additional subcategory. Table 9 outlines the contribution of each work package to these CMOCs, with a '+' denoting where supporting evidence was derived from. **Appendix S** outlines illustrative examples of data that have contributed to CMOC development in this category.

Table 9. Perceived contribution to primary care teams: Contribution of each data source type to the development of the final CMOC					
Initial CMOC	Realist review	Realist evaluation			Final CMOC
		Phase I	Phase II	Phase III	
CMOC 19	+	+	+	+	CMOC 18
CMOC 20	+			+	CMOC 19
CMOC 21				+	CMOC 20
CMOC 22	+	+		+	CMOC 21
CMOC 23		+	+		CMOC 22
CMOC 24				+	CMOC 23
CMOC 25	+			+	CMOC 24

When evaluating the contribution of each data source to CMOC 19 (outlined in Box 3), it was observed that while the mechanism for paramedic satisfaction was consistently met across phases I, II, and III of the realist evaluation, the inclusion of retention as a mechanism lacked supporting evidence. Skill transference was also outlined as important from the data gathered in phase II.

Box 3: Initial CMOC 19

Initial CMOC 19: When emergency medical services use rotational models for paramedics to work in both the ambulance service and primary care (C), the needs of both organisations are more likely to be met (such as EMS workforce retention and increased workforce capacity in primary care) (O) because paramedic staff retention rates and satisfaction is higher (M).

Based on the combination of these evidence sources, this CMOC is revised within the final programme theory to:

Final CMOC 18: When the use of emergency medical services rotational models for paramedics enables them to work and transfer their skills between the ambulance service and primary care (C), the workforce needs of both organisations are more likely to be met (such as EMS workforce retention and increased workforce capacity in primary care) (O) because paramedic staff satisfaction is higher (M).

Initial CMOC 20 (Box 4) was based on English literature published after the introduction of the ARRS in 2020 (NHS Confederation, 2021); paramedics were more

Box 4: Initial CMOC 20

Initial CMOC 20: Paramedics are considered for recruitment into the primary care workforce (O) when employers perceive them as a valuable addition to the team (M) due to the availability of adequate financial reimbursement for their roles (C).

widely considered to be a credible addition to the local primary care workforce, as they were regarded as having been endorsed by trusted organisations (such as NHS England).

However, no empirical data confirmed that it was the value of the addition of paramedics that prompted their recruitment into the primary care workforce. It is also worth noting that this CMOC is specific to England, as funding processes were not found to be in place at sites in Northern Ireland, Scotland, or Wales. While this may also apply to the rest of the UK, as the same mechanism could be triggered if funding was offered within the other UK nations, this remains to be tested. At the time of submission of this thesis (November 2023), no such funding schemes were available outside England. Therefore, this CMOC is revised within the final programme theory to:

Final CMOC 19: Paramedics are considered for recruitment into the primary care workforce in England (O) when employers perceive that they are a cost-effective way of increasing primary care team capacity (M) due to the availability of adequate financial reimbursement for their roles (C).

CMOC 22 (Box 5) was initially developed from phase I of the realist evaluation, the results of which demonstrated a statistically significant relationship between

Box 5: Initial CMOC 22

Initial CMOC 22: Paramedics who are judged by employers to lack clinical experience and education (C) are employed in an eyes and ears approach in primary care (O) because they lack the clinical acumen sufficient for primary care (M)

paramedics' knowledge and experience and the range of conditions they could manage in primary care (their clinical acumen).

Upon revisiting this CMOC, it became evident that comments in phase I indicated that the 'eyes and ears' approach to employing paramedics was primarily focused on home visits: "*all home visits discussed with GP for care pathway*" (RID 19: Paramedic).

Considering this potential development, evidence from the realist review was re-reviewed to explore this context. This demonstrated that the use of paramedics in an 'eyes and ears approach' was predominantly within home-visiting services (Abrams et al., 2020; Agarwal et al., 2015, 2019; Barr, 2011; Bowles et al., 2017; Clay & Stern, 2015; Dalgarno, 2016; Goldberg, 2014; Haebler & Montera, 2016; Hauswald et al., 2005; Heinelt et al., 2015; Iezzoni et al., 2018; Jones et al., 2019; Keefe, 2010; Lincolnshire East Clinical Commissioning Group, 2018; NHS England, 2018b; North Dakota Center For Nursing, 2014; RSM UK Group, 2017; Wessex Academic Health Science Network, 2017).

This was further supported by data from interviews in phase III, where GPs and practice staff who worked alongside home-visiting paramedics outlined that paramedics who worked predominantly in a home-visiting role would undertake an assessment and relay their findings for diagnosis and management to a GP. Therefore, this CMOC is revised within the final programme theory to:

Final CMOC 21: Paramedics with limited clinical experience and education (C) are usually employed in home-visiting roles within primary care (O) because their

employers judge they have insufficient clinical expertise for more challenging clinical decisions (M).

Within this subcategory, a specific focus was found from the international evidence of the realist review regarding the impact of paramedics in primary care on rural workforces. This is captured in the initial CMOC 25 (Box 6).

Box 6: Initial CMOC 25

Initial CMOC 25: When paramedics provide access to healthcare which otherwise would not be available (C) they are considered a community asset (O) because what they do is highly valued by patients and service commissioners and providers (M)

Evidence derived from the realist review emphasised the importance of the rural context in this CMOC. The data obtained from Canada in phase III proved particularly valuable in assessing the relevance of this CMOC, and upon reanalysis of the combined datasets, it became evident that this CMOC holds true across varying rural settings. For instance, in the UK, an hour-long emergency blue-light journey was considered rural, while in Canada, due to the country's vast geography, the definition of rurality was amplified. Nevertheless, despite differences in the expression of rurality, this CMOC continued to be relevant.

7.2 Concept 2: Transition into primary care roles

Derived from the findings of the realist review, this conceptual category encompasses three sub-categories of education, supervision, and experience that support the transition of paramedics into primary care roles.

Education

The importance of education to support paramedics working in primary care roles was outlined in the initial systematic review (Eaton et al., 2020) and has been featured across each work package in this DPhil. Initially, six CMOCs were created from all the evidence collected (**Appendix T**), and this has been reduced to five based on further analysis, as outlined in Table 10, where a '+' marks the work package's contribution to the CMOCs within this subcategory.

Table 10. Education: Contribution of each data source type to the development of the final CMOC					
Initial CMOC	Realist Review	Realist Evaluation			Final CMOC
		Phase I	Phase II	Phase III	
CMOC 26				+	CMOC 26
CMOC 27	+	+			
CMOC 28	+	+	+	+	CMOC 27
CMOC 29			+	+	CMOC 28
CMOC 30			+	+	CMOC 29
CMOC 31				+	CMOC 30

As outlined in Table 12 above, the most obvious alteration is the merger of initial CMOC 26 and CMOC 27 to form a new CMOC (final CMOC 26). These CMOCs, detailed in Box 8, exhibited common characteristics across the concepts and mechanisms, and they also shared a common outcome.

Box 7: Initial CMOC 26 and CMOC 27

Initial CMOC 26: When employers provide clinical supervision (C) and access to formal education to paramedics (C) they are better able to transition into primary care roles (O) because they feel supported (M)

Initial CMOC 27: Paramedics are able to transition into advanced practice roles (O) when they are supported by their employers in primary care (M) with clinical supervision (C) and access to formal education (C)

CMOC 27 was initially derived from the realist review and was subsequently supported by data collected in phase I through the free-text comments of respondents who were training to be advanced practitioners.

While the current policy outlines that paramedics moving into advanced practice roles require both clinical supervision in primary care and formal education (Health Education England, 2017, 2021), this policy is currently applicable within England only. Advanced practice is an active policy area within Northern Ireland (Department of Health NI, 2019), Scotland (Scottish Government, 2013), and Wales (Health Education and Improvement Wales, 2023), but these nations do not share the same stipulations regarding supervision for facilitating the transition of allied health professionals to advanced practitioner roles, such as paramedics in primary care.

Data collected during phase III confirmed that paramedics transitioning into primary care roles require access to formal education and supervision to feel supported. However, no further evidence was found to determine that this was particularly relevant for advanced practice roles over the general transition of paramedics to primary care.

Based on the overlap between these CMOCs with their shared contexts and outcomes, the initial CMOC 27 has been omitted, as its essence is better encapsulated by the final CMOC 26:

Final CMOC 26: When employers provide clinical supervision (C) and access to formal education to paramedics (C), they are better able to transition into primary care roles (O) because they feel supported (M).

Within this subcategory, the initial CMOC 29 has also evolved as the evidence from the combined work packages has been considered together. This CMOC was developed exclusively from phase II, where a predominant finding was the use of online social spaces to foster a community of practice, which was developed organically within the community of paramedics due to the professional isolation experienced by paramedics working in primary care: The initial CMOC is outlined in Box 8:

Box 8: Initial CMOC 29

Initial CMOC 29: Due to the geographical nature of primary care work (C), paramedics tend to use online social spaces to exchange insights regarding their role (O) and support each other (O) because it is a convenient way to engage with others (M).

However, data from phase III identified that this is less about the geographical nature of primary care work, but more regarding the professional isolation paramedics experience within their primary care roles in comparison to the community associated with the ambulance service and working in a station alongside members of the same profession.

This sense of isolation was considered to be such an important concept within phase III that this CMOC was revised within the final programme theory to:

Final CMOC 28: *When professional isolation exists for paramedics in primary care (C), paramedics tend to use online social spaces to exchange insights regarding their role (O) and to support each other (O) because it is a convenient way to engage with others (M).*

A similar evolution also occurred with the initial CMOC 30, outlined in Box 9:

Box 9: Initial CMOC 30

Initial CMOC 30: The lack of a structured curriculum to support primary care education (C) means that paramedics learn through practical experience of working in primary care (M) leading to variations in the implementation of the role (O)

During phase II, while observing online social spaces for paramedics in primary care, a recurring concern emerged regarding the absence of a standardised curriculum for paramedics in this field. This issue was primarily attributed to policymakers and professional organisations struggling to comprehend the role of paramedics in primary care. The absence of a curriculum led to paramedics acquiring practical knowledge on the job and relying on self-directed learning and evidence seeking to support their practice, as opposed to formal courses or modules. Indeed, where formal education was provided, paramedics reported that it was too generic for their role in primary care.

However, while the lack of a curriculum may have resulted in variation in the role, such variation was considered important in data collected in phase III, which highlighted instances where the paramedic role was developed to fill gaps in the workforce and facilitate patient access to healthcare. Therefore, the paramedic role requires flexibility to meet the needs of the community. Considering this within the broader context of the literature on the topic, the pluripotency of paramedics and their ability to adapt to complement local workforces aligns with the findings of the realist review. Therefore, the absence of a structured curriculum is not necessarily a drawback. Some of the most influential papers in this field emphasise the necessity of conducting community needs assessments as a foundation for implementing paramedic roles in primary care

(O’Meara et al., 2012, 2016; Stirling et al., 2007). A standardised curriculum would not accommodate the diverse needs of local communities, as it could not possibly encompass all the knowledge and skills required for the paramedic role in every context. Evidence from phases II and III indicates that the lack of a structured curriculum led paramedics to cultivate their expertise through experience in primary care, which is what results in varied approaches to the implementation of the role.

Taking these various sources of evidence into account, this CMOC is redefined within the final programme theory as follows:

Final CMOC 29: Lack of a structured curriculum to support primary care education (C) means that paramedics learn through practical experience of working in primary care (M), leading to diverse approaches to role implementation (O)

Supervision

As with education, the importance of supervision to support paramedics working in primary care roles was outlined in the initial systematic review (Eaton et al., 2020) and has been featured across each work package within this DPhil, as outlined in Table 11.

Table 11. Supervision: Contribution of each data source type to the development of the final CMOC					
Initial CMOC	Realist review	Realist evaluation			Final CMOC
		Phase I	Phase II	Phase III	
CMOC 32	+	+	+	+	CMOC 31
CMOC 33	+	+	+	+	
CMOC 34	+	+	+	+	

From the evidence collected, three CMOCs (presented in Box 10) were initially derived, but these have been consolidated into one CMOC based on the analysis of the combined datasets.

Box 10: Initial CMOC 32, CMOC 33 and CMOC 34

Initial CMOC 32: When paramedics are clinically supported in general practice (C), because they feel better supported (M), they will continue to advance and develop their capabilities and confidence within their role (O)

Initial CMOC 33: When paramedics are provided with clinical feedback, advice, and supervision in general practice (C), because they feel better supported (M), they have higher satisfaction with their role (O)

Initial CMOC 34: When clinical supervision is accessible for paramedics (C), they have higher satisfaction with their role (O) because they feel better supported (M)

During conception, and subsequent testing, it was considered that these CMOCs were linked through similar but independent contexts with a shared mechanism that focused on different outcomes associated with the provision of clinical supervision. However, during the review of these CMOCs within the supporting evidence gathered through each work package, it became apparent that there was a significant cross-over of each data source's contribution to the development of each CMOC (**Appendix T**).

Considering this, these three CMOCs were combined to form one final CMOC:

Final CMOC 31: When paramedics are provided with clinical feedback and supervision in general practice (C), because they feel supported and valued (M), they will develop their capabilities and confidence within their role (O).

Experience

Evidence included within the realist review (**Chapter 3**) revealed that paramedics entering primary care roles were generally expected to have five years of mandatory post-registration experience in ambulance services. This has also formed part of national policy (Health Education England, 2021). Throughout the development of each phase in the realist evaluation, the significance of experience facilitating paramedics' transition into primary care roles became increasingly clear. The contribution of each work package to the final programme theory is outlined in Table 12, with key evidence extracts outlined in **Appendix T**.

Table 12. Experience: Contribution of each data source type to the development of the final CMOC					
Initial CMOC	Realist review	Realist evaluation			Final CMOC
		Phase I	Phase II	Phase III	
CMOC 35	+	+	+		CMOC 32
CMOC 36	+			+	CMOC 33
CMOC 37		+	+	+	CMOC 34
CMOC 38		+	+	+	CMOC 35
CMOC 39		+		+	CMOC 36
CMOC 40			+	+	CMOC 37
CMOC 41			+	+	CMOC 38
CMOC 42				+	CMOC 39
CMOC 43		+		+	CMOC 40

Initial CMOC 43 (final CMOC 40), outlined in Box 11, was created from evidence from phase III.

Box 11: Initial CMOC 43/Final CMOC 40

Initial CMOC 43/Final CMOC 40: Experienced paramedics in primary care (C) complement the role of the GP (M) and are able to increase workforce capacity (O) by improving patient access to consultations (O).

However, during a review of the combined data sources, a quotation from phase I was found that supported the mechanism of this CMOC. Without data from phase III, this mechanism would have gone unnoticed. It was the understanding of the evidence collected during phase III that enabled the CMOC to be developed.

7.3 Concept 3: Roles and responsibilities

Based on the insights from the realist review, this conceptual category comprises three sub-categories: working in a team, the interpersonal skills of paramedics, and their clinical role, all of which serve as the foundation for the work undertaken by paramedics in primary care roles.

Working in a team

How paramedics integrate and work within primary care is vital if they are to make a valid contribution to the primary care workforce. This conceptual category was initially developed from evidence within the realist review, and subsequently expanded during data collection in the realist evaluation. Table 13 outlines the contribution of each work package to the final programme theory, with key evidence extracts outlined in **Appendix U**.

Table 13. Working in a team: Contribution of each data source type to the development of the final CMOC					
Initial CMOC	Realist review	Realist evaluation			Final CMOC
		Phase I	Phase II	Phase III	
CMOC 44	+	+			CMOC 41
CMOC 45	+	+			CMOC 42
CMOC 46	+			+	CMOC 43
CMOC 47	+		+	+	CMOC 44
CMOC 48			+	+	CMOC 45
CMOC 49				+	CMOC 46
CMOC 50				+	CMOC 47

It was initially considered that initial CMOC 48 was not confirmed by data collected in phase III (as outlined in Figure 8). However, re-examining the combined data sources, it was clear that from interviews and field notes, phase III outlined further considerations around role identity, considered in this initial CMOC 48 (Box 12). These discussions further supported the mechanism outlined in the data from phase II.

Box 12: Initial CMOC 48/Final CMOC 44

Initial CMOC 48/Final CMOC 45: Working in primary care (C) requires paramedics to reframe their professional identity (M) in order to integrate into the workforce (O).

Interpersonal skills

The significance of paramedics' capacity to establish rapport with both patients and colleagues, along with their interpersonal skills facilitating effective communication, trust-building, and the promotion of positive interactions, was a recurring theme across both work packages. The contribution of each work package to this conceptual category is outlined in Table 14, and **Appendix U** presents an overview of each evidence extract.

Table 14. Interpersonal skills: Contribution of each data source type to the development of the final CMOC					
Initial CMOC	Realist review	Realist evaluation			Final CMOC
		Phase I	Phase II	Phase III	
CMOC 51	+	+			CMOC 43
CMOC 52	+	+		+	CMOC 48
CMOC 53				+	CMOC 49

While synthesising the data, it became evident that CMOC 51 was developed using the same data sources as those initially used to create initial CMOC 46 (final CMOC 43). However, due to slight differences in phrasing regarding the same concept,

mechanism, and outcome, and its placement within a distinct subcategory, this overlap was initially overlooked as the programme theory was refined in each work package (Box 13). Upon reviewing both initial CMOCs and their contributing data sources, the decision was made to adopt the final CMOC 43. This choice was based on the fact that, while the concept of ‘trust’ was implied, it was not explicitly stated. However, as ‘trust’ remains synonymous with ‘credibility’, and this descriptor encompasses other components explicitly mentioned in supporting evidence, such as ‘support’ and ‘approachability’ (Oxford English Dictionary, 2023), the final CMOC 46 was considered to better encapsulate this data to contribute to the broader programme theory.

Box 13: Initial CMOC 46 and CMOC 51

Initial CMOC 46/Final CMOC 43: When the paramedics’ capabilities have been demonstrated (C) they are viewed by practice staff as a credible addition to the team (M) and are accepted into the practice workforce (O).

Initial CMOC 51: When paramedics demonstrate to the GP practice their awareness of their professional competencies (C), other health care professionals are more likely to accept the paramedic role in the practice (O), because they develop trust in their abilities (M).

Clinical role

The final subcategory within Concept 3 relates to the clinical role paramedics undertake when working in primary care. These CMOCs were developed during phase I of the realist evaluation, and have subsequently been supported within phases II and III, as outlined in Table 15. **Appendix U** outlines the key evidence extracts supporting these CMOCs.

Table 15. Interpersonal skills: Contribution of each data source type to the development of the final CMOC					
Initial CMOC	Realist review	Realist evaluation			Final CMOC
		Phase I	Phase II	Phase III	
CMOC 54		+	+	+	CMOC 50
CMOC 55		+	+	+	CMOC 51

No CMOCs within this subcategory required amendment when considered within the entire data collected for this DPhil.

7.4 Final programme theory

Following the overall synthesis of findings of the combined data sources within this DPhil, the final programme theory comprises 51 CMOCs (**Appendix V**) and is outlined visually in Figure 9.

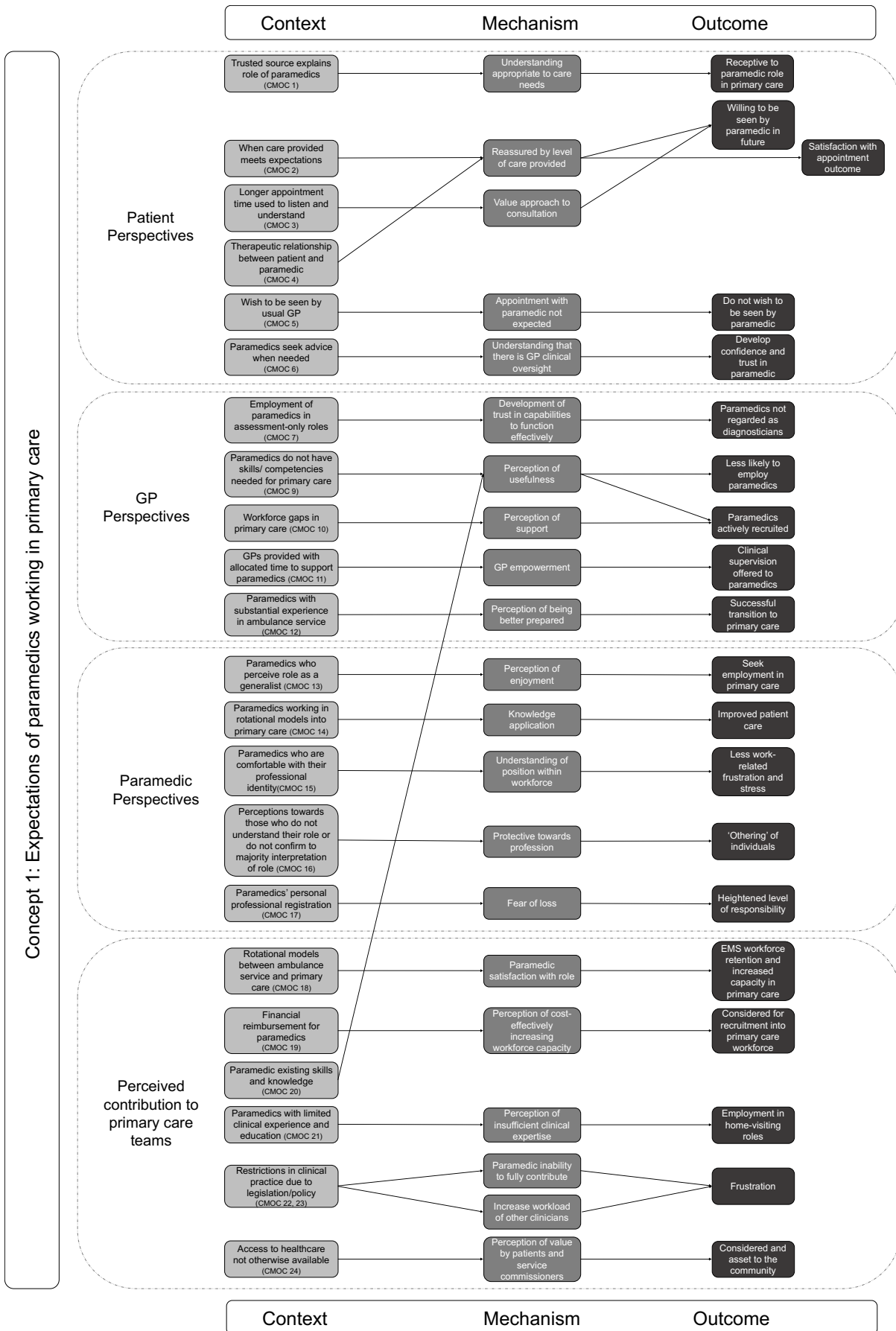


Figure 9. Final programme theory

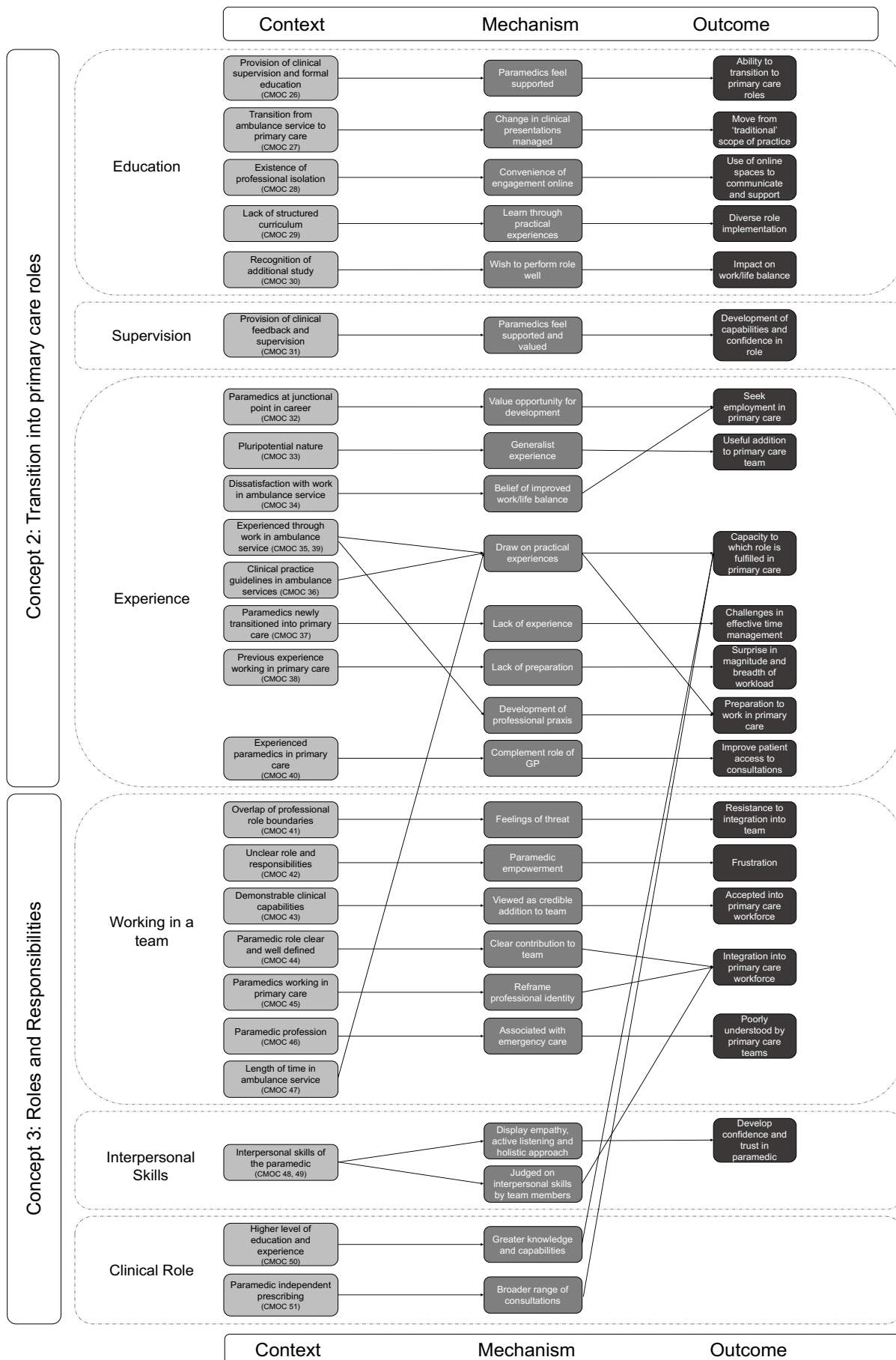


Figure 9. Final programme theory

Expectations of paramedics working in primary care

Patients show receptivity to the role of paramedics in primary care when they receive a clear explanation that these healthcare professionals are integral members of the primary care team and are available for specific consultations. Consequently, when paramedics utilise their extended appointment times to build rapport and connections with patients, individuals express their willingness to have subsequent appointments with paramedics, valuing the additional time during which they feel heard. Patients also show understanding when paramedics need to collaborate with other healthcare providers for their care, recognising the paramedic's role is within a broader healthcare team, and so patients are amenable to the paramedic seeking advice and input from GPs. However, patients are not receptive to seeing a paramedic when they expect to see a GP for their appointments.

When GPs establish confidence in a paramedic's competence, they perceive them as a valuable asset to the primary care team and actively seek their inclusion. GPs tend to favour paramedics who have had substantial experience in ambulance service, as they are seen as better equipped for primary care roles. Nevertheless, if GPs do not view paramedics as independent clinicians who can make a diagnosis, they may assign them assessment-only responsibilities. GPs are more inclined to provide clinical guidance to paramedics when they have available time during their workday.

Paramedics are more inclined to pursue careers in primary care when they believe that their education and prior experience in ambulance service have adequately prepared them for this transition. Additionally, paramedics who engage in rotational roles between ambulance service and primary care find it easier to transfer their skills

between these two environments. However, in primary care, paramedics may sense a greater degree of professional responsibility, leading to concerns about their professional registration. Paramedics who are confident in their clinical roles and their contributions to the primary care workforce tend to experience fewer frustrations in this setting. Nonetheless, they are protective of their responsibilities and may distance themselves from individuals they perceive as not aligning with their expectations or understanding of the paramedic role.

In England, employers are more inclined to hire paramedics into their workforce when they receive financial reimbursement from NHS England. Generally, paramedics are actively sought after in primary care when their knowledge and experience gained from the ambulance service are deemed valuable for the primary care workforce. However, paramedics with limited education and clinical experience may find employment in home-visiting roles, as employers may perceive them to have inadequate clinical expertise for more complex decision making. Implementing rotational employment models, where paramedics alternate between primary care and ambulance services, has the potential to boost capacity in the primary care workforce while retaining paramedics in ambulance service roles. When paramedics enhance patient access to healthcare, their role is highly appreciated by both primary care teams and patients. However, when legal or policy constraints prevent paramedics from addressing the entire spectrum of conditions encountered in primary care, it leads to frustration for both paramedics and other healthcare professionals, limiting their ability to make meaningful contributions to the primary care team.

Transition into primary care roles

Paramedics are motivated to transition to primary care to enhance their clinical skills, leveraging their prior experience in ambulance services as a valuable foundation for work in this setting. They find the transition smoother and more supportive when they have access to clinical supervision and structured educational opportunities. In cases where formal education is lacking, paramedics acquire knowledge through practical experience in primary care. Clinical supervision plays a crucial role in honing their capabilities and fostering confidence in their new roles. As they transition, paramedics expand their scope of practice, adapting to different clinical conditions from those encountered in the ambulance service, which can lead to variations in the paramedic role due to a lack of standardisation. Managing their time efficiently in a primary care setting can pose challenges. In essence, experienced paramedics complement the work of GPs and enhance workforce capacity by improving patient access to consultations.

Roles and responsibilities

For paramedics' effective integration into the primary care team, it is crucial to have well-defined roles and responsibilities for them that do not overlap with those of other healthcare professionals. When their capabilities and contributions are clearly defined and they possess the requisite knowledge and experience to support their roles, paramedics are recognised as a valuable addition to the workforce. However, the role and potential contributions of paramedics are often poorly understood by the primary care team, so paramedics need to redefine their professional identities for successful integration. Strong communication and interpersonal skills are essential for achieving this integration, as they also help patients develop trust in paramedics. In summary,

paramedics with higher levels of education and clinical experience, including independent prescribing capability, can effectively assume an expanded clinical role in primary care, allowing them to conduct a wider range of consultations.

7.5 Stakeholder engagement

The methodology for each work package was developed in consultation with the patient participation group and representatives from key stakeholder organisations, including the College of Paramedics, the Health Foundation, the Nuffield Trust, the Royal College of General Practitioners, and NHS England Workforce Transformation and Education Directorate. These discussions served to review the findings of each work package (and the phases within) and provide input for the development of the resulting CMOCs.

In October 2023, the final programme theory was presented to these representative groups through individual meetings. They assessed the relevance of the CMOCs within their specific contexts, and their feedback was instrumental in ensuring that each CMOC used appropriate and comprehensible terminology, as it contributed to the programme theory in each conceptual category.

Crucially, this stakeholder engagement validated the usability of the programme theory and directly influenced the outputs and dissemination strategy, which will be detailed in **Chapter 8**.

Chapter 8: Discussion and Conclusions

8.1 What this project contributes to understanding how paramedics work in primary care

This research aimed to improve the understanding of the ways in which paramedics impact (or not) the primary care workforce. This aim was considered through the overarching research question:

What is the role of paramedics working in NHS primary care?

The exploration of this research question was conducted by way of three subsidiary questions, the findings of which are based on the evidence generated as part of the realist review (**Chapter 3**) and realist evaluation (**Chapters 4, 5, and 6**) and are summarised below.

How, why, for whom, and in what contexts do paramedics ‘work’ in primary care settings?

Summarising the final programme theory, paramedics work in primary care to enhance patient access, manage specific conditions, and complement the role of the GP. They typically see patients who need non-urgent care and can use their generalist background to contribute in specific ways needed by their primary care provider, which can result in a lack of standardisation of the role. For example, some paramedics work in minor injury clinics, others may work in a home visit capacity only, and others may work to a routine appointment schedule, much in the same way as a GP. Regardless of their deployment model, their employment allows GPs to focus on more complex cases that require an expert generalist physician while ensuring that patients who do

not need such input are still seen by an autonomous registered professional in a timely manner.

Paramedics can have a significant impact on primary care settings when they improve healthcare access, especially in rural areas or regions with challenges in recruiting GPs and other clinicians. In these situations, paramedics do not replace the role of GPs or other clinicians, but can provide timely access to care for patients who may otherwise face extended waiting times to be seen.

What is the impact of paramedics working in primary care teams on the working practices of other healthcare professionals and the experiences of patients?

Data collected in both the realist review and phase III of the realist evaluation outlined that practice managers and receptionists witnessed effective integration of paramedics into their primary care teams. They acknowledged the paramedics' valuable support in terms of their contributions to workforce capacity, which went beyond their clinical responsibilities to assist other members of the practice team. GPs, in general, considered paramedics to be a highly valuable addition to the primary care team, while acknowledging they cannot be a substitute for a GP.

Patients were receptive to the concept of paramedics in primary care when they received clear information about when and why they might have an appointment with a paramedic. This was complemented by patients' perception that paramedics had longer appointment times, which patients valued. Patients reacted favourably when paramedics sought advice or guidance from a GP rather than seeing this as a duplication in the consultation. This open demonstration of an understanding of the

limits of their knowledge of decision making instilled a sense of confidence and trust in the paramedic among patients.

The inclusion of paramedics in primary care appeared to increase appointment availability for patients, resulting in improved access to primary care. This was advantageous for patients and was recognised by GPs and administrative staff, who believed that paramedics could handle certain tasks, allowing GPs to concentrate on other aspects of their responsibilities.

GPs, other healthcare professionals, administrative staff in primary care, and patients held the perception that paramedics were well-educated, well-trained, and possessed extensive knowledge, largely due to their experience in managing emergencies in the ambulance service. However, there was an awareness that, because of their specific experience, paramedics might be less effective when dealing with complex conditions or cases that typically fell outside the scope of their ambulance service duties, such as women's and men's health, palliative care, assessment of infants, and specific long-term conditions. Other limitations included paramedics who could not yet independently prescribe medicines, and the constraints on the practises of those who could prescribe, particularly around controlled drugs.

All the members of the primary care team, including paramedics, recognised that the role of paramedics was complementary to other healthcare professionals, and they were not intended to replace GPs.

What knowledge, capabilities, and skills do paramedics need to work in primary care within the NHS?

The realist review indicated that paramedics, by virtue of their experience in the ambulance service, were generalist clinicians. Their generalist background affords them pluripotency, which can be advantageous for their roles in primary care, provided they receive appropriate clinical support to facilitate their transition into this setting.

While paramedics in the ambulance service generally have a broad range of clinical capabilities, data from phase I showed that they have less exposure to certain patient groups. These include cases related to women's health, children under the age of two, complex chronic conditions, mental health-related presentations, and palliative care. phase I identified a statistically significant relationship outlining that length of time in primary care, higher levels of education, and status as an independent prescriber all contributed to an increase in the scope of the role for paramedics in primary care.

Phase II highlighted the necessity of formal education for paramedics to enhance their effectiveness in primary care and align their knowledge with the clinical cases encountered in this setting. In particular, further education is required in the management of specific conditions, moving beyond the recognition and diagnosis that was the focus of their ambulance service work. This should include specialised training related to dermatological conditions and their management, and developing knowledge regarding the aforementioned patient groups from phase I, whose presentations are less frequent in ambulance services but more common in primary care settings.

The significance of clinical experience gained in the ambulance service, and its relevance in terms of clinical competence in primary care, was underscored in every phase of the realist evaluation. GPs and other members of the primary care team emphasised the value of this experience during phase III, attributing it to the integration and effectiveness of paramedics as a professional group within the primary care team.

The importance of interpersonal skills was also highlighted in the realist review, and acknowledged to be important by paramedics in phases I, II, and III of the evaluation. Patients, in particular, reacted positively to paramedics in primary care due to their ability to establish rapport, in addition to their clinical role in their care. To ensure successful integration into the primary care team, paramedics needed to exhibit flexibility, friendliness, and a holistic approach to their work, as well as compassion, empathy, and active listening when interacting with patients.

8.2 Recommendations for practice

Based on the evidence generated, there are four key recommendations regarding how paramedics work in primary care:

1. A clear strategy for communication of the paramedic's role in primary care

The importance of informing patients regarding the presence of paramedics in their primary care practice, as well as the specific situations in which they might interact with a paramedic, was underscored as essential for fostering patient comprehension of the paramedic role and establishing clear expectations about their appointments (**Appendix V: CMOCs 1-6**). However, it was also demonstrated that the paramedic

role is not well understood by primary care teams (**Appendix V**: CMOC 46), and this can impact the integration and work of the paramedic in primary care (**Appendix V**: CMOCs 7, 8, 10, 20, 41, 42, 43, 44).

The importance of a clear communication strategy regarding the employment of paramedics in primary care teams, which is accessible to patients and understood by the clinical and non-clinical members of the team, is important in supporting this integration. Such a strategy may include the following:

- Introduction of the paramedic and their role (**Appendix V**: CMOCs 1, 2, 5, 50, 51).
- Outline of their educational background and experience (**Appendix V**: CMOCs 35, 47, 50, 51).
- Clear expectations about when patients may see a paramedic in the course of their care (**Appendix V**: CMOCs 1, 6, 40).

2. Developing a comprehensive curriculum framework for paramedics in primary care

Across England, several post-graduate education programmes have arisen that align with the *First Contact Practitioners (Paramedic) HEE Roadmap* (Health Education England, 2021) and seek to underpin the knowledge and skills set out in this document through formal academic study. Data derived throughout the realist evaluation revealed that the clinical responsibilities undertaken by paramedics in primary care extend beyond the scope defined in the 'roadmap'. Furthermore, this tool is inconsistently applied in England and lacks applicability to paramedics in primary care in Northern Ireland, Scotland, and Wales.

The development of a comprehensive nationwide curriculum framework that delineates the fundamental competencies for paramedics operating in primary care settings would facilitate the establishment of a baseline standard for the paramedic profession within primary care, whilst also ensuring that the paramedic role in primary care can be adapted to meet the needs of the community it serves, as informed by the evidence generated as part of this DPhil (**Appendix V**: CMOCs 26–29, 50–51). This work is currently underway and is in the initial phases of development in collaboration with the College of Paramedics (as outlined in section **8.3**).

3. The need for an effective transition support structure

In order for paramedics to effectively complement the GP role in primary care teams, they need support to transition into working in primary care and successfully integrate into these teams. Such a transition firstly requires recruiting the right paramedic for the primary care team. In particular, paramedics' capabilities (including their level of education and experience) are important if they are to effectively complement the GP role (**Appendix V**: CMOCs 9, 10, 18, 24, 50, 51). In addition, their interpersonal skills are crucial in facilitating integration of the individual within the primary care team and for patients' acceptance (**Appendix V**: CMOCs 48 and 49).

Through understanding the individuality of these capabilities, specific support structures for the paramedic to transition effectively transition into primary care can be adopted. These support structures should revolve around socialisation into the primary care team (**Appendix V**: CMOCs 7, 8, 12, 13–15, 21), the provision of supervision to paramedic (**Appendix V**: CMOCs 11, 26, 31), 32–40), and clarity regarding role

expectations (**Appendix V**: CMOCs 41, 42). A model to support the transition of paramedics to primary care is recommended in Figure 10.

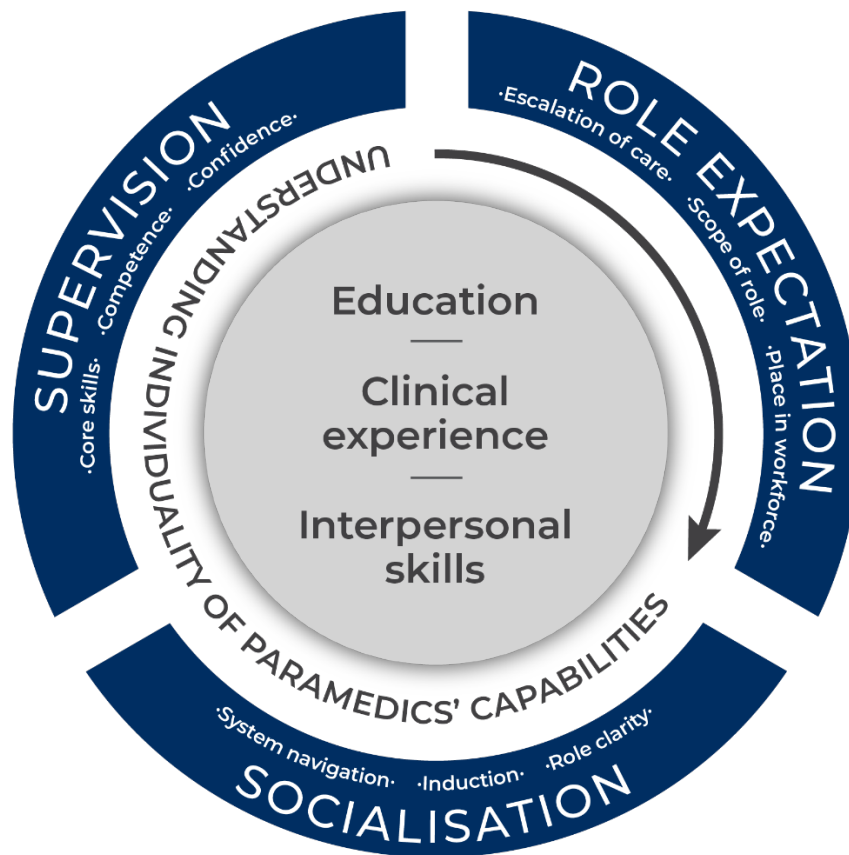


Figure 10. A model to support the transition of paramedics in primary care

4. Changes to legislation and policy

Lastly, limitations in legislation (particularly regarding the restrictions around the prescription of Schedule 2 controlled medicines¹⁶ or policy supporting the provision of a Statement of Fitness for Work) have an impact on the ability of paramedics to contribute in their fullest capacity to primary care teams (**Appendix V**: CMOCs 22 and 23).

¹⁶ Outlined in The Misuse of Drugs Regulations 2001.

In October 2019, the Advisory Council on the Misuse of Drugs (ACMD), responsible for advising on drug control, endorsed an NHS England proposal to amend the Misuse of Drugs Regulations 2001, granting paramedics the ability to independently prescribe and administer specific controlled drugs (Advisory Council on the Misuse of Drugs, 2019). While this was accepted by the government in October 2022 (Quin, 2022), there has been no subsequent development in amending the legislation.

In 2023, the Department of Work and Pensions (DWP) of the UK government published a consultation regarding which healthcare professionals should be considered to sign Statements of Fitness for Work (Department for Work and Pensions, 2023). There is currently no timeline regarding the publication of the results of this consultation, and specifically, whether paramedics may be added to the list of occupations who can sign fit notes.

These necessary changes to legislation and policy would support paramedics in contributing in their fullest capacity to primary care teams.

8.3 Outputs and dissemination strategy

At the time of submission of this thesis, four academic publications have arisen from this research (Eaton et al., 2019, 2020, 2022; Eaton, Wong, et al., 2021), with co-authorship on a further three academic papers (Mahtani et al., 2018; Shannon et al., 2022, 2023), one report (Shannon et al., 2021), and two blogs, the latter co-produced with the patient participation group associated with this project (Abrams & Eaton, 2021; Greehy et al., 2022). A short analysis paper regarding paramedic transition to primary care is currently awaiting publication in the *British Journal of General Practice*. In

addition to these publications, the researcher was also the principal editor for the textbook *Primary Care for Paramedics*, published in 2023. The academic publication of phases II and III is in progress and planned for 2024.

In addition to these academic publications, 13 UK conference presentations have been delivered regarding this project within the past four years. These include the *Health Education England Advanced Practice conference (2020)*, the *British Journal of General Practice annual conference (2020)*, the *Health Service Research UK conference (2021)*, the *Society of Academic Primary Care annual conference (2020, 2021, 2022, 2023)*, the *Royal College of General Practitioners annual conference (2021, 2022)*, the *College of Paramedics national conference (2022, 2023)*, *Netnocon (2023)*, and the *999EMS Forum (2023)*. This is in addition to presentations at three international conferences: *Community Paramedic Expo (Canada, 2022)*, *EMS World (USA, 2022)*, and the *International Roundtable of Community Paramedicine (UK, 2023)*.

Throughout this DPhil research, active collaboration with various stakeholders has been undertaken to advance the development of the programme theory, and this collaboration will now assist in the dissemination of this research. The following five outputs will be completed within the first three months of the submission of this DPhil thesis:

- A policy framework regarding key contract points for paramedics in primary care in partnership with NHS Confederation.

- A policy brief for the Royal College of General Practitioners regarding supervision models, typical patient presentations, and essential criteria for the employment of paramedics in primary care.
- A dissemination video that underscores patient perspectives in the integration of paramedics in primary care, for use by primary care employers and to be shared by the College of Paramedics and the Royal College of General Practitioners.
- Collaboration with the Primary and Urgent Care Special Interests Group and the Education Advisory Committee within the College of Paramedics to create a curriculum framework tailored for paramedics in primary care, drawing insights from the evidence derived from this research.
- An interactive toolkit designed for patients, paramedics, and GPs to facilitate access to information concerning paramedic recruitment, employment, and training in primary care. Notably, this project has received additional funding from NHS Workforce, Training, and Education (formerly known as Health Education England) and has involved active engagement with key representatives from the College of Paramedics and the Royal College of General Practitioners.

8.4 Strengths and limitations

The strengths and limitations of each individual study comprising this DPhil have been examined and detailed in the preceding chapters. This section considers the collective strengths and limitations of this project as a whole.

The first strength is that this DPhil received funding from both Health Education England (now NHS Workforce, Training, and Education) and a career development award from the National Institute for Health and Care Research (NIHR300681). The application process provided valuable external input on the research methodology, and the awarding of funding underscores the expressed need for and importance of the project within the broader context of the NHS.

The research project was enriched by its utilisation of a diverse array of methods and data sources. The realist review incorporated multiple data sources to lay the initial groundwork for the programme theory, while the realist evaluation gathered data from various perspectives, encompassing statistical data, perceptions, observed experiences, and interviews. Phases II and III of the realist evaluation, in particular, allowed the researcher to transcend their role as a researcher–practitioner and enhanced the transferability of the findings. However, it is essential to note that this programme theory will likely need revision, as further data may emerge in the future. Moreover, it is important to acknowledge the researcher’s perspective as a paramedic in primary care, which will have influenced how the data were interpreted.

In the context of a positivist world, a limitation inherent in the realist approach employed throughout this study is its dependence on the level of detail and depth present in the reports identified in the literature review as well as the quality of the data gathered during the realist evaluation. While data were collected from multiple sources, the objective reliability of the findings hinges upon the accuracy of the information presented by the cited authors and what participants disclosed during the phase I survey and phase III interviews, and the researcher's observations

documented in her immersion journal during phase II. To enhance the breadth of the data, measures were taken to ensure a statistically significant sample size for phase I. The selection of sites in phase III was guided by a maximum variation approach to sampling. The data collection for the realist evaluation spanned three years, with each study phase completed consecutively, allowing for the capture of role developments over time. Despite these endeavours, it is important to note that these findings provide momentary, cross-sectional glimpses of the paramedics' position in primary care, and thus may quickly become obsolete as the profession evolves to address the changing needs of primary care.

The realist approach also poses a risk of selective bias if researchers opt for underlying theories and synthesise them arbitrarily. To address this concern, the researcher engaged representatives from diverse stakeholder organisations, patients, and the public, in a collaborative effort to formulate the foundational research plan. A participatory approach was adopted, involving input from these different stakeholders in refining the evolving programme theory and exploring the implications of the findings. These contributions served as a foundation for the systematic development of the researcher's own theory, evolving alongside the substantive literature.

Lastly, the researcher received external feedback and guidance from their supervisors, who played a crucial role in ensuring that the analyses, interpretations, and data-driven inferences remained aligned with the research questions. The supervisors reviewed each stage of the research process and were instrumental in supporting the development of the programme theory and achieving a comprehensive understanding to answer the research question.

Overall, it is essential to remember that the programme theory proposed in this research project is an approximation of reality and should be subject to testing and refinement in future studies.

8.5 My DPhil learning journey

This reflective portion of the thesis will be presented from a personal perspective, transitioning back to a more formal academic style for the conclusion in section **8.6**.

Since starting my DPhil course in January 2019, I have kept a personal journal of my reflections, feedback, and task lists. As I approach the end of my thesis in October 2023, my writing in these journals has become increasingly smaller, as I tried to limit myself to two notebooks. Reviewing these journals, I recognise that I have undergone a deeply personal transformation. I have shifted from what had been my usual clinical and predominantly pragmatic way of thinking towards a theory-based realist approach to address my research questions. As on any journey, I encountered memorable moments, some of which arose from detours or periods of deep contemplation that took me out of my comfort zone. These experiences have had a profound impact on my perspective and thinking.

While I believe adopting a realist ontology has been the *right* way to answer the research question, it has not always felt like the easiest approach. Throughout the development of the project at inception, and the staged refinement of the programme

theory, I have been drawn to *The Son of Man*, a painting by René Magritte¹⁷. In concealing a portion of the face, a façade is created where both the apparent face and the apple are perceived, obscuring the visible but concealed aspect of the person's face. This phenomenon has been a recurring occurrence throughout the data collection element of my DPhil. In my observations during phases II and III, I was conscious of the underlying layer of mechanisms concealed by the superficial outcomes that I observed. In discovering what is concealed and not obvious, the programme theory was created. While such curiosity can evoke a profound sense of intrigue between the concealed elements of the visible and the elements that are openly presented, it is really *bloody* hard work to navigate as a post-graduate student—and to explain this to supervisors who did not observe what I did. It is perhaps this approach to communication that has changed me most: I have had to work (increasingly hard over the last two years) to present findings with neutrality so that my supervisors could assist me in navigating these complexities and a programme theory could be created.

I have also been acutely aware of my own impartiality in the subject. The quotation in the preface to this thesis hints at my perspective on this matter, and I have been mindful of the influence of my role as a researcher–practitioner throughout each stage of the study. I think René Descartes also helped me here. While I am not keen on some of his work¹⁸, I have always been drawn to his system of methodical doubt: *Je*

¹⁷ The artwork depicts a figure wearing an overcoat and a bowler hat, positioned in front of a short wall. Beyond the wall lies the sea and an overcast sky. The man's face is mostly hidden by a floating green apple, but his eyes are visible just above the edge of the apple. An additional intriguing detail is the apparent backward bend in the man's left arm at the elbow.

¹⁸ In my opinion, he holds considerable responsibility for the historical approach to mental health treatment in the Western hemisphere.

pense, donc je suis (best known in its Latin formulation, '*Cogito, ergo sum*', and translated into English as '*I think, therefore I am*'). I work in primary care, but why? What purpose does my role in this setting serve? Doubting the very existence of my role was the foundation for this research project, and the fact that that doubt was shared by others (notably patients and members of the public) reinforced my approach. I wonder whether this has also enabled me to be at peace with my own professional identity. I was surprised by my findings in phase II regarding the crises of identity outlined by my peers in primary care, as I have never encountered this myself. I am a *para*-medic: I work alongside the physician (GP in this case), do what I can with the knowledge and clinical capabilities I have (which appear to have evolved over time) and seek advice when I do not know something. My comfort with my professional identity was picked up by my supervisors, one of whom once commented, '*I don't think you're like a normal paramedic in primary care*'. This forced me to think more deeply about this concept, and ultimately enabled the development of the programme theory in this area.

I have also been surprised at the importance of interpersonal skills for paramedics in primary care. Early on in this DPhil journey, before commencing data collection, one of the patients in my stakeholder group pointed out that '*of course paramedics are good communicators, because they must rapidly build trust in an emergency*'. I have considered this statement frequently since, particularly while undertaking the occasional stint in an ambulance, and I think this patient is right. Whether it is crawling into cars that are overturned on country roads in order to assess the trapped patient, reassuring the expectant mother during the pre-term delivery of her baby, or supporting families with the management of the symptoms of an elderly relative who

is in the last hours of their life – I *have* to be able to build rapport, and to do so quickly, to help them. All paramedics do. Perhaps that is why paramedic experience in the ambulance service is so fundamental for their integration into primary care, and why such experience is particularly recognised by the primary care team as essential for the paramedic to work in this setting (as outlined in CMOCs 12, 21, 39, 47, 49).

There is no doubt that I have put these communication skills to use during my interactions with various stakeholder groups over the past four years. While I have been mindful to steer clear of clinical and academic jargon when communicating with patients and the general public, I have had to adopt a neutral and media-friendly approach when dealing with certain stakeholders. The latter has proven to be more challenging than the former. Given my naturally candid disposition, it has been challenging to maintain caution while ensuring their continued engagement. Nonetheless, I believe this experience will serve me well in the future, particularly as I contemplate more senior clinical and postdoctoral roles.

I have only one disgruntlement in the course of my DPhil research: the comparative data collection undertaken in Canada (as part of phase III) demonstrated that paramedics in Canada are not as analogous to the UK as I had initially envisaged. My understanding of the Canadian community paramedic's role had been developed through the realist review, and I spent time cultivating a relationship with key stakeholders in Canada, where, through regular conversations, I worked hard to understand their paramedic profession before selecting the country (and site) for data collection. However, the reality was different, and this demonstrated to me the difference in the development of the profession across the two countries: where the

UK has a nationwide system of regulation, Canada's is employer-specific and not standardised. Returning to Freidson's work (which I drew upon greatly in the initial substantive theory supporting the realist review), this lack of standardisation presents a problem in self-governance (Freidson, 2001). Nevertheless, despite differences in professionalisation, the similarities between the operational aspects of Canadian community paramedics and UK paramedics in primary care greatly facilitated the testing of components of the programme theory developed during this phase of data collection. In providing this breadth of perspective, rather than a direct comparison, the trip was far from a wasted effort.

The most challenging and time-intensive aspect of my studies was presenting the findings in such a way as to be accessible to a wide audience, including patients, public representatives, and stakeholders, while maintaining the academic rigour expected in a DPhil, especially at the University of Oxford. Striking the right balance between accessibility and academic depth was crucial. I hope I have achieved this, and only time will tell whether I was successful in this through my dissemination plans (as outlined in section **8.3**).

I have maintained my clinical role throughout my academic studies, working as a paramedic in primary care while occasionally fulfilling ambulance duties. Throughout my DPhil journey, my role as a paramedic in primary care has transformed along with my clinical capabilities. I began this DPhil course as a specialist paramedic, progressed to functioning as an advanced paramedic (attaining independent prescriber status), and will take employment as a consultant paramedic within a few months of thesis submission. Currently, I find myself adopting a more reflective

approach towards my responsibilities and contributions to the workforce. I am also more conscious of my interactions with patients and recognise that my paramedic experience plays a pivotal role in my integration into primary care, as well as my ability to engage with various stakeholders and academics. Maintaining a dual role as a researcher–practitioner is a source of personal satisfaction and pride. This DPhil journey has led to the transformation of my professional identity to align with this dual role.

8.6 Future research directions

The rigorous construction of the programme theory has instilled confidence in its ability to elucidate how paramedics operate in primary care, to what degree, for whom, and in which circumstances. Nevertheless, like any theory, it would be advantageous to subject it to further testing to validate, challenge, and enhance the core context-mechanism-outcome configurations (CMOCs).

Initially, future research directions at the outset of this DPhil project revolved around gaining insight into the health economics of paramedics in primary care. However, as this DPhil has advanced, funding was granted for two separate research projects aimed at investigating this subject (Petrou et al., 2022; Voss et al., 2021). Consequently, pursuing additional research into the same economic modelling is unlikely to be advantageous.

Every health workforce concern exists within a political framework, and alterations to government policy can influence workforce trajectories. With this in mind, potential

future research directions emerging from this DPhil research in the next five years might encompass the following:

- A follow-up cross-sectional survey of paramedics working in primary care across the nation: This survey, in addition to evaluating the forthcoming curriculum framework, will help to assess the evolution of paramedic roles in primary care. It will also gauge the potential influence of legislative and policy changes on the clinical responsibilities undertaken by paramedics in this context.
- The implementation of the curriculum framework as an educational intervention and the assessment of its effectiveness through pre- and post-intervention questionnaires: Health outcomes, including the perceptions of quality of care (PQOC), patient-reported experiences and outcomes of safety in primary care (PREOS-PC), and patient-reported general health-related quality of life, will be measured both at the initial appointment and 30 days later. This approach will yield statistical data on the curriculum framework's impact on patient care.

8.7 Conclusions

This research aimed to improve the understanding of the ways in which paramedics impact (or not) the primary care workforce. This was facilitated by a range of methods. An initial programme theory was developed from secondary research in the form of a systematic review (**Chapter 1**), and refined following the results of a realist review (**Chapter 3**). The programme theory was refined further through empirical data collection as part of a realist evaluation, which included a cross-sectional survey (**Chapter 4**), analytic auto-netnography (**Chapter 5**) and focused observations and interviews (**Chapter 6**).

The final programme theory demonstrates that paramedics in primary care enhance patient access by complementing the role of GPs. However, the absence of formal education in their role requires paramedics to depend on their prior experience in the ambulance service to make contributions to the primary care team. This reliance on experience can result in significant variations in their contributions, making it difficult to standardise the role of paramedics across the primary care workforce in the UK. Optimal implementation of paramedics in primary care requires a comprehensive approach encompassing a communications strategy for clarifying their role, a curriculum framework defining their necessary capabilities (whilst also promoting versatility in role application), a support structure for a smooth transition into the primary care workforce, and legislative adjustments to enable paramedics to make their fullest contribution to primary care. These key recommendations have shaped the strategy for the dissemination of these research findings and provided a framework for future research directions. These research directions will be the primary focus of planned postdoctoral research.

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General Data Protection Regulation (GDPR) (Regulation 2016/679). Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) (OJ L 119, 4.5.2016, p. 1).

The Misuse of Drugs Regulations 2001

Appendices

Appendix A: Systematic Review Methodology

Search strategy: Medline (Ovidsp)

- 1 Allied Health Personnel/ and emergenc*.mp.
- 2 Emergency Medical Technicians/
- 3 (paramedic* or ((emergency or ambulance) adj3 (technician? or practitioner? or staff* or personnel or workforce))).tw.
- 4 1 or 2 or 3
- 5 exp General Practice/
- 6 general practitioners/ or physicians, family/ or physicians, primary care/
- 7 Primary Health Care/
- 8 Community Medicine/ or Community Health Services/ or Rural Health Services/
- 9 After-Hours Care/
- 10 Ambulatory Care Facilities/
- 11 Office Visits/
- 12 ((family or general) adj3 (practi* or doctor? or physician?)).tw.
- 13 (primary adj (care or healthcare or "health care")).tw.
- 14 (community adj2 (care or medicine or service?)).tw.
- 15 ("out of hours" or ooh or walkin or walk-in).tw.
- 16 ((health* or medical or ambulatory) adj2 (centre? or center? or clinic?)).tw.
- 17 *Triage/
- 18 triage.ti.
- 19 (Remote Consultation/ or Triage/) and Telephone/
- 20 exp Call Centers/
- 21 (helpline? or help line? or hotline? or hot line? or call centre? or call center?).tw.
- 22 (telephone? adj3 (service? or centre? or center? or triage)).tw.
- 23 ((enhanc* or expand*) adj3 role?).tw.
- 24 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23
- 25 4 and 24

26 ((community or primary care or primary health care or primary healthcare) adj3 paramedic*).tw.

27 25 or 26

28 limit 27 to yr="2004 -Current"

A priori definitions and screening criteria

Studies were chosen for inclusion based on strict eligibility criteria. These criteria were designed to strike a balance, avoiding both overly broad inclusion, which could introduce a risk of over-inclusion, and overly narrow criteria, which might lead to over-exclusion. The rationale for these eligibility criteria is explained below:

Population

This scoping review focussed on paramedics working within the United Kingdom (UK) only. The College of Paramedics (Eaton, 2019) defines a paramedic as follows:

“A paramedic works autonomously as a generalist clinician across a range of health care settings, usually in emergency, primary or urgent care. They may also specialise in clinical practice, education, leadership or research.”

The role of paramedics in the UK sets it apart from other countries, including those within the Organisation for Economic Co-operation and Development, such as Australia, Canada, Ireland, and the United States of America (USA). In the UK, paramedicine is a graduate-level profession, legally protected in title, and subject to national regulation by the Health and Care Professions Council (HCPC). Paramedics in the UK have autonomous practice from the moment of registration, and they can work in various healthcare settings beyond the ambulance service. In contrast, there is currently no national regulation for paramedics in Canada or the USA, and the scope of practice can significantly vary between states or jurisdictions despite the shared title. Paramedics in Ireland are registered but do not operate within a similar scope of practice to their UK counterparts. Australia, while sharing some regulatory similarities with the UK, primarily employs paramedics within the ambulance service, even in the provision of primary care.

Considering these distinctions, it's evident that UK paramedics hold a rather unique position. As a result, this scoping review aimed to chart the existing literature on paramedics in primary care within the National Health Service (NHS) with the objective of outlining the trajectory for a current research agenda focusing on paramedic practice in NHS primary care.

Intervention

Scope of practice-related search terms were deliberately omitted because the goal was to capture all studies related to paramedics in primary care, without restriction based on clinical presentation or assessment. Therefore, the eligibility criteria focused on:

- Clinician satisfaction;
- Costs.
- Education/Training/Skills/Competencies
- Information relating to role;
- Patient and carer satisfaction;
- Scope of practice;
- Work within health and social care systems;

Context

In the original review by Ball (2005), the focus was on the role of paramedics in an urgent care capacity within UK ambulance services. However, given recent policy changes in NHS primary care, this review aimed to narrow its focus to paramedics working fully or partially in primary care settings. Primary care, as defined, serves as the initial point of contact for patient care, usually within the patient's local community. It's worth noting that minor injuries units, out-of-hours services, urgent care centers, and walk-in centers also provide first-contact care within the community. These services fall under the umbrella of urgent care within the NHS, addressing the need for same-day care. Since there is no formal distinction between primary and urgent care and both offer first-contact care within the community, this review considered work within these contexts to be appropriate for inclusion within the eligibility criteria.

Study design

As the primary objective of a scoping review is to comprehensively map the scope, breadth, and characteristics of research within a specific area, no restrictions were imposed on study design or type (whether quantitative or qualitative). Any literature providing relevant information for the purpose of this review was eligible for inclusion. This approach aimed to uncover common themes and pinpoint areas where the existing publications in this subject matter may have gaps.

PRISMA Flowchart

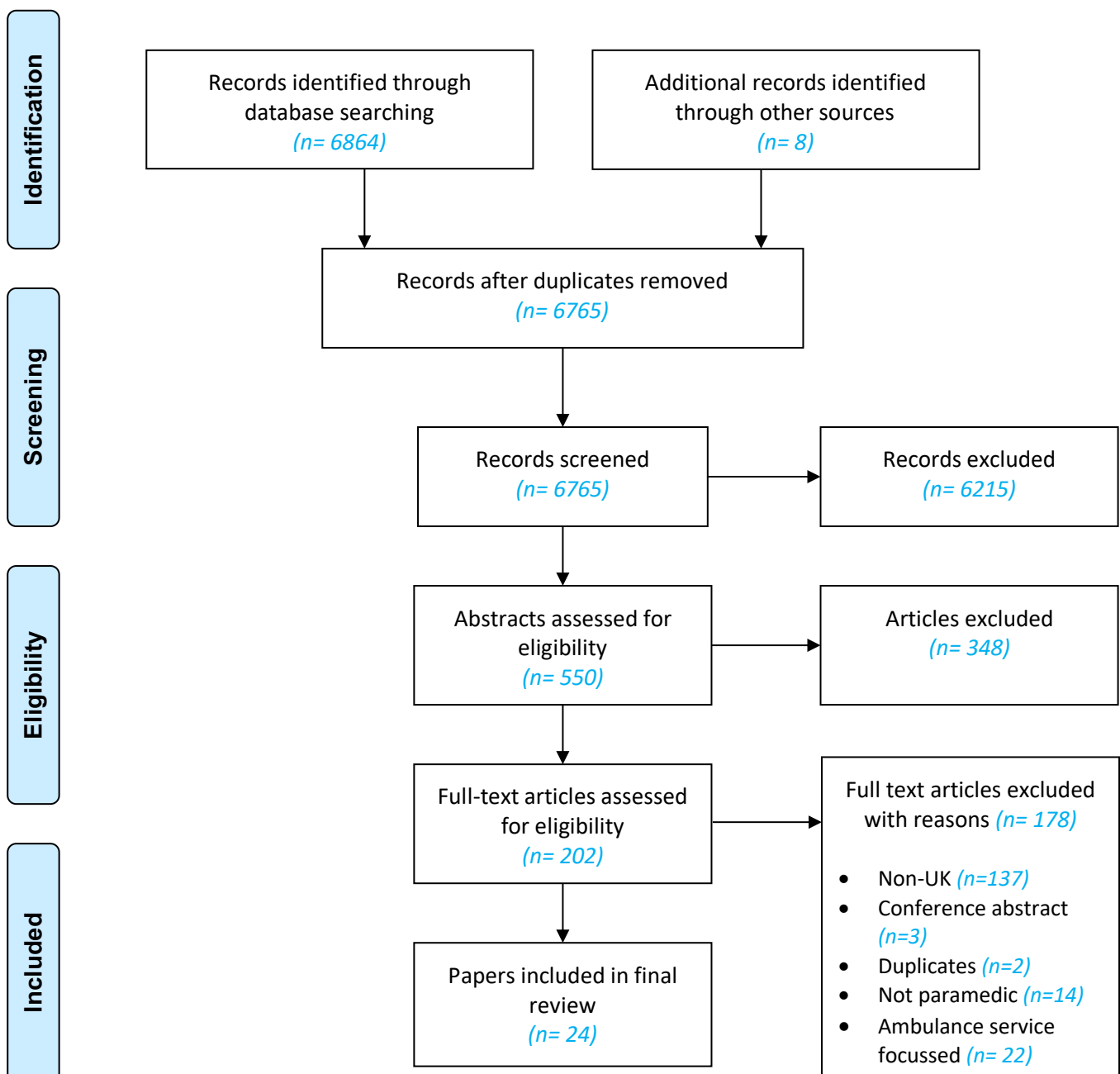


Table of study characteristics from the systematic review

Citation	Population	Concept	Context	Study Design
Abrams et al., 2018	Paramedics; Emergency Care Practitioners	Role	Early visiting service (home visiting)	Protocol
Brown, 2017	Paramedic Practitioner	Role; Training; Interaction within multidisciplinary team	General practice	No comparator - Case study
Clarke, 2018	Paramedic	Scope of practice; Role; Pay; outline of a typical day	General practice	Local guidance document
Daly, 2013	Paramedic	Skill set; Interaction within multidisciplinary team	General practice	No comparator - Case study
Eaton, 2017	Specialist Paramedics	Role	First Aid unit (rotational from ambulance service)	No comparator - Case study
Halter et al, 2007	Emergency Care Practitioners (Paramedics)	Patient satisfaction	Out-of-Hours care in Bromley (London)	Retrospective comparator - Telephone administered questionnaire (n=81 patients)
Hill, McMeekin, & Price, 2014	Emergency Care Practitioners	Role; Process of care; Training	General practice; Ambulance service	Systematic Review

Lattimer et al, 2010	Paramedic Practitioners; Emergency Care Practitioners (Paramedics); Primary Care Paramedics	Skills; Competencies; Workforce	Home visiting service; Urgent care (Out-of-Hours)	Retrospective comparator -Literature review; interviews (n=129 patients; n=120 staff)
Mason et al, 2006	Emergency Care Practitioners (77.4% Paramedics)	Core skills; training; outcomes	Minor Injury Unit; Walk-in-centre; Primary care; Emergency department; Ambulance services	Retrospective comparator - Questionnaire (n=14 sites); interviews with individual strategy leads (n= 12); economic analysis (n=14 sites);
Moule et al, 2018	Paramedics	Role (skill set); Education	Out-of-Hours	Historical Control - Mixed-methods evaluation: Interview; questionnaire data (n=2)
NHS England, 2015	Paramedics	Skill set; Interaction within multidisciplinary team; Indemnity	Home visiting service	Report
NHS England, 2017	Paramedic Practitioner	Role: Health assessment	Home visiting service	No comparator - Case study
NHS England, 2019	First Contact Community Paramedics	Role	General practice	Report
NHS England, 2019	Community Paramedics	Interaction within multidisciplinary team	Primary Care Networks	Report

NHS Wales, 2015	Paramedics; Advanced Paramedics	Interaction within multidisciplinary team	Primary care; Community services	Report
Northumberland Clinical Commissioning Group, 2016	Community Paramedics; Advanced Paramedics	Interaction within multi-professional team	Home visits; minors clinics in general practice	Local strategy plan
Proctor, 2019	Paramedic Practitioners	Health assessment (elderly patients)	Home visiting from general practice	Retrospective comparator – Qualitative face-to-face semi-structured interviews (n=8 patients)
RSM UK Group, 2017	Specialist Paramedic Practitioner	Patient satisfaction; GP satisfaction	Home visiting service	Retrospective comparator – Qualitative interviews (n= 2 GPs; n= 1 specialist paramedic); Online survey (n=19 GPs; n= 38 patients)
Scott & Carney, 2004	Emergency Care Practitioners (Paramedics)	Education pathways; Scope of practice; knowledge	General practice	Commentary
Spence, 2017	Paramedics	Role; What paramedics can bring to general practice	General practice	Commentary
Spencer, 2016	Paramedic	Role; outline of a typical day	General practice; Home visiting	Commentary

Turner & Williams, 2018	Specialist Paramedics	Role; Type of intervention	Rotational work through general practice and the Ambulance Service	Retrospective comparator - Qualitative interviews (n=30 clinical staff)
Turner et al., 2015	Extended Paramedic Roles	Workforce; Skill mix	General practice (rotational from ambulance service)	Rapid Review
Woollard, 2006	Paramedic	Role; Education requirements	Secondment to general practice from ambulance service	Commentary

Appendix B: Project protocol

This research employs two primary approaches: a realist review (Work Package 1) and a realist evaluation (Work Package 2). These methodologies are based on the work of Pawson, et al. (2005) and adhere to the standards for conducting and reporting realist reviews (Wong et al., 2014) and realist evaluations (Wong et al., 2016). The realist approaches consider causation as a generative process, where outcomes are shaped by context-sensitive mechanisms (Pawson et al., 2005). The role of paramedics in primary care is seen as a complex intervention with context-sensitive outcomes. These research approaches aim to identify and understand the contexts in which the outcomes of paramedics working in primary care may or may not be effective.

The realist review can synthesize a wide range of data, including quantitative, qualitative, mixed-method research, and grey literature. It goes beyond merely describing the literature, using a theory-driven, interpretative approach to analyse data from various sources. The findings from the realist review are transferable, as they focus on the mechanisms that cause specific outcomes within the paramedic role in primary care, allowing for the generation of recommendations applicable across the NHS.

Realist evaluation, as a form of primary research driven by theory, collects primary data from real-world NHS practice to further develop the program theory derived from the realist review (Pawson & Tilley, 1997). It recognises the complexity of paramedics' real-world working lives and allows for exploration of different contexts and their influence on outcomes through mechanisms. This approach also examines the extent to which patients, healthcare practitioners, and the health service benefit within different contexts.

Patient and Public Involvement

The realist approach protocol involves iterative cycles of engagement with the literature and the stakeholder group. The stakeholders include individuals working in

primary care, such as paramedics and GPs, patients, and organisations like the College of Paramedics and NHS England Workforce Transformation and Education Directorate (formally known as Health Education England). These individuals were identified through the authors' professional networks or through a call for input on social media, and they were invited to provide insights, feedback, and diverse perspectives. This engagement facilitates the provision of advice, feedback, and different viewpoints regarding considerations and outcomes for this evaluation.

As the research progresses, regular engagement with this stakeholder group will continue, enabling a deeper understanding of how mechanisms operating at different levels produce context-dependent outcomes in paramedics working in primary care.

Work Package 1: Development of Programme Theory Through a Realist Review

Step 1: Initial Programme Theory

A separate systematic scoping review (registered on PROSPERO with ID CRD42018109414) has already identified theories that help explain and develop understanding of paramedics working in primary care. These theories were developed by iteratively drawing on the literature from the review and consulting with key content experts within the stakeholder group. This process has allowed for the development of an initial program theory, incorporating relevant discussions within the project team and perspectives from the stakeholder group.

Step 2: Literature Search

This step involves formal searches guided by the initial programme theory. The goal is to identify existing literature that can inform the development of a more detailed program theory. The process of defining, piloting, and conducting formal searches will be done with the support of an information specialist.

The anticipated use of databases includes COCHRANE, MEDLINE, CINAHL, PsycINFO, EMBASE, NHSEED, ERIC, DARE, JBI, EBP, and OpenGrey. Additionally, forward citation searches and backward chaining will be conducted. The terminology and search structure will be informed by Step 1, with any changes documented and implemented across databases.

Grey literature sources, such as policy documents, stakeholder analyses, reports, conference proceedings, websites, news articles, leaflets, and social media posts, will also be included if they provide contextual or conceptual information.

Step 3: Data Screening

Data screening will involve two phases: The first phase considers title, abstract, and keywords, and the second phase involves a review of full-text documents. Specific inclusion criteria will be applied to determine whether a document is likely to contain relevant data, focusing on population, contribution, and setting. Documentation related to clinicians not employed as paramedics or not registered as paramedics will be excluded.

To ensure consistency in the screening process, a 10% sample of retrieved citations will be independently reviewed by supervisors. Disagreements will be discussed between, with unresolved issues referred to the wider project team for resolution. Additional searches may be conducted if gaps in the required data are identified during the refinement of the program theory. Any new or modified inclusion and exclusion criteria will be discussed with the wider project team.

Step 3: Selection and Extraction

Documents that meet the inclusion criteria will be considered for inclusion within the realist review. Selection will be based on their relevance to the development and refinement of the program theory and, where necessary, the rigor of the methods used to generate the data. Documents related to the UK will be prioritized initially for final inclusion and analysis to ensure findings are transferable to the NHS. Studies from other countries, where paramedics may work similarly to the NHS but within different OECD healthcare systems, will be considered later if necessary to avoid gaps in the program theory.

Descriptive characteristics of selected documents will be extracted into an Excel spreadsheet, and the documents will be managed and coded in NVivo for data analysis. Data extraction will be performed by the author, with 10% of extracted data

independently reviewed by supervisors. Disagreements will be discussed within the wider team, and the outcomes recorded.

Step 4: Data Synthesis

In realist reviews, data synthesis aims to further develop and refine the initial program theory. This process will follow the approach outlined by Papoutsis et al. (2018), focusing on creating a program theory that links context to outcomes using the "context + mechanism = outcome" (CMO) analytical rule of thumb. This level of detail allows for an understanding of the contexts required for specific outcomes to occur, which can inform intervention strategies, particularly in the education of paramedics.

Data synthesis will employ inductive reasoning (based on data in documents), deductive reasoning (informed by the program theory), and retroductive reasoning (inferences based on data interpretations about mechanisms). During analysis and synthesis, the relevance and rigor of the content within the documents will be assessed, following the process outlined by Abrams et al. (2018). This involves assessing whether the data are relevant to the program theory, determining the trustworthiness of the data for making changes to the program theory, and making interpretations and judgments about how data form CMOs and relate to each other within the program theory. Interpretive cross-case comparisons will provide an understanding of the relationships between CMOs across different data sources.

Throughout the review, input from the stakeholder group will be sought to continually refine and test the program theory. This active involvement of individuals working in primary care will improve how the findings support recommendations and inform changes in practice. The stakeholder group will serve as "critical friends," providing feedback, advice, and sense-checking findings. Emerging findings will be shared with them, and any issues they raise that are not covered in the findings will prompt further investigation in the included documents.

Review of the programme theory will continue until no new information is provided by the stakeholder group or paramedics working in primary care, achieving theoretical saturation. The final refined program theory will be presented in narrative form, underpinned by a description of the realist synthesis and supported by illustrative data.

Work Package 2: Testing of Programme Theory Using Empirical Data From a Realist Evaluation

Realist evaluation, a theory-driven form of primary research, collects primary data from real-world NHS practice to further develop the programme theory derived from the realist review (Pawson & Tilley, 1997). This approach recognises the complexity of paramedics' real-world working lives, allowing for the exploration of different contexts, their influence on outcomes, and the benefits or drawbacks for patients, healthcare practitioners, and the health service in various contexts.

Realist evaluation may employ multiple methods to collect relevant data, and data collection will occur in two steps:

Step 1: Survey

A national cross-sectional survey, supported by the College of Paramedics, will focus on gathering information related to variation in employment conditions, scope of practice, educational requirements, and salaries for paramedics working in primary care. The survey aims to test specific aspects of the program theory derived from the realist review and provide information on how well this theory reflects the reality of paramedics working in primary care.

The content of the survey will be informed by the programme theory, and its design will involve piloting and refinement with members of the stakeholder group.

Sample

An estimated 20% of the 11,470 members of the College of Paramedics work in primary care. Therefore, an appropriate sample size of 410 is required to provide statistical significance. The survey will also target formal and informal networks of paramedics working in primary care to minimize sampling bias.

Data Analysis

The survey is expected to yield mixed data, likely in non-parametric form. If this is the case, the chi-squared test will be the most appropriate statistical hypothesis test for analysing group differences within the results.

Step 2: Focused Observations and Interviews

Focused observations of paramedics working in primary care will be followed by semi-structured interviews. The content of the interviews will be informed by the program theory derived from the realist review. Interviews will also be conducted with other healthcare professionals in general practice, such as GPs, nurses, and pharmacists, as well as patients who have received care from paramedics in primary care. These interviews will focus on the experiences of working with a paramedic and the care received by patients.

Sample

Paramedics are expected to work differently in different contexts. Different contexts will affect how and why paramedic practice and the outcomes vary, and a case study approach will be used to select settings where paramedics work. A sample of 40 individuals across four sites, with an equal number of interviews at each site, will be included. Fewer interviews at each site may be needed if theoretical saturation is reached.

Data Analysis

Data from interviews is considered evidence of real phenomena and processes. Field notes from focused observations and interview transcripts will be coded in NVivo. The data will be analysed using realist logic of analysis, similar to the approach used in the realist review. Consultation with the stakeholder group will continue throughout work package 2, and potential CMO configurations will be proposed and discussed with the group to refine the programme theory.

Ethics and Dissemination

The study will seek ethics committee approval from the University of Oxford and Health Research Authority. Additionally, since this study involves NHS staff, approval will also be required from the Health Research Authority before commencing the evaluative phase of the research.

For Work Package 2, all participants engaging in the survey and interviews will be asked to provide written informed consent. To maintain confidentiality, no identifiable information will be collected from the participants. Data related to the participants, such as their healthcare profession, will be recorded using an encrypted device and subsequently anonymised and transcribed.

The primary goal is to ensure that the outcomes of this project are valuable for enhancing best practices in the educational development of paramedics in primary care. To achieve this, a variety of outputs tailored to different audiences will be produced:

- Findings will be published in high-impact, peer-reviewed academic journals and present them at professional and academic conferences.
- Stakeholder consultation and presentations will encourage the adoption of the outputs from this research, which includes an education pathway, curriculum, and workplace-based tools, into the paramedic postgraduate curriculum by the College of Paramedics or their endorsement as practical tools within NHS England Workforce Transformation and Education Directorate.
- Plain English summaries will be created to provide concise and meaningful overviews of this research. These summaries will help engage a broad audience, including patients, paramedics, general practitioners, educators, and commissioners. They will serve as evidence-based resources to inform the practice and implementation of paramedics in primary care.

Appendix C: Realist review search strategy

Search strategy: Medline (Ovidsp)

- 1 Allied Health Personnel/ and emergenc*.mp.
- 2 Emergency Medical Technicians/
- 3 (paramedic* or ((emergency or ambulance) adj3 (technician? or practitioner? or staff* or personnel or workforce))).tw.
- 4 1 or 2 or 3
- 5 exp General Practice/
- 6 general practitioners/ or physicians, family/ or physicians, primary care/
- 7 Primary Health Care/
- 8 Community Medicine/ or Community Health Services/ or Rural Health Services/
- 9 After-Hours Care/
- 10 Ambulatory Care Facilities/
- 11 Office Visits/
- 12 ((family or general) adj3 (practi* or doctor? or physician?)).tw.
- 13 (primary adj (care or healthcare or "health care")).tw.
- 14 (community adj2 (care or medicine or service?)).tw.
- 15 ("out of hours" or ooh or walkin or walk-in).tw.
- 16 ((health* or medical or ambulatory) adj2 (centre? or center? or clinic?)).tw.
- 17 *Triage/
- 18 triage.ti.
- 19 (Remote Consultation/ or Triage/) and Telephone/
- 20 exp Call Centers/
- 21 (helpline? or help line? or hotline? or hot line? or call centre? or call center?).tw.
- 22 (telephone? adj3 (service? or centre? or center? or triage)).tw.
- 23 ((enhanc* or expand*) adj3 role?).tw.
- 24 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23
- 25 4 and 24
- 26 ((community or primary care or primary health care or primary healthcare) adj3 paramedic*).tw.
- 27 25 or 26

28 limit 27 to yr="2004 -Current"

Search strategy: Google

Paramedics ("primary care" OR "general practice") site:nhs.uk

Appendix D: Table of study characteristics from realist review

Author	Year	Country	Title	Study Design	Population Group	Setting	Objectives
Scott and Carney	2004	UK	Emergency Care Practitioners	Opinion piece	Emergency Care Practitioners working	Primary, secondary and out-of-hospital care within the UK	Discusses different considerations prior to implementation of ECP roles.
Hauswald et al	2005	USA	Expanded emergency medical services: The failure of an experimental community health program	Case Report	Extended-Emergency Medical Technicians	Rural health provision by Emergency Medical Service	Description of the implementation of E-EMTs in one rural town which identified poor clinical care and professional conduct amongst E-EMTs.
Misner	2005	Canada	Community Paramedicine: Part of an Integrated Healthcare System	Case Report	Community Paramedics work with a Nurse Practitioner in a rural area	Emergency Medical Service initiative: Community Paramedic Programme	To design an innovative delivery of primary healthcare to two isolated Nova Scotia island communities.
Misner	2005	USA	Community Paramedicine: Part of an Integrated Healthcare System	News article	Community Paramedic	Rural community paramedic roles provided by Emergency Medical Service	Description of service design and delivery of primary healthcare using community paramedics in two isolated island communities.
Mason et al	2006	UK	The evolution of the emergency care practitioner role in England: experiences and impact	Mixed methods: Questionnaire; semi-structured interviews; economic analysis	Emergency Care Practitioners (77.4% had paramedic as their root profession)	Range of clinical settings, including minor injury unit; walk-in-centre; primary care; emergency department & ambulance services	To describe the development of ECP schemes across 17 sites and identify criteria contributing to a successful operational framework. Routinely collected data was analysed to provide a preliminary estimate of costs.
Woollard	2006	UK	The Role of the Paramedic	Commentary Paper	Emergency Care Practitioners,	UK-informed, with population in	To describe the roles and opportunities open to paramedics.

			Practitioner in the UK		Community Paramedic, Paramedic Practitioner, advanced paramedic practitioners	ambulance service employment	
Halter et al	2007	UK	A patient survey of out-of-hours care provided by Emergency Care Practitioners	Telephone administered questionnaire	Emergency Care Practitioners (ECPs)	Out-of-hours care	The aim of the study was to evaluate the care provided to patients receiving out-of-hours home visits from ECPs in London from the patients' perspective and to assess their wellbeing following the visit.
Mason	2007	UK	Effectiveness of emergency care practitioners working within existing emergency service models of care	Mixed methods: Controlled comparative observational study; telephone interviews; economic analysis	Emergency Care Practitioners	UK 999 urban ambulance service; Rural GP-led out-of-hours service; Rural Nurse-led walk-in centre	Objectives were to evaluate the appropriateness, satisfaction and cost of ECPs compared with the usual service available in the same healthcare setting; to increase understanding of the effect ECPs were having on health service delivery; and to evaluate any cost savings achieved with ECPs work.
Stirling et al	2007	Australia	Engaging rural communities in health care through a paramedic expanded scope of practice	Semi-structured interviews with stakeholders; Review of organisational documents	Expanded Scope Paramedics	Emergency Medical Services	To explores how community engagement by paramedics in an expanded scope role contributes to both primary health care and to an overall improved emergency response capacity in rural communities.
Gray and Walker	2008	UK	Is referral to emergency care practitioners by general practitioners in-hours effective?	Service evaluation	Emergency Care Practitioners (ECPs_	ECPs in ambulance services undertaking home visits	To evaluate the cost effectiveness to primary care trusts (PCT) in commissioning general practitioner (GP) referrals in-hours to emergency care practitioners (ECP).

Scottish Ambulance Service	2008	UK	Potential impact on preventing avoidable A&E attendances	Briefing Paper	Community Paramedics	Employed by Scottish Ambulance Service to work in General Practice	Outline some of the new ways of working by SAS staff, which impact upon avoidable emergency department attendances.
Blacker et al	2009	Australia	Redesigning paramedic models of care to meet rural and remote community needs	Conference paper (including survey results)	Extended Care Paramedic; Paramedic Community Support Coordinator; Isolated Practice Area Paramedic; Community Paramedic	Emergency Medical Services in Australia and New Zealand	To inform Council of Ambulance Authorities (CAA) member ambulance services in monitoring the development of expanding paramedic roles and to assist services in the development of their own models.
Dixon et al	2009	UK	Is it cost effective to introduce paramedic practitioners for older people to the ambulance service? Results of a cluster randomised control trial	Cluster randomised controlled trial	Paramedic Practitioners (PP) who responded to adults over the age of 60 who had fallen	Yorkshire Ambulance Service	To assess the cost effectiveness of the paramedic practitioner scheme compared with usual emergency care.
Mulholland et al	2009	Australia	Multidisciplinary Practice in Action: The Rural Paramedic – It's Not Only Lights and Sirens	Semi-structured interviews, direct observation and document review	Advanced Paramedics	Rural provision of health run by Emergency Medical Services on the East Coast of Tasmania	This paper examines the Tasmanian portion of a four-state study commissioned by the Australian Council of Ambulance Authorities to examine the expanded scope of practice for Australian rural paramedics.
Coleman et al	2010	UK	War and peace? strategies by emergency care practitioners to integrate into	Interviews with Emergency Care Practitioners (part of the National Evaluation of Emergency Care	Emergency Care practitioners	Ambulance services; out-of-hours services; urgent care services; care homes; minor	The aim of the National Evaluation of Emergency Care Practitioners (NEECaP) Trial was to evaluate the impact of ECPs on patient pathways and care in different emergency care settings. This

			health care teams in the UK	Practitioners (NEECaP) Trial)		injury units that employed ECPs in the UK.	paper focussed on the interviews undertaken with ECPs as a work package within the larger trial.
Mason et al	2010	UK	A pragmatic quasi-experimental multi-site community intervention trial evaluating the impact of Emergency Care Practitioners in different UK health settings on patient pathways (NEECaP Trial)	Pragmatic quasi-experimental multi-site community intervention trial	Emergency Care Practitioners	Ambulance services; out-of-hours services; Urgent care services; care home; minor injury units that employed ECPs in the UK	The aim of this study was to evaluate the impact of ECPs on patient pathways and care in different emergency care settings.
Barr, P	2011	USA	Doctor 911 Rural areas seek expanded roles for paramedics.	Opinion Piece	Rural Community Paramedics	Community Paramedics via Emergency Medical Services	To outline current debates regarding the implementation of community paramedic roles within emergency medical services within the USA.
O'Hara et al	2011	UK	Quality and safety of care provided by emergency care practitioners	Retrospective patient case note review	Emergency Care Practitioners	Range of clinical settings, including minor injury unit; walk-in-centre; primary care out-of-hours services; primary care home visiting services; emergency department & ambulance services	The objectives were to compare the quality and safety of care provided by ECPs with non-ECP care across different clinical settings.
O'Keefe et al	2011	UK	A community intervention trial to evaluate emergency	Pragmatic quasi-experimental multi-site trial	Emergency Care Practitioners (ECPs)	Urgent care, out-of-hours, minor injury units	To evaluate the impact of ECPs on the patient care pathway for children presenting with minor

			care practitioners in the management of children				conditions in unscheduled care settings.
Ruston and Tavabie	2011	UK	An evaluation of a training placement in general practice for paramedic practitioner students: improving patient-centred care through greater interprofessional understanding and supporting the development of autonomous practitioners	Semi-structured interview and survey	Paramedic Practitioner students	General Practice	To report the extent to which the placement of paramedic practitioner students in accredited general practice (GP) training practices supported their development as autonomous, patient-centred practitioners and fostered interprofessional learning.
Wiley	2011	USA	Community Health Care Paramedic	News article	Community Paramedics	Emergency Medical Services	Description of the expanded role of Emergency Medical Services to provided community paramedic programmes in rural communities.
Ball	2012	UK	Setting the scene for the paramedic in primary care: a review of the literature	Literature review	Paramedics, Paramedic Practitioners: Community Paramedics;	Telephone triage services; minor injury unit; walk-in-centre; Intermediate care services	To explore the published evidence regarding paramedic practice in an attempt to identify the skills, training, and professional capacity which paramedics working in primary care will require.
Daly	2012	UK	The Paramedic in the Community: My Story	Case Study (including results of patient satisfaction survey)	Paramedic	General Practice	Overview of the role of a paramedic working in general practice.
North Central EMS Institute	2012	USA	Community Paramedic Curriculum 3.0	Curriculum	Community Paramedic	All providers of Community Paramedics education	To train community paramedics as an international health care provider.

O'Meara et al	2012	Australia	Extending the paramedic role in rural Australia: a story of flexibility and innovation	Multiple case study methodology over one year, including semi-structured interviews, observation and review of documents which describe the paramedic role	Rural Community Paramedic models	Rural Expanded Scope of Practice (RESP) model run by Emergency Medical Services	To identify trends in the practice of rural paramedics and describe key characteristics, roles and expected outcomes for a Rural Expanded Scope of Practice (RESP) model.
Bigham et al	2013	Canada	Expanding Paramedic Scope of Practice in the Community: A Systematic Review of the Literature	Systematic Review	Community Paramedics; Paramedic Practitioner; Emergency care Practitioner	Inclusion of published literature in Australia, Canada, UK and USA	To undertake a systematic review of the international literature to describe existing community paramedic programs.
Evans et al	2013	UK	Which extended paramedic skills are making an impact in emergency care and can be related to the UK paramedic system? A systematic review of the literature	Systematic literature review	Prehospital emergency care providers (including paramedics)	Ambulance services, general practices and emergency departments in literature from Australia, Canada, UK and USA	To identify evidence of paramedics trained with extra skills and the impact of this on patient care and interrelating services such as General Practices or Emergency Departments.
Hill et al	2013	UK	A systematic review of the activity and impact of emergency care practitioners in the NHS	PROSPERO registered systematic review	Emergency Care Practitioners (ECPs). No distinction between Nursing and Paramedic professional route to ECP were outlined in the included papers	UK-only papers focussing on Emergency Care Practitioners in ambulance services, primary care and emergency departments	To summarise the national evidence-based literature on the impact of ECPs on healthcare delivery, effectiveness of practice and related health service resource use.

Kinney	2013	USA	Community Paramedic: Starting with Hospice	Case Report	Community Paramedics	Community Paramedics deployed to hospice patients via Emergency Medical Services	To outline how the programme reduces unnecessary emergency department visits during the evening hours.
Mettner	2013	USA	Keeping Emergencies at Bay	News Article	Community Paramedics	Community Paramedics undertaking home visits via Emergency Medical Services	Outline of the community paramedicine role introduced to Minnesota.
Nolan, M	2013	Canada	A Survey of Community Paramedic Programs in Ontario	Survey	Chiefs of Emergency Medical Service	Emergency Medical Service	To gather the data required for an overview of the level of Community Paramedic Program activity in Ontario.
Tohira et al	2013	Australia	The impact of new prehospital practitioners on ambulance transportation to the emergency department: a systematic review and meta-analysis	Systematic review: PROSPERO registered.	Emergency care practitioners (EmCPs); Paramedic practitioners; Extended care paramedics (ECPs)	Emergency Medical Services	To conduct a systematic review and metanalysis to examine the impact of new prehospital practitioners (NPPs), EmCPs, paramedic practitioners and ECPs, on ambulance transportation to the emergency department.
Drennan et al	2014	Canada	Expanding Paramedicine in the Community (EPIC): study protocol for a randomized controlled trial	Protocol: a pragmatic, randomized controlled trial comparing a community paramedic intervention to standard of care for patients with DM, HF and COPD.	Community Paramedic	Emergency Medical Service initiative: Community Paramedicine at Home programme (home visiting)	To understand whether expanding the paramedic scope of practice reduce acute care hospitalisation.

Goldberg	2014	USA	Mobile Integrated Healthcare: Using existing out of hospital resources to bridge gaps in healthcare services	Master's Thesis: Topical Analysis	Paramedic	Mobile Integrated Health programmes (run by Emergency Medical Services) in Chicago, Indiana, Pittsburgh, San Francisco, Alaska and New Mexico	To examine the ways in which current Emergency Medical Services may use mobile integrated health programmes to bridge the gap between at-risk patient populations and health care services.
Hambleton, Richmondshire and Whitby Clinical Commissioning Group	2014	UK	Community Paramedic Practitioners	Business Planning Template	Paramedic Practitioner	Employed by Yorkshire Ambulance Service to work in General Practice	Business plan for Paramedic Practitioners to undertake home visits for primary care services as well as respond to category one calls in local area.
Health Education Kent, Surrey and Sussex	2014	UK	Clone of Paramedic Practitioner Training	News article	Paramedic Practitioner students	General Practice	Outline of the training for paramedic practitioner students.
Jensen et al	2014	Canada	Insights into the Implementation and Operation of a Novel Paramedic Long-term Care Program	Focus groups and semi structured interviews	Extended care Paramedic	Emergency Medical Service initiative: Extended Care Paramedic Programme	To identify insights gained and lessons learned during implementation and operation of this novel program.
North Dakota Center For Nursing	2014	USA	Policy Brief: Community Paramedic Pilot Study Recommendations	Policy	Community Paramedics	Community Paramedics via Emergency Medical Services	Policy recommendations to ensure that implementation of the Community Paramedicine Program will result in every patient receiving safe, quality care through the coordinated effort of all health care providers
O'Meara et al	2014	Canada	Community paramedicine: higher education as an enabling factor	Observational: Ethnographic case study using focus group and interviews (part of previous	Community Paramedics	Emergency Medical Service initiative: Community	To describe a Canadian community paramedic model and to identify enablers related to successful implementation.

				study - O'Meara et al 2016)		Paramedic Programme	
Agarwal et al	2015	Canada	Development of a community health and wellness pilot in a subsidised seniors' apartment building in Hamilton, Ontario: Community Health Awareness Program delivered by Emergency Medical Services (CHAP-EMS)	Feasibility study	'Accommodated' paramedics who are unable to fulfil traditional paramedic duties. Patient population were elderly in subsidised housing with high frequency use of Emergency Medical Services	Emergency Medical Service initiative (The Community Health Assessment Program)	To measure the feasibility and challenges of implementing a Community Health Assessment Program through Emergency Medical Service (CHAP-EMS).
Clay and Stern	2015	UK	Making Time in General Practice	Case Study	Paramedic or Emergency Care Practitioner	General Practice: Home Visiting	Report for workforce recommendations to optimise general practice workforce.
Cope	2015	UK	How employing a paramedic solved our recruitment problem	Case Study	Paramedic	General Practice	Overview of how employing a paramedic assisted in filling a gap in the workforce.
Glendenning and Jones	2015	USA	New Hanover Community Paramedicine Success Story	News Article	Community Paramedics	Mobile Integrated Health Service (within Emergency Medical Services)	Outline of the beneficial role of the community paramedic within one healthcare region in
Heinelt et al	2015	Canada	Prehospital Identification of Underlying Coronary Artery Disease by Community Paramedics	Case Report (Part of Expanding Paramedicine in the Community (EPIC) study)	Community Paramedic	Emergency Medical Service initiative: Community Paramedicine at Home programme (home visiting)	To investigate the use of community paramedics in chronic disease management.
Kusel and Savino	2015	USA	Boots on the Ground: Alameda County, California Community Paramedics Curb	News article	Community Paramedics	Emergency Medical Services	Description of a mobile integrated healthcare and community paramedicine (MIH-CP) implemented in one county within California.

			Hospital Readmissions and Non-emergent 9-1-1 Use				
NHS England	2015	UK	Improving Access with an Urgent Care Team at Beacon Medical Group, South	Case Study	Advanced Paramedic	Urgent Care Team within Medical Group	Overview of how employing a paramedic assisted in filling a gap in the workforce.
O'Meara et al	2015	Canada	Integrating a community paramedicine program with local health, aged care and social services: An observational ethnographic study	Observational: Ethnographic case study using focus groups, direct observation and informal discussions (part of previous study - O'Meara et al 2016)	Community Paramedics; Patients; other healthcare professions	Emergency Medical Service initiative: Community Paramedic Programme	To identify and describe the nature of the relationship between public engagement and the integration of community paramedicine with local health, aged care and social services
Turner et al	2015	UK	What evidence is there on the effectiveness of different models of delivering urgent care? A rapid review	Rapid evidence review	Paramedics employed in extended care roles	Ambulance services; community roles; emergency departments.	To assess the nature and quality of the existing evidence base on delivery of emergency and urgent care services and identify gaps that require further primary research or evidence synthesis.
Abrashkin et al	2016	USA	Providing Acute Care at Home: Community Paramedics Enhance an Advanced Illness Management Program— Preliminary Data	Observational Study	Community Paramedics	Advanced Illness Management (AIM) programme run by Emergency Medical Services	To explore the feasibility of in-home evaluation and treatment of acute illnesses by paramedics within an Advanced Illness Management (AIM) program.
Beacon Medical Group	2016	UK	Meet our Advanced	Newsletter	Advanced Paramedic Practitioner	General Practice	Introduction of the new role of Advanced Paramedic Practitioner to medical group.

			Paramedic Practitioner				
Brydes et al	2016	Canada	The CHAP-EMS health promotion program: a qualitative study on participants' views of the role of paramedics	Participant observation and semi-structured interviews	Advanced Care Paramedics; Community Paramedics; Patients	Emergency Medical Service initiative (The Community Health Assessment Program)	To examine participants' perceptions of paramedics providing a community paramedicine program, named the Community Health Assessment Program through Emergency Medical Services (CHAP-EMS).
Butcher, I	2016	USA	Tapping the Potential of Community Paramedicine	News article	Community Paramedics	Community Paramedics via Emergency Medical Services	Interview-style news article with the Director of California Emergency Medical Services Authority.
Colver et al	2016	UK	Paramedic Practitioner: A Survey of Scope of Practice and Development Requirements	Online cross-sectional questionnaire	Paramedic Practitioner	Scottish Ambulance Service	To describe paramedic practitioners' views on their scope of practice and identify areas for improvement.
Dalgarno, D	2016	Canada	Community Paramedic in Home Blood Transfusions	Conference presentation	Community paramedics give blood transfusions to frail patients with mobility issues	Emergency Medical Service initiative: Community Paramedic Programme	To show that transfusions can be done safely in the home by community paramedics, to improve access to this care, and to improve the patient experience.
Haebler and Montera	2016	USA	Coming to a location near you: Community paramedics	Opinion Piece from American Nurse Association	Community Paramedics	Community Paramedics via Emergency Medical Services	Commentary and opinion on the development of the community paramedic role within the USA.
Imison, Castle-Clarke and Watson	2016	UK	Reshaping the workforce to deliver the care patients need	Report	Paramedic Practitioner; primary care practitioner'	General Practice	To give practice guidance to reshape the general practice workforce.
Kizer	2016	USA	Community Paramedicine Builds a Much Needed	News Article	Community Paramedics	Community Paramedics via Emergency Medical Services	Introduction of the role of the community paramedic.

			Bridge to Quality Care				
Long et al	2016	Australia	What's in a name? The confusion in nomenclature of low-acuity specialist roles in paramedicine	Commentary	Any low-acuity specialist roles in paramedicine	Australia, Canada, UK and USA	Outline that consistent nomenclature for low-acuity paramedic roles is fundamental for professionalisation of the paramedic profession.
Martin et al	2016	Canada	Consumer perspectives of a community paramedicine program in rural Ontario	Observational: Ethnographic approach with informal discussions, semi-structured interviews and direct observation	Community Paramedics	Emergency Medical Service initiative: Community Paramedic Programme in Ontario	To evaluate a community paramedicine program in rural Ontario, Canada, through the perceptions and experiences of consumers.
Montera	2016	USA	The Community Paramedic's Role in Treating Mental and Behavioural Health Patient	Opinion Piece	Community Paramedics	Emergency Medical Service	Outlines the use of community paramedics to work with patients with mental illness.
NHS England	2016	UK	Improving access: Paramedic practitioner service in the South Kent Coast	Case Study: Ambulance service provides paramedics to General Practice	Paramedic Practitioner	Employed by South East Coast Ambulance Service to undertake home visits on behalf of General Practice	Overview of how employing a paramedic assisted in the provision of a 7-day primary care service.
NHS England	2016	UK	Reducing pressure in general practice: Practice based paramedics, S Kent Coast	Case Study	Paramedic Practitioners	Employed by South East Coast Ambulance Service to undertake home visits on behalf of General Practice	Overview of the introduction of the paramedic practitioner role to provide a 7-day home visiting service.
NHS Salford Clinical Commissioning Group	2016	UK	Primary Care (General Practice) Workforce Development Strategy	Workforce Plan	Paramedics	Home visiting services	Sets out how Salford CCG will support and enable primary care providers to develop a multi-disciplinary workforce, in the right numbers with the appropriate

							knowledge, skills and values, to provide high quality primary care for the residents of Salford.
Northumberland LMC	2016	UK	A Primary Care Strategy for Northumberland 2016-2020	Strategy	Community Paramedic; Advanced Paramedic	General Practice; Home visiting services	A vision for a vibrant and sustainable future for primary care.
O'Meara et al	2016	Canada	Community paramedicine model of care: an observational, ethnographic case study	Ethnography: direct observation, informal discussions, interviews and focus groups	Community Paramedics; Patients; other Healthcare Professions	Emergency Medical Service initiative: Community Paramedic Programme	To identify and analyse how community paramedics create and maintain new role boundaries and identities in terms of flexibility and permeability and through this develop and frame a coherent community paramedicine model of care that distinguish the model from other innovations in paramedic service delivery.
Patterson et al	2016	USA	What Is the Potential of Community Paramedicine to Fill Rural Health Care Gaps?	Structured interviews with programme leaders	Community Paramedics	Community Paramedics via Emergency Medical Services	To examine the goals, activities, and outcomes of 31 rural-serving community paramedicine programs through structured interviews of program leaders and document review.
Pennel, C et al	2016	USA	Emergency Medical Service-based Care Coordination for Three Rural Communities	Comparative case study approach: Interview and focus groups	Rural Community Paramedics working in care coordination roles	Emergency Medical Services	To report on the innovative care coordination programmes using local Emergency Medical Services to address the health and social care needs of rural populations in one American State.
Wilcox	2016	USA	Community Paramedicine in a Rural Setting	News article	Community Paramedics	Rural areas with predominant health inequalities	Description of provision of community paramedics via Emergency Medical Services in rural areas with predominant health inequalities.
Agarwal et al	2017	Canada	Effectiveness of a community paramedic led health assessment	Prospective pre-post approach intervention study	'Accommodated' paramedics who are unable to fulfil traditional	Emergency Medical Service initiative (The Community Health	To examine the effectiveness of the Community Health Assessment Program through Emergency Medical Service

			and education initiative in a seniors' residence building: the Community Health Assessment Program through Emergency Medical Services (CHAP-EMS)		paramedic duties. Patient population were elderly in subsidised housing with high frequency use of Emergency Medical Services	Assessment Program)	(CHAP-EMS) in reducing blood pressure, diabetes risk, and EMS calls.
Bowles et al	2017	Canada	Four Dimensions of Paramedic Practice in Canada	Semi structured interviews	17 current or former paramedics in clinical, provincial or national leadership positions	Emergency Medical Service initiative: Community Paramedic Programme	To explore current conceptions of the terms, roles, boundaries and future directions of Canadian paramedic practice, and sought to identify key issues and problems facing stakeholders in Canadian paramedic education.
Brown	2017	UK	A day in the life of a paramedic advanced clinical practitioner in primary care	Case study	Advanced Clinical Practitioner (Paramedic)	Primary Care	To illustrate the range and complexity of the role of paramedics based in primary care, and how this role is developing beyond the traditional scope of paramedic practice.
Eaton	2017	UK	Taking healthcare to the community: the evolving role of paramedics	Opinion piece	Specialist Paramedic	First Aid Unit (staffed by South Central Ambulance Service)	Description of static first aid unit in North Oxfordshire and provision of services to the community.
Flomenbaum	2017	USA	Back to the Future, Part 2: Community Paramedicine	Opinion Piece	Community Paramedics	Community Paramedics via Emergency Medical Services	Commentary and opinion on the development of the community paramedic role within the USA.
Guo et al	2017	Canada	Community paramedicine: Program characteristics and evaluation.	Report including a systematic literature review	Community Paramedic Programmes.	Evaluates published literature in Australia, Canada, UK and USA	To provide a summary of information regarding currently existing community paramedicine programs.

Long	2017	Australia	Out of the silo- A qualitative study of paramedic transition to a specialist role in community paramedicine	Doctoral Thesis: Qualitative interviews	Community Paramedic	Emergency Medical Services employing community paramedics in Australia and Canada	To understand how qualified paramedics transition to specialist roles in community paramedicine.
McCarthy et al	2017	USA	Impact of Community Paramedic Program on Health Service Utilization	Retrospective review	Community Paramedics	Home visiting service provided by an urban Emergency Medical Service	To assess the impact of the community paramedic program on the number of Emergency Department visits and hospital admissions among patients enrolled in a community paramedic program.
Mogridge	2017	UK	Paramedic Practitioners in Primary Care	Conference Presentation	Paramedic Practitioners	Home visiting services	Overview of pilot scheme where paramedics employed by ambulance service undertake home visiting services.
NHS Ashford Clinical Commissioning Group; NHS Canterbury and Coastal Clinical Commissioning Group	2017	UK	CCG Operating Plan 2017-2019	Workforce Plan	Paramedic Practitioners	General Practice	Outline of the planned implementation of local care models.
NHS England North	2017	UK	Expanding general practice workforce will transform patient care	News article	Community Specialist Practitioner (Paramedic)	General Practice	Overview of operationalisation of the General Practice Forward View in Cheshire and Merseyside.
NHS Thurrock CCG	2017	UK	First Primary Care Paramedic Arrives in Thurrock	News article	Emergency Care Practitioner Paramedic / Primary Care Paramedic	General Practice	Introduction of the role of paramedic to GP surgeries in clinical commissioning group.
RSM	2017	UK	Better Local Care Hampshire Multispecialty	Interviews with clinical staff; survey	Specialist Paramedic	Delegated home visiting services undertaken by	To evaluate Paramedic Home Visiting Services (PHVS).

			Community Provider Vanguard Deep Dive Evaluation Report: Paramedic Home Visiting Service	of GPs; patient survey		South Central Ambulance Service	
Ruest et al	2017	Canada	Community Health Evaluations Completed using Paramedic Service (CHECUPS): Design and Implementation of a New Community-Based Health Program	Evaluation	Community Paramedics	Emergency Medical Service initiative: Community Paramedic Programme in Ontario	To review the “Community Health Evaluations Completed Using Paramedic Service” (CHECUPS) Program, a response to the Government of Ontario’s desire to evaluate how CP can contribute to the health care system in the Province of Ontario.
Sawyer and Coburn	2017	USA	Community Paramedicine: 911 Alternative Destinations Are a Patient Safety Issue	Opinion Piece	Community Paramedics	Community Paramedics via Emergency Medical Services	To outline concerns regarding the implementation of the Community Paramedic model of care.
Singh et al	2017	USA	Qualitative Evaluation of the Coach Training within a Community Paramedicine Care Transitions Intervention	Semi-structured interviews with community paramedics	Community paramedics	Community Paramedics via Emergency Medical Services	To define community paramedics' perceptions regarding their training needs to serve as care transition intervention coaches supporting the emergency department-to-home transition.
Spence	2017	UK	Good medicine — the GP paramedic	Opinion piece	GP Paramedic	Primary Care	Opinion on the positive contribution paramedics can make to general practice
Ulintz, A	2017	USA	Community Paramedicine in a Primary Care Group Practice	Case Study in conference presentation	Community Paramedics	Home visiting service	Description of Community Paramedics replacing physicians in a home visiting service.

Wessex Academic Health Science Network	2017	UK	The Wessex Primary Care Project	Workforce Plan	Paramedic	General Practice	Describe a range of initiatives that general practice can use to meet population and system demands.
Wood et al	2017	Canada	The Economic Value of Community Paramedicine Programs	Randomized controlled trial CT and economic analysis	Community Paramedics	Emergency Medical Service initiative: Community Paramedic Programme	To determine whether Community Paramedicine services could reduce hospital service utilization for high-frequency chronic condition clients and establish whether Community Paramedicine could influence self-perceived quality of life.
Abrashkin et al	2018	USA	Hospice at Home: Paramedics as Part of the Team	Case Study in conference presentation	Community Paramedics	Hospice Centre Network (alternative to Emergency Medical Services)	Description of the introduction of community paramedics to a hospice programme providing emergency visits as an alternative to 911.
Agarwal et al	2018	Canada	Evaluation of a community paramedicine health promotion and lifestyle risk assessment program for older adults who live in social housing: a cluster randomized trial	Open-label pragmatic cluster-randomized controlled trial with parallel intervention and control groups	Community Paramedics: 'Accommodated' paramedics who are unable to fulfil traditional paramedic duties. Patient population were elderly in subsidised housing with high frequency use of Emergency Medical Services	Emergency Medical Service initiative: Community Paramedic Programme	To determine if a community paramedicine program - in which paramedics provide health care services outside of the traditional emergency response - reduced the number of ambulance calls to subsidized housing for older adults.
Barird et al	2018	UK	Innovative models of general practice	Report and Case Study	Paramedic	General Practice	To recommend a place-based approach to health and care, rooted in communities.
Bennett et al	2018	USA	Community Paramedicine Applied in a Rural Community	Pre/post-test with a comparison group study design	Community Paramedics	Emergency Medical Services	To determine if the community paramedic program reduced emergency department visits in one American county while improving patient outcomes.

Burns	2018	UK	GP perspectives of paramedic referrals to urgent and primary care	Interview and thematic analysis	Paramedic	Ambulance services	To gain more understanding about how paramedics relate to urgent and primary care
Central LHIN Community Paramedicine Working Group	2018	Canada	Recommendations for Central LHIN Community Paramedicine	Report	Community Paramedic (CP)	Emergency Medical Service	To advance a consistent CP program across the Central LHIN to support improving the health of vulnerable and complex patients.
Chellappa et al	2018	USA	Supporting the on-call primary care physician with community paramedicine	Case Study	Community Paramedics (oversight from primary care physicians)	Home visiting service provided by primary care service	To describe the development of a community paramedicine programme that supports on-call primary care providers managing a high-risk patient population with the goal of reducing avoidable emergency department referrals.
Clarke	2018	UK	A Guide for General Practice Employing a Paramedic	Guideline	Paramedic; Specialist Paramedic; Advanced Paramedic	General Practice; Home visiting services	Outline of role descriptors, salary and clinical capabilities for paramedics working in general practice.
Commissioner of Community and Health Services	2018	Canada	Discontinuation of the Expanding Paramedicine in the Community Program	Report	Community Paramedic	Emergency Medical Service initiative: Community Paramedicine at Home programme (home visiting)	To provide information about discontinuing the Expanding Paramedicine in the Community (EPIC) program due to a withdrawal of funding from the Central Local Health Integration Network.
Dainty et al	2018	Canada	Home Visit-Based Community Paramedicine and Its Potential Role in Improving Patient-Centered Primary Care: A Grounded Theory Study and Framework	Interviews and ethnography	Community Paramedics; Patients with chronic conditions.	Emergency Medical Service initiative: Community Paramedicine at Home programme (home visiting)	To study the patient perspective and valuation of this type of program to understand its potential value for primary care innovation in the future.

Graham	2018	Canada	Community Paramedic: A Practitioner's Perspective	Opinion piece	Advanced Care Paramedics; Community Paramedics	Emergency Medical Service initiative: Community Paramedic Programme	Opinion of the role, education and call types that Advanced Care Paramedics/Community Paramedics attend.
Health Education England	2018	UK	Community multi-disciplinary team rotation	News article	Specialist and Advanced Paramedics	Rotational between ambulance service and general practice	Outline of the inclusion of specialist and advanced paramedics within a multidisciplinary team.
Health Education England	2018	UK	Primary care rotation	Case study	Paramedic	General Practice	Outline of role of paramedic in GP surgeries, including patient story.
Huang et al	2018	USA	Development of sustainable community paramedicine programmes: a case study in Pennsylvania	Case Study with four structured interviews	Community Paramedics	Community Paramedics via Emergency Medical Services	To explore the strategies used by active community paramedic programmes and investigate their operational status, community demographics, financial models and challenges for programme development.
Iezzoni et al	2018	USA	Early Experiences with the Acute Community Care Program in Eastern Massachusetts	Observational Study	Paramedics	Acute Community Care Program (ACCP) provided within an Emergency Medical Service	To examine visits and post-visit service use, deaths, on-scene activities, and self-reported patient satisfaction of the Acute Community Care Program (ACCP) to provide insight into patient outcomes during the programmes' first 24 months.
Leyenaar et al	2018	Canada	A scoping study and qualitative assessment of care planning and case management in community paramedicine	Scoping Review	Community Paramedics	Emergency Medical Service initiative: Community Paramedic Programme	To contribute to paramedic practice by examining broad areas of care planning in CP, identifying gaps in the evidence, clarifying key concepts, and reporting on the types of evidence that address and inform practice.
Lincolnshire East Clinical	2018	UK	Specialist paramedics to	News article	Specialist Paramedics	Specialist Paramedics from East Midlands	Outline of scheme where paramedics undertake care home

Commissioning Group			support patients in care homes			Ambulance Service undertake care home visits on behalf of General Practice	visits on behalf of General practice.
Moule et al	2018	UK	Preparing non-medical clinicians to deliver GP out-of-hours services: lessons learned from an innovative approach	Pre and post intervention questionnaires	Paramedics	Out-of-hours service	To present the development and evaluation of one programme delivered in 2017 of paramedics seeking to work in OOHs services
Murray	2018	UK	How do advanced paramedics experience and manage uncertainty in primary care organisations?	Master's Thesis: Literature review	Advanced Paramedics (APs)	Primary Care	Seeks to identify how APs are engaging with uncertainty within their practice in primary care.
NHS England	2018	UK	Wokingham paramedic home visiting model	Case Study	Paramedic Practitioners	Home visits on behalf of General Practice	Overview of primary care lead integrated paramedic home visiting model.
NHS Leeds Clinical Commissioning Group	2018	UK	Innovative GP service shortlisted for national award	News article	Specialist Paramedic	Rotational model between Yorkshire Ambulance Service, home visiting services and General Practice	Outline of workforce project that was shortlisted for a Health Service Journal Value Aware in the workforce efficiency category.
NHS Scotland	2018	UK	National Health and Social Care Workforce Plan: Part 3 – Improving workforce planning	Workforce Plan	Paramedics and Advanced Paramedics	Primary Care	Sets out recommendations and the next steps that will improve primary care workforce planning in Scotland.

			for primary care in Scotland				
NHS Wales	2018	UK	A Planned Primary Care Workforce for Wales	Report and Case Study	Advanced Paramedic Practitioner	Primary Care; Paramedics in Ambulance Service	To describe the direction required for employed and contracted staff by putting in place actions to secure, manage and support a sustainable primary care workforce shaped by local population needs and by prudent healthcare principles.
North West Ambulance Service NHS Trust	2018	UK	Community Specialist Paramedic, Ivan Scrase	Case Study	Community Specialist Paramedic	Community Care	Week in the life of narrative of paramedic working in community care.
O'Meara et al	2018	Australia; USA; Canada	Frontier and remote paramedicine practitioner models	Narrative review	Extended Care Paramedic; Community Paramedic	Inclusion of published literature in Australia, Canada, UK and USA	To review paramedic models of service delivery, with an emphasis on models that have the potential to improve the health and wellbeing of frontier and remote populations.
Overberger et al	2018	USA	Community Paramedicine Interventions to Reduce Emergency Department Visits and Rehospitalizations	Retrospective analysis	Community Paramedics	Home visiting service provided by an urban Emergency Medical Services	To examine the effectiveness of a Community Paramedicine programme for patients discharged from an inpatient setting in reducing the rate of unplanned return visits and increasing the rate of planned follow-up visits.
Pearce, Cody and White	2018	USA	EMS-Based Urgent Care in the Ramah (N.M.) Navajo Reservation	Opinion Piece (Case Study)	Community Paramedics	Static programme via Emergency Medical Services within the Navajo Nation (American Indian Reservation)	Use of community paramedics to provide care to American Indians.
Shah et al	2018	USA	Improving the ED-to-Home Transition: The	Single-blind randomized controlled trial	Community paramedics	Community Paramedics via	To describe a novel model of care that uses community-based paramedics to deliver a modified

			Community Paramedic–Delivered Care Transitions Intervention—Preliminary Findings			Emergency Medical Services	version of the evidence-based hospital-to-home Care Transitions Intervention to a new context: the emergency department-to-home transition.
Sibley et al	2018	UK	Independent evaluation of the North East Hampshire and Farnham Vanguard Fleet Rapid Home Visiting Service	Evaluation - interviews and survey	Paramedic Practitioners	Home visiting services	Independent evaluation of the impact of running multiple interventions, delivered at three levels (individual, practice and system), on seven GP Retention Intensive Support Sites.
Turner and Williams	2018	UK	An Evaluation of early stage development of rotating paramedic model pilot sites Final Report	Evaluation: face to face and telephone interviews; qualitative data analysis.	Specialist Paramedics (SPs); Advanced Paramedics (APs)	SPs and APs across four UK sites (South Central; South Hardwick; East Lincolnshire; Newcastle) rotate between primary care (Home visiting services and general practice) and ambulance service (999 response and work within ambulance control)	This report, commissioned by Health Education England, aims to evaluate the development of a rotating paramedic model of care delivery designed to address both the career aspirations of specialist paramedics and the combined workforce issues in ambulance services and primary care so that all, not just some, of the healthcare sectors can benefit.
Wickware	2018	UK	Paramedics to resume GP home visits under new rota system	Case Study	Paramedic Practitioners	Paramedic Practitioners employed by South East Coast Ambulance Service undertaking home visits on behalf of	Description of a rotational model where paramedic practitioners are employed by the ambulance service and work every 8 weeks undertaking home visits for local general practices.

						general practices in Sussex	
Agarwal et al	2019	Canada	Rationale and methods of an Evaluation of the Effectiveness of the Community Paramedicine at Home (CP@home) program for frequent users of emergency medical services in multiple Ontario regions: a study protocol for a randomized controlled trial	Protocol: An open-label, pragmatic, randomized controlled trial with parallel intervention and control groups will be conducted in four paramedic services in Ontario	Community Paramedic	Emergency Medical Service initiative: Community Paramedicine at Home programme (home visiting)	To evaluate the impact of a community paramedicine home-visit intervention with frequent users on reducing ambulance calls, hospital visits, and admissions.
Agarwal et al	2019	Canada	Reducing 9-1-1 Emergency Medical Service Calls by Implementing A Community Paramedicine Program For Vulnerable Older Adults In Public Housing In Canada: A Multi-Site Cluster Randomized Controlled Trial	Open label, pragmatic, cluster-randomized controlled trial	Community Paramedics	Emergency Medical Service initiative: Community Paramedic Programme	To evaluate the change in mean EMS calls at the building level, comparing intervention and control buildings, across multiple community sites.
Booker and Voss	2019	UK	Models of Paramedic Involvement in General Practice	Editorial	Paramedic	General Practice	Commentary describing the challenges, expectations and support needed as paramedics move into primary care roles.

Burgess, L	2019	UK	Primary Care in Scotland	Report	Paramedic	Primary Care	Outlines how primary care operates in Scotland.
Cameron and Carter	2019	Canada	Community paramedicine: A patch, or a real system improvement?	Commentary	Community paramedics	Canada-informed, with population in Emergency Medical Service employment	To describe the roles and opportunities open to paramedics.
Chan et al	2019	Canada	Community paramedicine: A systematic review of program descriptions and training	Systematic Review	Community Paramedic	Community Paramedic Programmes across Canada	To identify the types of community paramedicine programs and the training for each program.
Fisher et al	2019	UK	Briefing: Understanding primary care networks	Report	First contact community paramedics	Primary Care	To examine the rationale for networks and explore the relevant evidence for the future of primary care networks.
Gregg et al	2019	USA	Systematic Review of Community Paramedicine and EMS Mobile Integrated Health Care Interventions in the United States	Systematic Review	Mobile Integrated Health care programmes and Community Paramedicine programmes	Emergency Medical Services	To describe the outcomes from community paramedicine and mobile integrated health care interventions on controlling health care costs while improving population health and both provider and patient satisfaction.
Health Education England	2019	UK	Paramedic Specialist in Primary and Urgent Care Core Capabilities Framework	Framework	Specialist Paramedic	Primary and Urgent Care	Description of the core capabilities for paramedics to work in primary care.
Jones et al	2019	UK	ARRIVE: Ambulance paramedics Responding to urgent patient Requests	Abstract from oral conference presentation	Paramedics	General Practice: Home Visiting	To describe the evidence base, theoretical underpinning and current initiatives; and determine the feasibility of undertaking a definitive evaluation of PPC in order to produce generalisable

			In general practice for home Visits - Evaluation development				evidence to inform policy and practice.
Leyenaar et al	2019	Canada	Examining consensus for a standardised patient assessment in community paramedicine home visits: a RAND/UCLA-modified Delphi Study	Delphi study with 13 purposively selected national experts	Community Paramedics	Emergency Medical Service home visit initiative: Community Paramedic Programme	To investigate the level of consensus that could be found by a panel of experts regarding appropriate health, social and environmental domains that should be assessed in community paramedicine home visit programme.
Leyenaar et al	2019	Canada	What do community paramedics assess? An environmental scan and content analysis of patient assessment in community paramedicine	Environmental scan and content analysis	Community Paramedics	Emergency Medical Service home visit initiative: Community Paramedic Programme	To summarize the content of assessment instruments and describe the state of current practice in community paramedicine home visit programs.
Malmsbury Medical Partnership Patients Participation Group	2019	UK	Minutes of the meeting held on Monday December 9th 2019 at 19.00hrs	Meeting minutes	Paramedic	General Practice: Home Visiting	Introduction of a paramedic working in General Practice, undertaking home visits.
Martin and O'Meara	2019	Canada/USA	Perspectives from the frontline of two North American community paramedicine	Ethnography	Community Paramedics	Two independent Emergency Medical Service provided community	To identify the motivations, job satisfaction and challenges of community paramedics pioneering two independent programs in rural North America from their

			programs: an observational, ethnographic study			paramedic programmes in North America: Ontario (Canada) and Colorado (USA)	perspectives and those of their managers.
Mid and South Essex Health and Care Partnership	2019	UK	Paramedics in General Practice (sometimes called Emergency Care Practitioners ECPs)	Newsletter	Primary Care Emergency Care Practitioners	General Practice	Factsheet introducing role of paramedics in general practice.
NHS Castle Point and Rochford Clinical Commissioning Group and NHS Southend Clinical Commissioning Group	2019	UK	Paramedics help ensure you get the right care this Winter	News article	Paramedic Home Visiting Clinician	General Practice: Home Visiting	Outline of the paramedic role to help general practices meet demands.
NHS England	2019	UK	GP practices free up 3,000 extra patient appointments through Primary Care Network	News article	Paramedic	General Practice	Outline of changes introduced as part of a primary care network.
NHS England	2019	UK	GPs create 100,000 extra patient appointments through Primary Care Network model	News article	Paramedic	General Practice	Outline of changes introduced as part of a primary care network.
Oxford Primary Care	2019	UK	Primary Care Workforce Strategy	Workforce Plan	Paramedics	General Practice; Home Visiting Services;	Workforce strategy to deliver primary care services within Oxfordshire.

Commissioning Committee						Rotational through ambulance service and primary care	
Pang et al	2019	USA	Limited data to support improved outcomes after community paramedicine intervention: A systematic review	Systematic Review	Community Paramedics	Community paramedic programmes according to the USA national definition (papers from Australia, Canada, UK and USA)	To describe the evidence supporting community paramedicine practice.
Primary Care One	2019	UK	Advanced Paramedic Practitioner (APP) Practice	News article	Rotational Advanced Paramedic Practitioners (APPs)	Welsh Ambulance Service NHS Trust (WAST) APPs rotate through General Practice	Overview of the APP role within WAST
Proctor	2019	UK	Home visits from paramedic practitioners in general practice: patient perceptions	Semi-structured interviews with thematic analysis	Paramedic Practitioners	Home visiting (within General Practice)	To explore older patients' perceptions of having PPs, who work in GP surgeries, attend to them on a home visit in place of the GP.
Rasku et al	2019	Finland	The core components of Community Paramedicine – integrated care in primary care setting: a scoping review	Scoping review	Community Paramedics	Community Paramedics via Emergency Medical Services; Primary Care Settings; other non-emergency services.	To identify and describe the core components of community paramedicine models of healthcare delivery and identify research gaps for the further study.
Abrams et al	2020	UK	Delegating home visits in general practice: a realist review on the impact on GP	Realist review	Community paramedic (alongside other healthcare professionals)	Home visiting services	To explore how the process of delegating home visits works, for whom, and in what contexts.

			workload and patient care				
Baird et al	2020	UK	How to build effective teams in general practice	Guide	Paramedic	General Practice: Home Visiting	To bring together insights from research, policy analysis and leadership practice.
Dixon	2020	UK	The developing role of the paramedic prescriber	Case study	Paramedic	General Practice	Description of how independent prescribing fits within role in general practice.
Healthcare Improvement Scotland	2020	UK	Hospital at Home: Guiding principles for service development	Report	Paramedic	General Practice in Scotland	Source of information and evidence of 'hospital at home' services
Jones	2020	UK	My first 3 months as a Rotational Advanced Paramedic Practitioner	Case Study	Advanced Paramedic Practitioner	General Practice; Rotational through Welsh Ambulance Service and primary care	To share experiences of the first three months of rotational role between the ambulance service and primary care.
London Ambulance Service NHS Trust	2020	UK	Our paramedics to help ease pressure on GP services this winter	News article	Paramedic Home Visiting Clinician	Rotational through London Ambulance Service and home visiting roles in general practice	To improve the care patients, receive and reduce pressures on GPs during winter.
Mid Essex Clinical Commissioning Group	2020	UK	Services available from your GP surgery	News article	Paramedic Practitioners	General Practice: Home Visiting	Introduction of a paramedic working in General Practice, undertaking home visits.
NHS England	2020	UK	South Coast Medical Group Primary Care Network: Supporting the demand on primary care	Case Study	Paramedic	General Practice: Home Visiting	Introduction of a paramedic working in General Practice, undertaking home visits.
NHS England	2020	UK	Suffolk Coast and Country Primary Care Collaboration	Case Study	Paramedic	General Practice: Home Visiting	Outline of how the introduction of two paramedics have reduced General Practitioner workload.

NHS England	2020	UK	The changes being made	Case Study	Paramedic	General Practice: (Rapid) Home Visiting	Implementation of a paramedic rapid home visiting service to free up GP time.
NHS Wiltshire	2020	UK	Case Study: Gareth Ward	Case Study	Specialist Paramedic	General Practice	Overview of the career journey of a paramedic working in general practice.
NHS Wiltshire	2020	UK	Case Study: Lili Ratcliffe	Case Study	Home Visiting Paramedic	General Practice: Home Visiting	Overview of the career journey and role of a home visiting paramedic employed by general practice.
Royal College of General Practitioners	2020	UK	Multidisciplinary Toolkit	Introductory Guide	Primary Care Paramedic	General Practice	To support practices exploring how to develop their clinical teams and create a way of working that is better able to meet their population needs for both urgent and routine primary care.
Royal College of General Practitioners	2020	UK	Fit for the Future: Workforce Roadmap	Report	Paramedic	General Practice	To set out a future vision for general practice to meet the challenges and opportunities of the next decade.
Schofield et al	2020	UK	Exploring how paramedics are deployed in general practice and the perceived benefits and drawbacks: a mixed method scoping study	Mixed methods: Literature review; survey; qualitative interviews.	Paramedics	General Practice	To understand how paramedics are deployed in general practice, and to investigate the theories and drivers that underpin this service development.
Thurman et al	2020	USA	A scoping review of community paramedicine: evidence and implications for interprofessional practice	Scoping Review	Community Paramedics	Community paramedic programmes in Australia, Canada, UK and USA	To understand the evidence base of community paramedic programmes in order to inform further evolution of this model of care.
Wagstaff and Mistry	2020	UK	The Integration of paramedics into primary care	Case Study	Paramedic Practitioner	One general practice surgery	Description of the work undertaken by the author as a paramedic

							practitioner working in general practice.
Watkins	2020	UK	Paramedic uses her skills to make a difference in the community	Case Study	Advanced Paramedic Practitioner	General Practice	Outline of the role of an Advanced Paramedic Practitioner working for a general practice surgery in Wales.
Health Education England	2021	UK	First Contact Practitioners and Advanced Practitioners in Primary Care: (Paramedic) A Roadmap to Practice	framework	First Contact Paramedic, Advanced Paramedic	Primary Care	To provide a roadmap of education for practice when moving into First Contact Practitioner (FCP) roles, and onward to Advanced Practice (AP) roles in Primary Care.
NHS England	2021	UK	Supporting General Practice in 2021/22	Briefing report	Paramedic; Paramedic Practitioner; Advanced Paramedic	General Practice	To support the workforce

Job Advertisements				
Employer	Year	Job Title	Role Overview	Salary
Blackmore Vale Partnership	2016	Primary Care Paramedic Practitioner	Home visiting services; First point of contact within the practice for patients presenting with undifferentiated, undiagnosed problem; Act as the emergency care lead for the practice; Develop and set up new patient services; Provide clinical leadership.	NA
Concordia Health	2017	Paramedic	Home visiting service (including palliative care); Post-discharge reviews; Minor illness service; Onsite support as non-medical prescriber; Attendance at clinical meetings.	<i>Competitive</i>
AT Medics Ltd	2018	Paramedic Practitioner /Primary Care Paramedic	The role will provide a specialist Paramedic resource working in collaboration with other members of the multidisciplinary team with a focus on home visits, telephone consultations and practice-based appointments; To assess, diagnose, treat, refer or signpost patients who contact the surgery with undifferentiated or undiagnosed condition relating to minor illness; Under supervision and guidance of a GP, work clinical sessions consisting of telephone appointments, face to face appointments and home visits; to provide assessment, diagnosis and treatment at first point of contact by attending to patients according to patients' needs either at practice sites or patient's homes/place of residence.	(£38,000 - £45,000 p.a) Negotiable with benefits commensurate with position
Valentine Health Partnership	2018	Paramedic Practitioner	Assessing, diagnosing, treating and discharging patients autonomously and in reviewing and assessing common long-term conditions. Training will be considered for someone who wants to make the transition from a traditional paramedic role into general practice.	£45,000
Brunel Health Group Primary Care Network	2019	Paramedic Practitioner	Peripatetic Paramedic Practitioners, to undertake the home visiting service	£40-45k pro rata
Care UK	2019	Urgent Care Practitioner (Paramedic)	The clinical dimensions of the post encompass the assessment, diagnosis and treatment of patients presenting with minor illness. All clinical activities will be within the scope of practice of the post holder.	£28/hour

Coast and Country Collaboration	2019	Senior Paramedic / Emergency Care Practitioner	To practice autonomously as a lone practitioner without direct supervision as a Senior Paramedic/Emergency Care Practitioner across the Coast and Country Collaboration area. The role will involve the assessment, diagnosis, treatment or referral of patients presenting with undifferentiated and undiagnosed conditions. The post holder will work autonomously within their level of competency.	AfC Band 6-7
DHU Urgent Care (LLR)	2019	Emergency Care Practitioner	The post holder will work autonomously, undertake clinical assessment, make referrals as required and give advice to patients across a wide spectrum of clinical conditions within the services provided by DHU Urgent Care (LLR).	£45,076
Downend Health Group	2019	Paramedic in General Practice	First point within the practice for patients presenting with undifferentiated, undiagnosed problems, making use of history taking, physical examination, problem-solving and clinical decision-making, to establish a diagnosis and management plan; Provide assessment, treatment and diagnosis at point of first contact, by attending to patient's in a variety of clinical or non-clinical settings according to patients' or practice needs; Undertake home visits, in accordance with practice protocols; Make professionally autonomous decisions; hold a virtual case load; To provide holistic patient care within the unscheduled care setting from assessment of presenting condition through to diagnosis and initial treatment including the dispensing of medication within agreed clinical guidelines (PGDs) and protocols.	NA
GTD Healthcare	2019	Advanced Practitioner Paramedic	Portfolio working across a walk-in-centre service, home visiting services, telephone triage, ED settings and GP primary and urgent care.	£40-48k pro rata (Potential earning of £44,000 - 76,800 WTE Inclusive of enhancements/ incentives and unsocial hour payments)
Lister House Surgery	2019	Paramedic Practitioner	Working under GP supervision, this newly created role is intended to support GPs by providing general medical care through assessment, diagnosis, treatment and referral or signposting to other services, subject to scope of practice and levels of qualification. It is anticipated the	£33,222-£43,041

			Primary Care Practitioner (paramedic) role will encompass participation in patient telephone & face-to-face triage, holding clinics, home visits, minor ailments, coworking with an Advanced Nurse Practitioner and general support to the GP team, with the potential to expand and design according to demand and specialist skills/experience.	
NELFT NHS Foundation Trust	2019	Primary Care Paramedic Practitioner ECP	Manage the local population under supervision from a General Practitioner or autonomously depending on the scope of their role, and will be able to assess, diagnose, treat or refer patients within the scope of professional qualifications and skills and abilities in a General Practice Setting.	Band 7: £33,222-£43,041 plus HCAS 5% supplement (£1,000-£1,733)
Penrose Surgery	2019	Paramedic	Working with the triage team; Offer telephone and face-to-face same day appointments for acute cases; See patients with minor illness and minor injuries; Home visits and Holistic reviews; Help with long term conditions and other clinical target areas.	<i>Competitive</i>
Poole Central	2019	Paramedic Primary Care / Advanced Paramedic Practitioner	Experienced clinician, with an interest in supporting frail and complex patients in the community to enable patients to remain cared for at home.	Equiv. band 7
Stourside Medical Practice	2019	Advanced Paramedic Practitioner	Following appropriate triage, patients will be booked for either a GP or Advanced Paramedic Practitioner appointment depending on the complexity of the issue. The triage process may be undertaken by another member of the team or by the Advanced Paramedic Practitioner. There is a requirement to see extra or emergency patients.	AfC Band 8a £42,414,000 to £49,969 pro rata
Tadley Medical Partnership	2019	Primary Care Paramedic	The post-holder is an experienced Advanced Clinical Practitioner, who will be acting as a Triage/Paramedic Practitioner within their professional boundaries. The post-holder will provide care for the presenting patient from initial history taking, clinical assessment, diagnosis, treatment and evaluation of their care.	From £37,000
The Mission Practice	2019	Paramedic - Primary Care Practitioner	The post holder will provide clinical care to patients of the practice by way of surgeries, clinics, triage clinic, on-call duties, home visits and relevant administrative work	TBC (does not follow AfC)

			together with such other duties as are required of the practice which are reasonably delegated by the Practice.	
Albion Place Medical Practice	2020	Paramedic	Responsible for face-to-face and telephone consultations with patients presenting with a wide range of illnesses. Treatment provided will be both in the surgery and in patients own homes. Provision of care for the presenting patient from initial history taking, clinical assessment, diagnosis, evaluation of care and treatment where appropriate.	Band 6: £26,171 - £37,267 per annum
Care UK	2020	Paramedic	Provide high quality emergency care and minor injury treatment to patients with both primary care and acute care needs in a prison setting - performing procedures such as suturing, IV access, haemorrhage control, wound care and cardiac & cerebral vascular accident intervention. The post-holder will play an active part in the assessment, planning, implementation and evaluation of the patients care, working as part of a team of primary care nurses within HMP Wayland	£19/hour
Care UK	2020	Paramedic	Provide high quality emergency care and minor injury treatment to patients with both primary care and acute care needs in a prison setting - performing procedures such as suturing, IV access, haemorrhage control, wound care and cardiac & cerebral vascular accident intervention. The post-holder will play an active part in the assessment, planning, implementation and evaluation of the patients care, working as part of a team of primary care nurses within HMP Wormwood Scrubs and respond to emergencies.	up to £44,000 FTE - DOE
Care UK	2020	Paramedic	Provide high quality emergency care and minor injury treatment to patients with both primary care and acute care needs in a prison setting - performing procedures such as suturing, IV access, haemorrhage control, wound care and cardiac & cerebral vascular accident intervention. The post-holder will play an active part in the assessment, planning, implementation and evaluation of the patients care, working as part of a team of primary care nurses within HMP Brixton and respond to emergencies.	£44,044 per annum DOE

Care UK	2020	Paramedic	Provide high quality emergency care and minor injury treatment to patients with both primary care and acute care needs in a prison setting - performing procedures such as suturing, IV access, haemorrhage control, wound care and cardiac & cerebral vascular accident intervention. The post-holder will play an active part in the assessment, planning, implementation and evaluation of the patients care, working as part of a team of primary care nurses within HMP UPI Doncaster and respond to emergencies.	up to £39,000 per annum.
Cranfield Surgery	2020	Advanced Paramedic Practitioner	To deliver a high standard of patient care as an Advanced Paramedic Practitioner in general practice, using advanced autonomous clinical skills, and a broad and in-depth knowledge of theoretical knowledge; To formulate a management plan, using the multi-disciplinary team if required to support diagnosis or next course of action; To diagnose and manage acute, chronic and urgent long term conditions, prescribe medication and be accountable for all clinical decisions within clinical competence; Instigate necessary invasive and non-invasive diagnostic tests or investigations and interpret findings/reports.	NA
DHU Healthcare CIC	2020	Paramedic Practitioner	Responsible for the clinical assessment, treatment and/or referral or giving advice as appropriate to both adults and children presenting with a wide spectrum of clinical conditions either within the Primary Care Centre or while undertaking a Home Visit.	£53,536.86 pro rata
East Coast Community Healthcare CIC	2020	Paramedic	An autonomous practitioner that is responsible for their own caseload and take a lead in the delivery of projects to improve service delivery, patient safety and quality of care with the aim of admission prevention to the acute hospital carrying out rapid holistic assessments in patients own homes, including physical, physiological and social aspects of need including palliative and end of life care patients.	£30,401 to £37,267
Farnham Road Practice	2020	Visitation Paramedic & Emergency Practitioner	The post holder will be responsible for the assessment, diagnosis, treatment and referral of patients within their level of competence supported by agreed protocols following initial triage by a GP. Farnham Road Practice	<i>Competitive</i>

			has a team of paramedics so there will be an opportunity to work alongside and learn from this established team.	
G4S	2020	Paramedic	To provide high quality emergency care and minor injury treatment to patients with both primary care and acute care needs in a prison setting by playing an active part in the assessment, planning, implementation and evaluation of the patients care.	£22 p/hr Mon-Fri and £25 p/hr for nights and weekends.
Highham Ferrers	2020	Paramedic	Provide services including telephone, face to face appointments and home visiting service to those who are unable to attend the surgery with the aim of supporting them to stay at home safely.	<i>Competitive</i>
Integrated Care Partnership	2020	Paramedic Practitioner	The Paramedic Practitioner will act autonomously, within their professional scope of practice, providing care for patients primarily on home visits, visits to care homes, and through face-to-face and telephone consultations.	Depending on Experience
ISSA Medical Group	2020	Advanced Paramedic Practitioner	To work within the community as an autonomous, accountable, Advanced Paramedic Practitioner, in the provision of a holistic approach for individuals including assessment, diagnosis and treatment, to deliver quality patient services; To assess, diagnose, treat, refer or signpost patients/service users who attend surgery with undifferentiated or undiagnosed condition relating to minor illness or minor injury; The post holder will use advanced clinical skills to provide education to service users, promoting self-care and empower them to make informed choices about their treatment.	Salary dependant on experience
Kingswood Surgery	2020	Primary Care Paramedic	To assess, diagnose, treat, refer or signpost patients/service users who attend surgery with undifferentiated or undiagnosed conditions.	<i>Competitive Salary Package</i>
Nottinghamshire Healthcare NHS Foundation Trust	2020	Senior Paramedic	To provide high quality emergency care and minor injury treatment to patients with both primary care and acute care needs in a prison setting by playing an active part in the assessment, planning, implementation and evaluation of the patients care. To provide basic leadership to junior staff by maintaining professional standards ensuring adherence to all relevant policies and procedures to ensure the delivery of high-quality care. To provide	£30,401- £37,267 per annum

			support and supervision for junior qualified and unqualified staff by helping the line manager with staff development and by providing a first point of contact for patients when on duty.	
Omnes Healthcare	2020	Paramedic Practitioner based in General Practice	Home visiting service (including palliative care); Post-discharge reviews; Minor illness service; Onsite support as non-medical prescriber; Attendance at clinical meetings.	<i>Competitive</i>
OnePrimaryCare	2020	Paramedic Practitioner	The post holder will be part of wider multi-disciplinary team within Primary Care and will work within their personal scope of practice to deliver excellent care – supporting the practice values. The Paramedic Practitioner will predominantly support the delivery of acute on the day care. This may involve elements of telephone and face to face triage, acute on the day clinics and home visits.	Up to £35,000 pro rata (depending on experience)
Portsdown Group Practice	2020	Paramedic Practitioner	Role will be varied and wide-ranging, which can include telephone triage, face-to-face same-day consultations and home visits, supported by an experienced team of dedicated clinicians. The Paramedic Practitioner at Portsdown Group Practice will be an experienced practitioner who, acting within their professional boundaries, will provide care for patients presenting at the practice from initial history taking, clinical assessment, diagnosis, treatment and evaluation of care. They will demonstrate safe, clinical decision-making and expert care, including assessment and diagnostic skills, for patients within the general practice.	£42,750 - £48,500
Princes Medical Centre	2020	Paramedic	An experienced Paramedic Practitioner who has experience in prescribing for minor illness, minor injuries and long-term conditions. The post-holder will demonstrate safe, clinical decision-making and expert care for patients within general practice. The post-holder will work collaboratively with the multi-disciplinary general practice team to meet the needs of patients and support the delivery of policy and procedures.	£44,606 to £50,819 pa

Southampton Primary Care Ltd	2020	Specialist Paramedic (Practitioner)	An experienced nurse practitioner/Specialist Paramedic acting within their professional boundaries will provide care for the presenting patient from initial history taking, clinical assessment, diagnosis, treatment and evaluation of their care. They will demonstrate safe, clinical decision-making and expert care for patients within the general practice.	£35/hour with prescribing qualification
Suffolk Primary Care	2020	Practice Paramedic	Act as a senior paramedic/emergency care practitioner, demonstrating advanced clinical competence and a knowledge base beyond those associated with conventional nursing roles; Undertake consultations in the surgery or the community as an autonomous practitioner and using own clinical judgement to diagnose and treat patients; Make direct referrals to primary, secondary and social services within locally agreed pathways, guidance and protocols; Ensure that patients receive high quality clinical care, delivered in a timely manner; Supply and administer medicines as indicated to address patient need, where necessary working to Patient Group Directions or with reference back to registered GP as necessary; Ensure complete and accurate documentation of each and every patient contact.	<i>Competitive</i>
The Light Surgery	2020	Paramedic Practitioner	The Paramedic Practitioner will predominantly support the delivery of acute, on the day care. This may involve elements of telephone and face to face triage, acute on the day clinics and home visits.	Up to £35,000 annual pro rata (depending on experience)
West Kent CCG	2020	Advanced Paramedic Practitioner	Autonomously assess, manage and treat patients presenting to the primary care service and work closely with General Practitioners to form a duty team each day.	£50,000 - £60,000 (pro rata)
Westway Surgery	2020	Primary Care Practitioner (Paramedic)	To work as an autonomous experienced practitioner, acting within professional boundaries to provide care for the presenting patient. Working as part of the duty team provide telephone triage and face to face consultations for acute and urgent presentations demonstrating safe, clinical decision-making and expert care for patients.	£38,890 - £44,503 pro rata (Agenda for Change Band 7 equivalent)
Essex Primary Care	2021	Paramedic Primary Care	To work within the community, as an autonomous, accountable, Specialist / Advanced Paramedic, in the provision of a holistic approach for individuals including	Depending on Experience

			assessment, management and treatment, to deliver high quality patient services; To assess, manage, treat, refer and/or signpost patients/service users who attend surgery with undifferentiated or undiagnosed condition relating to minor illness or minor injury; The post holder will use advanced clinical skills to provide education to service users, promoting selfcare and empower them to make informed choices about their treatment.	
NHS England	2021	Example Job Description Paramedic	Work autonomously within the community at an advanced level of practice, using their enhanced clinical assessment and treatment skills, to provide first point of contact for patients presenting with undifferentiated, undiagnosed problems relating to minor illness or injury, abdominal pains, chest pains and headaches. They are health professionals who practice at an advanced level having the capability to make sound judgements in the absence of full information and to manage varying degrees of risk when there are complex, competing or ambiguous information or uncertainty.	AfC Band 6-7

Appendix E: CMOCs developed from realist review

Concept 1: Expectations of paramedics working in primary care

Patient Perspectives

1. Patients want to know what paramedics do in their General Practice. When the paramedic role in General Practice is clear to patients (C) they understand how the role is appropriate in relation to their care needs (M), and so have increased confidence when they are treated by paramedics (O)
2. When a trusted source explains the role and value of seeing a paramedic (C), patients understand how the role is appropriate in relation to their care needs (M), and so are supportive of the introduction of these new roles (O) and have increased confidence when they are treated by paramedics (O)
3. When the care provided by paramedics meets the patients' expectations (C), they will be more willing to be seen by a paramedic in the future (O) and more satisfied with the appointment outcome (O) because they are reassured with the level of care provided (M)
4. When a paramedic uses their longer appointment time to listen and understand a patient's problem (C), patients are more willing to see them again (O), because they value this approach (M)
5. When paramedics have a therapeutic relationship with the patients they see (C), these patients are reassured with the level of care provided (M) and more willing to be seen by a paramedic in the future (O) and more satisfied with the appointment outcome (O)
6. When patients want to be seen by their usual GP (C), they do not wish to be seen by a paramedic (O) as this is not what they expect (M).

GP Perspectives

7. GPs do not regard paramedics as diagnosticians (O) and so employ them in assessment-only roles (C) as they consider the paramedic to be 'out of depth' in primary care (M)
8. When the employer does not consider the paramedic to have the skills and competencies relevant for their needs (C) employers may be less likely to employ paramedics (O) because they don't consider them to be useful (M)

9. When the paramedics can demonstrate that they can help to reduce the workload of GPs (C), because this is valued by GPs (M) paramedics continue to be actively recruited into primary care (O)
10. Paramedics are actively recruited into primary care (O) when gaps within the workforce exist (C) because they are perceived to be able to support general practice (M)

Paramedic Perspectives

11. Paramedics who perceive their role as a generalist (C) will look for opportunities for employment in primary care (O) because they believe they can enjoy and work in that environment (M)

Contribution to Primary Care Teams

12. When Emergency medical services use rotational models for paramedics to work in both the ambulance service and primary care (C) the needs of both organisations are more likely to be met (such as EMS workforce retention and increased workforce capacity in primary care) (O) because paramedic staff retention rates and satisfaction is higher (M).
13. When sufficient financial reimbursement is offered for paramedic roles in primary care (C) because paramedics are viewed as a credible addition to the team by employers (M) they are considered for recruitment into the practice workforce (O)
14. The existing skills and knowledge of paramedics is perceived by commissioners and stakeholders to correlate well into primary care (C) and so paramedics are actively recruited into primary care (O) because what they can offer is valued (M)

For whom: Rural workforces/teams

15. When paramedics provide access to healthcare which otherwise would not be available (C) they are considered a community asset (O) because what they do is highly valued by patients and service commissioners and providers (M)

Concept 2: Transition into primary care roles

Education

16. Paramedics are able to transition into advanced practice roles (O) when they are supported by their employers in primary care (M) with clinical supervision (C) and access to formal education (C)
17. As paramedics transition from EMS to primary care roles (C), paramedics move away from their traditional scope of practice (O) because of the change in the clinical presentations they have to manage (M)

Supervision

18. When paramedics are clinically supported in general practice (C), because they feel better supported (M) they will continue to develop their capabilities and confidence within their role (O)
19. When paramedics are provided with clinical feedback, advice, and supervision in general practice (C), because they feel better supported (M), they have higher satisfaction with their role (O)
20. When clinical supervision is accessible for paramedics (C), they have higher satisfaction with their role (O) because they feel better supported (M)

Experience

21. Paramedics at a junctional point within their career (C) value the opportunity to develop themselves (M) and so look for opportunities for employment in primary care (O)
22. Paramedics are pluripotent (C). Because of the breadth of issues with which they can deal (M) paramedics are considered a useful addition to the primary care team (O)

Concept 3: Role and Responsibilities

Working in a Team

23. When the professional role boundaries of paramedics overlap with existing health care professionals in General Practice (C) there may be resistance of the paramedic role and responsibilities by these other health care professionals (O), because they feel threatened (M)
24. There is dysfunction to the employment of paramedics in primary care (O) when the role and responsibilities of the paramedic are unclear (C). When this occurs, paramedics are less likely to be empowered (M) and work within the full range of their capabilities (M)
25. When the paramedics capabilities have been demonstrated (C) they are viewed by practice staff as a credible addition to the team (M) and are accepted into the practice workforce (O)
26. When the boundaries of the paramedic scope of practice are understood by the practice team (C), paramedics are viewed as a credible addition to the team (M) and are accepted into the practice workforce (O)

Interpersonal skills

27. When paramedics demonstrate to the GP practice their awareness of their professional competencies (C), other health care professionals are more likely to accept the paramedic role in the practice (O), because they develop trust in their abilities (M)
28. When paramedics in a patient consultation display strong interpersonal skills and enthusiasm (C) patients are more likely to be satisfied (O) because patients use these to judge the quality of care they receive (M)

Appendix F: Survey instrument

Understanding the roles and work of paramedics in primary care: A national cross-sectional survey

What is this project about?

Thank you for your interest in participating in this questionnaire. This questionnaire is part of a study which aims improve understanding of the ways in which paramedics are working within the primary care workforce in the United Kingdom. Whilst paramedics are currently working in primary care roles, evidence must be generated to show how and why these changes would work, for whom, in what context and to what extent. That's why we're keen to understand from your perspective, as a paramedic working in primary care, the impact you feel you have and your perspectives of your role. We hope that the results of our research will influence future policy and professional change, as well as support paramedics working in primary care in the future.

You have been invited to participate as you are a paramedic working in primary care within the UK. Please read through this information before agreeing to participate (if you wish to) by ticking the 'yes' box below.

You may ask any questions before deciding to take part by contacting the researcher (details below).

The Principal Researcher is Georgette Eaton, who is attached to the Nuffield Department of Primary Care Health Services at the University of Oxford. This project is being completed under the supervision of Dr Kamal R. Mahtani, Dr Geoff Wong, Dr Stephanie Tierney and Dr Veronika Williams from the University of Oxford, and Professor Julia Williams from the University of Hertfordshire. It is funded through a Doctoral Research Fellowship from the National Institute of Health Research.

You will be asked a series of questions about the work you undertake in primary care, and your perceptions of this. This should take about 20 minutes. No other background knowledge is required.

Do I have to take part?

No. Please note that participation is voluntary. If you do decide to take part, you may withdraw at any point for any reason before submitting your answers by pressing the 'Exit' button/ closing the browser. We are offering every paramedic who completes the questionnaire a £10 Amazon e-voucher. However, we are only able to offer this to participants who complete all study activities.

We have included a 'Prefer not to say' option for each set of questions should you prefer not to answer a particular question.

How will my data be used?

During the main set of questions, we will not collect any data that could directly identify you.

At the end of the survey, you will see a page to register your interest in being part of the second phase of our research which will involve an interview. To register your interest, please submit your name and nhs.net email address. This is not linked to your completion of the questionnaire and there is no obligation to be involved in the second phase of our research.

We are offering every paramedic who completes the questionnaire a £10 Amazon e-voucher. At the end of the survey, you will be taken to a separate page to give us your name and nhs.net email address in order to claim this e-voucher. This cannot be matched to your responses in the survey and will be destroyed when individual participant involvement is complete (e.g. when the Amazon e-voucher has been sent and redeemed by you).

Your IP address will not be stored. We will take all reasonable measures to ensure that data remain confidential.

The responses you provide will be stored in a password-protected electronic file on University of Oxford secure servers and may be used in academic publications, conference presentations, reports for external organisations and on websites. Identifiable information will be deleted as soon as it is no longer required for the research. Research data will be stored for 3 years after publication or public release of the study's results.

Who will have access to my data?

The University of Oxford is the data controller with respect to your personal data (name and email address) and, as such, will determine how your personal data is used in the study. The University will process your personal data for the purpose of the research reasons outlined above. Research is a task that we perform in the public interest. Further information about your rights with respect to your personal data is available from <https://compliance.admin.ox.ac.uk/individual-rights>.

All data will be anonymous. The answers you give us will be shared with the College of Paramedics, Health Education England, and the National Institute for Health Research.

We would also like your permission to use the questionnaire answers in future studies, and to share these with other researchers (e.g., in online databases). This will not include your name and email address, as this is only to claim incentive for the study or to participate in future work associated with this project.

The results will be written up for a DPhil (PhD) degree.

Who has reviewed this study?

This project has been reviewed by, and received ethics clearance through, a subcommittee of the University of Oxford Central University Research Ethics Committee R64129/RE001.

Who do I contact if I have a concern or I wish to complain?

If you have a concern about any aspect of this study, please speak to Georgette Eaton at georgette.eaton@phc.ox.ac.uk or their supervisor, Professor Kamal R. Mahtani kamal.mahtani@phc.ox.ac.uk and we will do our best to answer your query. We will acknowledge your concern within 10 working days and give you an indication of how it will be dealt with. If you remain unhappy or wish to make a formal complaint, please contact the Chair of the Research Ethics Committee at the University of Oxford who will seek to resolve the matter as soon as possible.

Please note that you may only participate in this survey if you are 18 years of age or over	Yes No
If you have read the information above and agree to participate with the understanding that the data (including personal data) you submit will be processed accordingly, please tick the box below to start.	Yes No
Section 1. The purpose of this section is to find out about the prevalence of paramedics working in primary care in the United Kingdom.	
Are you currently a paramedic working in primary care?	Yes No
What is your age range?	18-24 years old 25-34 years old 35-44 years old 45-54 years old 55-65 years old
Which of the following most accurately describe(s) you? (Multiple choice answer)	Female Intersex Male Non-binary Transgender Let me type (answer box)
Where do you practice?	England Northern Ireland Scotland Wales
How long have you been a registered paramedic?	0-2 years 3-5 years 6-10 years 11- 14 years 15 - 19 years 20-24 years 25 - 30 years 31-35 years >36 years

How long have you worked in your current role in primary care?	0-6 months 6-12 months 12 – 18months 18months – 2 years 2-4 years 5-7 years 8-10 years 11- 14 years 15 - 19 years >20 years
What is your salary?	Band 5 (£24,907 - £30,615) Band 6 (£31,365 - £37,890) Band 7 (£38,890 - £44,503) Band 8a (£45,753 - £51,668) Band 8b (£53,168 - £62,001) Band 8c (£63,751 - £73,664) Band 8d (£75,914 - £87,754) Band 9 (£91,004 - £104,927)
What hours do you work in primary care?	Full time – more than 30 hours per week Part time – 21-30 hours per week Part time – 10-20 hours per week One day a week One session a week (4 hours)
What is your highest qualification relevant to your role as a paramedic in primary care?	Institute of Health and Care Development (IHCD) Graduate Diploma Diploma/Certificate of Higher Education Foundation degree Bachelor's degree Practice Certificate Postgraduate Certificate Postgraduate Diploma Master's Degree Let me type (answer box)
What is your job title?	Paramedic Specialist Paramedic Paramedic Practitioner First Contact Practitioner (Paramedic) Emergency Care Practitioner Advanced Clinical Practitioner (Paramedic) Advanced Paramedic Consultant Paramedic Let me type (answer box)
Are you annotated as an independent prescriber with the Health and Care Professions Council?	Yes Not yet – I am undertaking the course currently No – but I would like to be in the future

	No
How are you employed in primary care?	Directly employed by GP practice Directly employed by a primary care network/federation/health board Freelance/locum contract Agency/Private provider Rotational through ambulance trust Let me type (answer box)
What type of tasks do you undertake*? *These could be face to face or remotely (by telephone or online) Please select as many as apply.	Same day/urgent home visits Routine home visits Same day/urgent clinic appointments* Minor illness clinic* Routine clinic appointments* Telephone triage Care home ward rounds Chronic Disease Reviews* Covid clinics* Admin (e.g. requesting investigations, interpreting results, medication checks) Let me type (answer box)
What types of patients do you see?	Let me type (answer box)
Are there any patient types that you do not see?	Let me type (answer box)
Why?	Let me type (answer box)

Section 2.

The purpose of this section is to understand the type of activities that make up your role as a paramedic in primary care. For each of the following activities, please indicate the extent that these form part of your role

	Not at all	Little extent	Some extent	Great extent	Very great extent
Communication and consultations					
Practising holistically to personalise care and promote public and person health					
Working with colleagues in primary care					
Maintaining an ethical approach and fitness to practice					
Information gathering and interpretation					
Clinical Examination and procedural skills					
Making a diagnosis					
Managing medical and clinical complexity					
Independent prescribing, medicines, and supply of pharmacotherapy					
Leadership and Management					
Education and Development					
Research and evidence-based practice					

Section 3.					
The purpose of this section is to understand the type of clinical presentations that make up your role as a paramedic in primary care. For each of the following activities, please tick the regularity of which you see these in your role in primary care					
	Not at all	Sometimes	Regularly	Very regularly	All the time
Cardiovascular system* Blood pressure issues, chest pain, chest discomfort, orthopnoea, palpitation, irregular pulse, oedema, shortness of breath on exertion					
Dermatology* Rash, itching, infestation, spots, skin lesions/moles, nail issues, changes in pigmentation					
Eyes, Ears, Nose and Throat* Red eye, visual disturbance, acute loss of vision, eye discharge, eye injury, foreign body, swollen eyelid, dizziness, vertigo, otalgia, otorrhoea, sinus pain, nasal pain, nasal obstruction, mouth pain, neck swelling, sore throat, throat swelling, tinnitus, hearing loss, voice changes					
Emergency presentations* Cardiac arrest, catastrophic haemorrhage, shock, respiratory distress, cardiovascular emergency, anaphylaxis, angioedema, allergic reaction, collapse, seizure, non-blanching rash, overdose/poisoning, suspected DKA, meningism, limp child					
Gastrointestinal system* Difficulty swallowing, poor appetite, excessive thirst, abdominal pain, abdominal distention, abdominal mass/swelling, constipation, diarrhoea, change in bowel habit, nausea/vomiting, hematemesis, indigestion, rectal bleeding, abdominal blood results (eg. deranged liver enzymes, LFTs, anaemia), high risk behaviours and concerns, stoma issues					
Genitourinary System* Loin pain, groin pain, haematuria, urinary symptoms, kidney disease, recurrent infection, penile pain, testicular pain/swelling, inability to pass urine, profuse vaginal bleeding, acute groin swelling/pain					
General presentations*					

Breast symptoms, tired all the time, generalised aches and pains, lymphadenopathy, sleep issues, fever, substance/alcohol misuse, overdose/poisoning, vulnerable adult, family/carer concern, genetic predisposition, presentations in patients with a learning disability; review of blood test results					
Sexual health assessment* Genital rashes/irritation, urinary symptoms, penile pain, penile discharge, acute groin swelling/pain, pelvic pain/mass, contraception					
Medication Review* Adverse side effects, ineffective medication, poor compliance, overuse of medication, misuse of medication, issues with polypharmacy, abnormal blood test results, higher risk groups (risk reduction medications)					
Mental Health* Suicidal ideation, self-harm, acute anxiety, stress, panic, post-natal mental health issues, visual/auditory hallucinations, paranoia, bereavement, substance misuse					
Musculoskeletal system* Pain, swelling, redness, stiffness, difficulty with movement, minor injury					
Neurological system* Altered level of consciousness, fits, faints and funny turns, dizziness, altered power tone sensitivity, paraesthesia, altered level of consciousness, weakness, altered gait, facial palsy, tremor, speech changes, headache, head injury, memory problems, confusion					
Paediatrics* Vulnerable child, rashes, pyrexia of unknown origin, crying baby, otalgia/otorrhoea, eye injury, red eye/discharge, cough/wheeze/stridor/respiratory distress/nasal symptoms, sore throat, vomiting, diarrhoea, acute bowel symptoms, abdominal pain, constipation, musculoskeletal symptoms, minor injury					
Pain*					

Acute pain, worsening pain, change in type of pain					
Palliative and end of life care* Symptom management, discussions about advanced care planning, verification of death					
Pregnancy related conditions					
Non-pregnancy related conditions in pregnant people					
Respiratory System* Shortness of breath, breathing difficulties, pain on breathing, cough (including haemoptysis), wheeze, pallor, cyanosis, suspected or recurrent infection, acute covid-19, post covid-19 syndrome					

Section 4.

The purpose of this section is to understand the type of clinical investigations and procedural skills that make up your role as a paramedic in primary care. For each of the following activities, please order the regularity that you undertake these in your role in primary care

	Not at all	Sometimes	Regularly	Very regularly	All the time
Abdominal examination – including inspection, auscultation, percussion & palpation					
Assessment for lymphadenopathy					
Blood pressure					
Blood sugar					
Blood ketones					
Blood tests – FBC, ESR, iron studies, TFT, HbA1c, LFT, U&Es, haematinics, PSA, ACR, B12, drug levels, calcium, CRP, clotting factors, vitamin D, rheumatoid factor, anti CCP, urate, D-dimer, INR, TnT, autoimmune antibodies, TFT, lipid profile, testosterone, SHBG, free androgen index, FSH/LH +/- prolactin, CA125, CA19-9, CRP, coeliac screen, amylase, hepatitis, HIV, glandular fever screen/monospot, BNP/NT-proBNP					
Cardiovascular examination – including inspection, auscultation & palpation, Jugular venous pressure					
Core paramedic skills: Emergency procedures for seeking assistance and calling ambulance; provide basic life support (CPR, defibrillator); administration of nebulised therapies; management of anaphylaxis; management of suspected meningitis; management of seizures; management of suspected MI; administration of oxygen					
Digital rectal examination					
Interpretation of injection fraction from echocardiogram (Echo)					
Electrocardiograph (ECG)					
Eye examination including inspection and visual acuity, fundoscopy and pupils, fluorescein, local anaesthetic					
Respiratory clinic - FeNO testing Spirometry					
Request for Imaging (eg. X-ray, CT, MRI, Ultrasound of organs,					

MSK and soft tissue, pelvic transvaginal and testicular)					
Interpretation for imaging					
Joint Injections					
Prescribing					
Mental health examination – Person Health Questionnaire (PHQ9); Generalised Anxiety Disorder Questionnaire (GAD7); Edinburgh Post					
Mid-stream urine culture					
Minor Surgery					
Mini mental state examination (MMSE), GPCOG and 6CIT, 480					
Musculoskeletal examination – including spine, neck, shoulders, elbows, wrists, hands, fingers, hips, pelvis, knee, ankle, feet and toes using Look/Feel/Move principles					
Neurological examination – including inspection, palpation, reflexes, sensation, power, tone, strength, pupils and nystagmus, cranial nerve and cerebellar testing					
Otoscopy					
Oxygen saturations					
Peak Expiratory Flow Rate					
Phlebotomy					
Pulse rate, rhythm, volume and character					
Referral to specialism or specialist services					
Respiratory examination – including inspection, auscultation, percussion and palpation					
Respiratory rate					
Skin and/or nail scrapings/samples					
Smear					
Spirometry					
Sputum sample					
Stool sample – culture and sensitivity, faecal calprotectin, helicobacter-pylori testing, FIT testing or FOB					
Swabs					
Temperature					
Throat examination					
Urinalysis and HCG					
Vaginal examination (PV)					
Are there any clinical investigations and procedural skills that you undertake that we have not listed here?	Let me type (answer box)				

Section 5. The purpose of this section is to understand your perspectives of your role working in primary care. You are welcome to write your answers, or bullet point them – whichever works best for you

Why did you choose to work in primary care?	
Compared to your previous role, how do you find your current role in primary care?	Prompt: What are the challenges? What are the differences?
Do you experience conflict in your role?	Yes – go to next Q No – skip
What type of conflict occurs?	
Do you receive clinical supervision in your role?	Yes – go to next Q No – skip
To what extent does the clinical supervision/support you receive meet your needs?	
Do you feel patients are satisfied following a consultation with you?	Yes – go to next Q No - go to next Q (negative)
Why do you feel patients are (not) satisfied following a consultation with you?	
How does Health Education England's Roadmap to Practice in primary care impact you in your role?	
What frustrations do you have about your role?	
How does your role as a paramedic in primary care make a difference to: <ul style="list-style-type: none"> - Patients - Other members of the primary care team - The profession 	

Appendix G: CUREC approved participant online information and consent form phase I

MEDICAL SCIENCES INTERDIVISIONAL RESEARCH ETHICS COMMITTEE

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CONFIDENTIAL

Georgette Eaton
Nuffield Department of Primary Care Health Sciences
University of Oxford
Radcliffe Observatory Quarter
Woodstock Road
Oxford

26 July 2021

Dear Georgette,

Research Ethics Approval - CUREC 1

Ethics Approval Reference: R64129/RE001

Study title: Understanding the roles and work of paramedics in primary care: A national cross-sectional survey

Short title: Understanding the role of paramedics in primary care

The above application has been considered on behalf of the Medical Sciences Interdivisional Research Ethics Committee (MS IDREC) in accordance with the University's procedures for ethical approval of all research involving human participants.

I am pleased to inform you that, on the basis of the information provided to the IDREC, the proposed research has been judged as meeting appropriate ethical standards, and approval has been granted for a period of **18 months**, commencing on **26th July 2021**.

Amendments

Should there be any subsequent changes to the study, you should submit details to the MS IDREC for consideration and approval. Details of changes must be listed on an [amendment form](#).

Yours Sincerely

A handwritten signature in black ink, appearing to read 'H. Barnby-Porritt'.

Dr Helen Barnby-Porritt
Research Ethics Manager

Appendix H: CMOCs developed from realist evaluation phase I

Font Key:

Grey = CMOCs that could not be refined due to the data collected, but may still be relevant

Black = Previously developed CMOCs relevant to findings within this work package

Bold = New CMOC based on the analysis of data derived from this work package.

Concept 1: Expectations of paramedics working in primary care

Patient Perspectives

1. Patients want to know what paramedics do in their General Practice. When the paramedic role in General Practice is clear to patients (C) they understand how the role is appropriate in relation to their care needs (M), and so have increased confidence when they are treated by paramedics (O)
2. When a trusted source explains the role and value of seeing a paramedic (C), patients understand how the role is appropriate in relation to their care needs (M), and so are supportive of the introduction of these new roles (O) and have increased confidence when they are treated by paramedics (O)
3. When the care provided by paramedics meets the patients' expectations (C), they will be more willing to be seen by a paramedic in the future (O) and more satisfied with the appointment outcome (O) because they are reassured with the level of care provided (M)
4. When a paramedic uses their longer appointment time to listen and understand a patient's problem (C), patients are more willing to see them again (O), because they value this approach (M)
5. When paramedics have a therapeutic relationship with the patients they see (C), these patients are reassured with the level of care provided (M) and more willing to be seen by a paramedic in the future (O) and more satisfied with the appointment outcome (O)
6. When patients want to be seen by their usual GP (C), they do not wish to be seen by a paramedic (O) as this is not what they expect (M).

GP Perspectives

7. GPs do not regard paramedics as diagnosticians (O) and so employ them in assessment-only roles (C) as they consider the paramedic to be 'out of depth' in primary care (M)

8. When the employer does not consider the paramedic to have the skills and competencies relevant for their needs (C) employers may be less likely to employ paramedics (O) because they don't consider them to be useful (M)
9. When the paramedics can demonstrate that they can help to reduce the workload of GPs (C), because this is valued by GPs (M) paramedics continue to be actively recruited into primary care (O)
10. Paramedics are actively recruited into primary care (O) when gaps within the workforce exist (C) because they are perceived to be able to support general practice (M)

Paramedic Perspectives

11. Paramedics who perceive their role as a generalist (C) will look for opportunities for employment in primary care (O) because they believe they can enjoy and work in that environment (M)
12. **Paramedics working in rotational roles between emergency medical services and primary care (C) feel able to apply their knowledge learnt in one area to another (M) to provide improved patient care (O)**

Contribution to Primary Care Teams

13. When Emergency medical services use rotational models for paramedics to work in both the ambulance service and primary care (C) the needs of both organisations are more likely to be met (such as EMS workforce retention and increased workforce capacity in primary care) (O) because paramedic staff retention rates and satisfaction is higher (M).
14. When sufficient financial reimbursement is offered for paramedic roles in primary care (C) because paramedics are viewed as a credible addition to the team by employers (M) they are considered for recruitment into the practice workforce (O)
15. The existing skills and knowledge of paramedics is perceived by commissioners and stakeholders to correlate well into primary care (C) and so paramedics are actively recruited into primary care (O) because what they can offer is valued (M)
16. **Paramedics who are judged by employers to lack clinical experience and education (C) are employed in an eyes and ears approach in primary care (O) because they lack the clinical acumen sufficient for primary care (M)**
17. **When paramedics are prevented by legislation or policy from seeing the full range of conditions that present to primary care (C), they feel**

frustrated in their role (O), because they feel they cannot contribute in the fullest way (M)

For whom: Rural workforces/teams

18. When paramedics provide access to healthcare which otherwise would not be available (C) they are considered a community asset (O) because what they do is highly valued by patients and service commissioners and providers (M)

Concept 2: Transition into primary care roles

Education

19. Paramedics are able to transition into advanced practice roles (O) when they are supported by their employers in primary care (M) with clinical supervision (C) and access to formal education (C)

20. As paramedics transition from EMS to primary care roles (C), paramedics move away from their traditional scope of practice (O) because of the change in the clinical conditions they have to manage (M)

Supervision

21. When paramedics are clinically supported in general practice (C), because they feel better supported (M) they will continue to develop their capabilities and confidence within their role (O)

22. When paramedics are provided with clinical feedback, advice, and supervision in general practice (C), because they feel better supported (M), they have higher satisfaction with their role (O)

23. When clinical supervision is accessible for paramedics (C), they have higher satisfaction with their role (O) because they feel better supported (M)

Experience

24. Paramedics at a junctional point within their career (C) value the opportunity to develop themselves (M) and so look for opportunities for employment in primary care (O)

25. Paramedics are pluripotent (C). Because of the breadth of issues with which they can deal (M) paramedics are considered a useful addition to the primary care team (O)

- 26. **Paramedics who are dissatisfied with their work in the ambulance service (C) will look for opportunities for employment in primary care (O) because they believe this will afford them a better work/life balance(M)**
- 27. **Paramedics who are experienced by virtue of their work in the ambulance service (C) fulfil an increased clinical role in primary care (O) because they have practical experience to draw upon (M)**
- 28. **When paramedics are not allowed to see some patient groups due to the clinical guidelines that exist in their work in ambulance services (C) they are prevented from gaining experience in the whole range of conditions that present to primary care (O) because they don't have these relevant opportunities to learn from (M)**

Concept 3: Role and Responsibilities

Working in a Team

- 29. When the professional role boundaries of paramedics overlap with existing health care professionals in General Practice (C) there may be resistance of the paramedic role and responsibilities by these other health care professionals (O), because they feel threatened (M)

<i>Existing</i>	<i>Refined</i>
There is dysfunction to the employment of paramedics in primary care (O) when the role and responsibilities of the paramedic are unclear (C). When this occurs, paramedics are less likely to be empowered (M) and work within the full range of their capabilities (M)	Paramedics experience frustrations in their role (O) when the role and responsibilities of the paramedic are unclear (C). When this occurs, paramedics are less likely to be empowered (M)

- 30. When the paramedics capabilities have been demonstrated (C) they are viewed by practice staff as a credible addition to the team (M) and are accepted into the practice workforce (O)
- 31. When the boundaries of the paramedic scope of practice are understood by the practice team (C), paramedics are viewed as a credible addition to the team (M) and are accepted into the practice workforce (O)

Interpersonal skills

32. When paramedics demonstrate to the GP practice their awareness of their professional competencies (C), other health care professionals are more likely to accept the paramedic role in the practice (O), because they develop trust in their abilities (M)
33. When paramedics in a patient consultation display strong interpersonal skills and enthusiasm (C) patients are more likely to be satisfied (O) because patients use these to judge the quality of care they receive (M)

Clinical role

34. **Paramedics who have a higher level of education and clinical experiences (C) fulfil an increased clinical role in primary care (O) because they have greater knowledge and capabilities (M)**
35. **Paramedics who can independently prescribe medicines (C) fulfil an increased clinical role in primary care (O) because they are able to complete a broader range of clinical (M)**

Appendix I: Relationship between core capabilities of primary care and demographics of paramedics

			Clinical Supervision	Hours worked	Job Title	Length of time registered as a paramedic	Length of time in primary care	Level of Education	Prescribing Status
Spearman's rho	Communication and consultations	Correlation Coefficient	-.042	-.050	.138	.150	.051	.112	-.102
		Sig. (2-tailed)	0.436	0.356	0.011	0.006	0.349	0.038	0.059
		N	341	341	341	341	341	341	341
Practising holistically to personalise care and promote public and person	Working with colleagues in primary care	Correlation Coefficient	-.015	-.076	.123	-.016	.066	.115	-.162
		Sig. (2-tailed)	0.779	0.164	0.023	0.767	0.226	0.034	0.003
		N	341	341	341	341	341	341	341
Maintaining an ethical approach and fitness to practice	Information gathering and interpretation	Correlation Coefficient	-.128	-.189**	.066	.069	-.015	.048	-.107
		Sig. (2-tailed)	0.018	0.0005	0.225	0.204	0.783	0.375	0.048
		N	341	341	341	341	341	341	341
Clinical Examination and procedural skills	Making a diagnosis	Correlation Coefficient	-.095	-0.083	0.095	0.139	0.026	0.013	-0.055
		Sig. (2-tailed)	0.081	0.125	0.080	0.010	0.629	0.812	0.312
		N	341	341	341	341	341	341	341
Managing medical and clinical complexity	Independent prescribing, medicines, and supply of pharmacotherapy	Correlation Coefficient	-.059	-.024	.219**	.062	.066	.125	-.123
		Sig. (2-tailed)	0.280	0.658	0.0000	0.251	0.225	0.021	0.023
		N	341	341	341	341	341	341	341
Leadership and Management	Education and Development	Correlation Coefficient	-.005	-.079	.079	.142	.106	.081	-.119
		Sig. (2-tailed)	0.924	0.145	0.145	0.009	0.051	0.137	0.028
		N	341	341	341	341	341	341	341
Research and evidence-based practice	Leadership and Management	Correlation Coefficient	.016	-.081	.174	.092	.251**	.196**	-.284**
		Sig. (2-tailed)	0.763	0.134	0.001	0.090	0.0000	0.0003	0.0000
		N	341	341	341	341	341	341	341
Education and Development	Research and evidence-based practice	Correlation Coefficient	-.047	-.145	.209**	.017	.170	.156	-.298**
		Sig. (2-tailed)	0.391	0.007	0.0001	0.750	0.002	0.004	0.0000
		N	341	341	341	341	341	341	341
Research and evidence-based practice	Research and evidence-based practice	Correlation Coefficient	-.044	-.091	.334	.097	.357**	.403**	-.757**
		Sig. (2-tailed)	0.416	0.092	0.0000	0.075	0.0000	0.0000	0.0000
		N	341	341	341	341	341	341	341
Research and evidence-based practice	Research and evidence-based practice	Correlation Coefficient	.016	-.213**	.158	.045	.302**	.175	-.331**
		Sig. (2-tailed)	0.774	0.0001	0.003	0.403	0.0000	0.001	0.0000
		N	341	341	341	341	341	341	341
Research and evidence-based practice	Research and evidence-based practice	Correlation Coefficient	-.008	-.095	.105	.003	.143	.087	-.143
		Sig. (2-tailed)	0.888	0.080	0.052	0.956	0.008	0.110	0.008
		N	341	341	341	341	341	341	341
Research and evidence-based practice	Research and evidence-based practice	Correlation Coefficient	.000	-.088	.095	.005	.033	.082	-.114
		Sig. (2-tailed)	0.997	0.104	0.079	0.927	0.546	0.131	0.035
		N	341	341	341	341	341	341	341

** Correlation is significant at the 0.0005 level (2-tailed).

Appendix J: Clinical examination and procedural skills

			Clinical Supervision	Hours worked	Job Title	Length of time registered as a paramedic	Length of time in primary care	Level of Education	Prescribing Status	
Spearman's rho	Cardiovascular	Blood pressure issues	Correlation Coefficient	.118	.139	.062	.002	.001	.105	.068
			Sig. (2-tailed)	0.029	0.01	0.256	0.972	0.988	0.052	0.21
			N	341	341	341	341	341	341	341
			Correlation Coefficient	.097	.065	0.212**	.024	.120	.061	.084
			Sig. (2-tailed)	0.073	0.234	0.0000	0.66	0.027	0.262	0.123
			N	341	341	341	341	341	341	341
			Correlation Coefficient	.016	.018	0.206**	-.002	.103	.076	.050
			Sig. (2-tailed)	0.762	0.737	0.0001	0.972	0.058	0.163	0.358
		N	341	341	341	341	341	341	341	
		Irregular pulse	Correlation Coefficient	.087	.176	.036	.061	.088	.047	.057
			Sig. (2-tailed)	0.108	0.001	0.506	0.259	0.105	0.389	0.298
			N	341	341	341	341	341	341	341
		Oedema	Correlation Coefficient	.188	.130*	-.018	-.045	-.037	-.024	.010
			Sig. (2-tailed)	0.0001	0.016	0.742	0.408	0.499	0.659	0.851
			N	341	341	341	341	341	341	341
		Othopnoea	Correlation Coefficient	.058	.106	.096	.030	.053	-.029	.051
		Sig. (2-tailed)	0.283	0.051	0.076	0.584	0.325	0.588	0.349	
		N	341	341	341	341	341	341	341	
	Palpitations	Correlation Coefficient	.076	.094	.186**	.015	.093	.129	.171	
		Sig. (2-tailed)	0.159	0.083	0.0005	0.786	0.086	0.017	0.002	
		N	341	341	341	341	341	341	341	
	Shortness of breath on exertion	Correlation Coefficient	.140	.177	.028	-.049	.026	.029	.059	
		Sig. (2-tailed)	0.01	0.001	0.606	0.37	0.628	0.591	0.278	
		N	341	341	341	341	341	341	341	
** Correlation is significant at the 0.0008 level (2-tailed).										
Dermatology	Changes in pigmentation	Correlation Coefficient	-.011	.108	.093	.073	.100	.093	.279**	
		Sig. (2-tailed)	0.843	0.045	0.087	0.177	0.066	0.087	0.000	
		N	341	341	341	341	341	341	341	
	Infestation	Correlation Coefficient	.022	.094	.105	.103	.206**	.159**	.365**	
		Sig. (2-tailed)	0.688	0.084	0.053	0.058	0.000	0.003	0.000	
		N	341	341	341	341	341	341	341	
	Itching	Correlation Coefficient	.086	.037	.213**	.094	0.125	.203**	.303**	
		Sig. (2-tailed)	0.111	0.500	0.000	0.084	0.021	0.000	0.000	
	N	341	341	341	341	341	341	341		
Nail issues	Correlation Coefficient	.019	.093	.098	.108	.165**	.133*	.308**		
	Sig. (2-tailed)	0.725	0.087	0.070	0.046	0.002	0.014	0.000		
	N	341	341	341	341	341	341	341		
Rash	Correlation Coefficient	.108	-.003	.226**	.048	.063	.192**	.260**		
	Sig. (2-tailed)	0.045	0.962	0.000	0.379	0.249	0.000	0.000		
	N	341	341	341	341	341	341	341		
Skin lesions/moles	Correlation Coefficient	.113	.044	.182**	.036	.111	.156**	.327**		
	Sig. (2-tailed)	0.038	0.420	0.001	0.503	0.041	0.004	0.000		
	N	341	341	341	341	341	341	341		
Spots	Correlation Coefficient	.092	.024	.161**	.077	.164**	.188**	.313**		
	Sig. (2-tailed)	0.088	0.662	0.003	0.156	0.002	0.000	0.000		
	N	341	341	341	341	341	341	341		
** Correlation is significant at the 0.001 level (2-tailed).										

Eyes, Eard, Nose and Throat	Acute loss of vision	Correlation Coefficient	.042	.166	.088	-.004	.249**	.101	.176
		Sig. (2-tailed)	0.443	0.002	0.104	0.948	0.0000	0.063	0.001
		N	341	341	341	341	341	341	341
	Dizziness	Correlation Coefficient	.130	.167	.153	-.049	.089	.131	.147
		Sig. (2-tailed)	0.016	0.002	0.005	0.370	0.100	0.015	0.007
		N	341	341	341	341	341	341	341
	Eye discharge	Correlation Coefficient	.093	.047	.156**	.067	.197**	.151	.215**
		Sig. (2-tailed)	0.088	0.382	0.004	0.216	0.0002	0.005	0.0001
		N	341	341	341	341	341	341	341
	Eye injury	Correlation Coefficient	-.053	.068	.108*	.020	.140	.013	.046
		Sig. (2-tailed)	0.327	0.209	0.046	0.711	0.010	0.816	0.395
		N	341	341	341	341	341	341	341
	Foreign body	Correlation Coefficient	-.025	.020	.068	.021	.143	.024	.063
		Sig. (2-tailed)	0.645	0.719	0.208	0.706	0.008	0.664	0.245
		N	341	341	341	341	341	341	341
	Hearing loss	Correlation Coefficient	.084	.192	.071	.011	.149**	.091	.308**
		Sig. (2-tailed)	0.122	0.0004	0.188	0.834	0.006	0.095	0.0000
		N	341	341	341	341	341	341	341
	Mouth pain	Correlation Coefficient	.043	.080	.014	-.036	.092	.066	.181
		Sig. (2-tailed)	0.431	0.140	0.797	0.507	0.089	0.222	0.001
		N	341	341	341	341	341	341	341
	Nasal obstruction	Correlation Coefficient	-.060	.159	.093	.012	.212**	.134	.267**
		Sig. (2-tailed)	0.272	0.003	0.088	0.821	0.0001	0.013	0.0000
		N	341	341	341	341	341	341	341
	Nasal pain	Correlation Coefficient	.071	.143	.124	.030	.149	.160	.324**
		Sig. (2-tailed)	0.194	0.008	0.022	0.584	0.006	0.003	0.0000
		N	341	341	341	341	341	341	341
	Neck swelling	Correlation Coefficient	.057	.098	.139	.004	.119	.198**	.225**
		Sig. (2-tailed)	0.293	0.072	0.010	0.948	0.028	0.0002	0.0000
		N	341	341	341	341	341	341	341
	Otalgia	Correlation Coefficient	.104	.009	.243**	.099	.121	.128	.214**
		Sig. (2-tailed)	0.056	0.865	0.0000	0.069	0.026	0.018	0.0001
		N	341	341	341	341	341	341	341
	Otorrhoea	Correlation Coefficient	.120	.056	.210**	.069	.171	.134	.259**
Sig. (2-tailed)		0.027	0.305	0.0001	0.206	0.002	0.013	0.0000	
N		341	341	341	341	341	341	341	
Red eye	Correlation Coefficient	.098	.069	.141	-.004	.153	.130	.189	
	Sig. (2-tailed)	0.070	0.201	0.009	0.943	0.005	0.016	0.0005	
	N	341	341	341	341	341	341	341	
Sinus pain	Correlation Coefficient	.107	.137	.202**	.075	.164	.200**	.307**	
	Sig. (2-tailed)	0.048	0.011	0.0002	0.167	0.002	0.0002	0.0000	
	N	341	341	341	341	341	341	341	
Sore throat	Correlation Coefficient	.078	.072	.210**	.043	.083	.171	.134	
	Sig. (2-tailed)	0.148	0.183	0.0001	0.430	0.127	0.002	0.013	
	N	341	341	341	341	341	341	341	
Swollen eyelid	Correlation Coefficient	.090	.099	.146	.056	.146	.151	.259**	
	Sig. (2-tailed)	0.098	0.069	0.007	0.303	0.007	0.005	0.0000	
	N	341	341	341	341	341	341	341	
Throat swelling	Correlation Coefficient	.003	.101	.140	-.096	.132	.161	.192	
	Sig. (2-tailed)	0.955	0.063	0.010	0.079	0.015	0.003	0.0004	
	N	341	341	341	341	341	341	341	
Tinnitus	Correlation Coefficient	.097	.066	.119	.040	.101	.195**	.215**	
	Sig. (2-tailed)	0.074	0.224	0.029	0.459	0.062	0.0003	0.0001	
	N	341	341	341	341	341	341	341	
Vertigo	Correlation Coefficient	.111	.121	.116	-.004	.078	.181	.176	
	Sig. (2-tailed)	0.040	0.025	0.032	0.937	0.151	0.001	0.001	
	N	341	341	341	341	341	341	341	
Visual disturbance	Correlation Coefficient	.085	.111	.103	.005	.168	.106	.191	
	Sig. (2-tailed)	0.119	0.042	0.058	0.934	0.002	0.051	0.0004	
	N	341	341	341	341	341	341	341	
Voice changes	Correlation Coefficient	.034	.099	.047	.015	.216**	.090	.274**	
	Sig. (2-tailed)	0.535	0.067	0.389	0.777	0.0001	0.097	0.0000	
	N	341	341	341	341	341	341	341	
** Correlation is significant at the 0.0003 level (2-tailed).									
Female and Male Anatomical Health	Acute groin swelling/pain	Correlation Coefficient	.038	.140	.202**	-.017	.184**	.206**	.276**
		Sig. (2-tailed)	0.487	0.010	0.0002	0.754	0.001	0.0001	0.00000
		N	341	341	341	341	341	341	341
	Breast symptoms	Correlation Coefficient	-.024	-.038	.138	-.018	.087	.169	.191**
		Sig. (2-tailed)	0.664	0.483	0.011	0.735	0.109	0.002	0.0004
		N	341	341	341	341	341	341	341
	Genital rashes/irritation	Correlation Coefficient	-.024	.094	.239**	.022	.145	.188**	.332**
		Sig. (2-tailed)	0.662	0.082	0.00001	0.688	0.007	0.0005	0.00000
		N	341	341	341	341	341	341	341
	Pelvic pain/mass	Correlation Coefficient	-.024	.136	.167	.050	.164	.169	.242**
		Sig. (2-tailed)	0.665	0.012	0.002	0.361	0.002	0.002	0.00001
		N	341	341	341	341	341	341	341
	Penile discharge	Correlation Coefficient	.032	.133	.137	.037	.158	.195**	.293**
		Sig. (2-tailed)	0.560	0.014	0.011	0.499	0.003	0.0003	0.00000
		N	341	341	341	341	341	341	341
	Penile pain	Correlation Coefficient	.039	.147	.200**	-.027	.170	.234**	.331**
		Sig. (2-tailed)	0.469	0.007	0.0002	0.614	0.002	0.00001	0.00000
		N	341	341	341	341	341	341	341
	Urinary symptoms	Correlation Coefficient	.042	.036	.174**	-.003	.013	.060	.134
		Sig. (2-tailed)	0.439	0.513	0.001	0.949	0.804	0.273	0.013
		N	341	341	341	341	341	341	341
** Correlation is significant at the 0.001 level (2-tailed).									

Gastrointestinal & Hepatic System	Abdominal blood results	Correlation Coefficient	.187	.131	.117	.033	.065	.142	.224**
		Sig. (2-tailed)	0.001	0.015	0.031	0.538	0.229	0.009	0.0000
		N	341	341	341	341	341	341	341
	Abdominal distention	Correlation Coefficient	.041	.249**	.042	-.071	.085	.018	.012
		Sig. (2-tailed)	0.455	0.0000	0.440	0.188	0.116	0.737	0.820
		N	341	341	341	341	341	341	341
	Abdominal mass/swelling	Correlation Coefficient	.038	.207**	.023	-.041	.096	.009	.059
		Sig. (2-tailed)	0.489	0.0001	0.671	0.451	0.076	0.872	0.274
		N	341	341	341	341	341	341	341
	Abdominal pain	Correlation Coefficient	.060	.023	.133	.001	.045	.113	.093
		Sig. (2-tailed)	0.273	0.678	0.014	0.991	0.410	0.037	0.085
		N	341	341	341	341	341	341	341
	Change in bowel habit	Correlation Coefficient	.064	.004	.084	-.041	.002	.091	.144
		Sig. (2-tailed)	0.238	0.943	0.120	0.451	0.973	0.094	0.008
		N	341	341	341	341	341	341	341
	Constipation	Correlation Coefficient	-.102	.134	.072	-.014	.013	.041	.115
		Sig. (2-tailed)	0.060	0.013	0.187	0.791	0.813	0.448	0.034
		N	341	341	341	341	341	341	341
	Diarrhoea	Correlation Coefficient	.042	.094	.064	-.039	.052	.041	.116
		Sig. (2-tailed)	0.434	0.082	0.239	0.477	0.338	0.451	0.032
N		341	341	341	341	341	341	341	
Difficulty swallowing	Correlation Coefficient	.070	.152	.079	-.007	.145	.026	.184	
	Sig. (2-tailed)	0.195	0.005	0.144	0.902	0.007	0.627	0.001	
	N	341	341	341	341	341	341	341	
Excessive thirst	Correlation Coefficient	.014	.183	.076	-.056	.036	.077	.174	
	Sig. (2-tailed)	0.797	0.001	0.161	0.300	0.507	0.158	0.001	
	N	341	341	341	341	341	341	341	
Hematemesis	Correlation Coefficient	-.012	.103	.098	-.019	.143	.116	.133	
	Sig. (2-tailed)	0.820	0.058	0.070	0.732	0.008	0.032	0.014	
	N	341	341	341	341	341	341	341	
High risk behaviours and concerns	Correlation Coefficient	-.017	.143	.016	.121	.138	-.011	.086	
	Sig. (2-tailed)	0.750	0.008	0.768	0.025	0.011	0.836	0.114	
	N	341	341	341	341	341	341	341	
Indigestion	Correlation Coefficient	.142	.097	.222**	.008	.138	.157	.262**	
	Sig. (2-tailed)	0.009	0.073	0.0000	0.883	0.011	0.004	0.0000	
	N	341	341	341	341	341	341	341	
Nausea/vomiting	Correlation Coefficient	.138	.102	.123	.005	.055	.078	.159	
	Sig. (2-tailed)	0.011	0.060	0.023	0.929	0.308	0.152	0.003	
	N	341	341	341	341	341	341	341	
Poor appetite	Correlation Coefficient	.090	.098	.034	.043	.045	-.001	.070	
	Sig. (2-tailed)	0.095	0.070	0.530	0.430	0.407	0.978	0.197	
	N	341	341	341	341	341	341	341	
Rectal bleeding	Correlation Coefficient	.074	.128	.153	.012	.117	.119	.242**	
	Sig. (2-tailed)	0.174	0.018	0.005	0.820	0.031	0.028	0.0000	
	N	341	341	341	341	341	341	341	
Stoma issues	Correlation Coefficient	-.033	.242**	-.017	.047	.107	-.065	.130	
	Sig. (2-tailed)	0.544	0.0000	0.754	0.383	0.049	0.235	0.016	
	N	341	341	341	341	341	341	341	
** Correlation is significant at the 0.0004 level (2-tailed).									
Key Presentations	Fever	Correlation Coefficient	.038	.070	.150	.000	.044	.101	.127
		Sig. (2-tailed)	0.486	0.200	0.006	0.999	0.415	0.063	0.019
		N	341	341	341	341	341	341	341
	Generalised aches and pains	Correlation Coefficient	.121	.052	.069	-.037	-.001	.064	.081
		Sig. (2-tailed)	0.026	0.335	0.203	0.493	0.988	0.238	0.134
		N	341	341	341	341	341	341	341
	Genetic predisposition	Correlation Coefficient	.029	.029	.036	.049	.069	.043	.027
		Sig. (2-tailed)	0.593	0.590	0.504	0.365	0.204	0.424	0.617
		N	341	341	341	341	341	341	341
	Lymphadenopathy	Correlation Coefficient	.138	.136	.125	0.054	0.057	.149	.228**
		Sig. (2-tailed)	0.011	0.012	0.021	0.318	0.298	0.006	0.00002
		N	341	341	341	341	341	341	341
	Overdose/poisoning	Correlation Coefficient	-.048	.254**	.101	-.073	.160	.057	.074
		Sig. (2-tailed)	0.377	0.00000	0.061	0.181	0.003	0.290	0.174
		N	341	341	341	341	341	341	341
	Presentations in patients with a learning disability	Correlation Coefficient	.024	.178	.075	.097	.117	.029	.063
		Sig. (2-tailed)	0.653	0.001	0.166	0.075	0.031	0.588	0.249
		N	341	341	341	341	341	341	341
	Review of blood test results	Correlation Coefficient	.144	.094	.201	-.001	.087	.199	.282**
		Sig. (2-tailed)	0.008	0.082	0.0002	0.982	0.109	0.0002	0.00000
N		341	341	341	341	341	341	341	
Sleep issues	Correlation Coefficient	.074	.060	.040	-.104	-.039	.080	.107	
	Sig. (2-tailed)	0.171	0.267	0.457	0.056	0.472	0.140	0.048	
	N	341	341	341	341	341	341	341	
Substance/alcohol misuse	Correlation Coefficient	.014	.127	.115	-.018	.175	.092	.092	
	Sig. (2-tailed)	0.791	0.019	0.034	0.743	0.001	0.091	0.090	
	N	341	341	341	341	341	341	341	
Tired all the time	Correlation Coefficient	.165	.077	.096	-.036	.029	.105	.160	
	Sig. (2-tailed)	0.002	0.154	0.077	0.513	0.590	0.053	0.003	
	N	341	341	341	341	341	341	341	
Vulnerable adult, family/carer concern	Correlation Coefficient	.072	.216	-.033	.016	.054	-.069	-.013	
	Sig. (2-tailed)	0.185	0.0001	0.545	0.765	0.320	0.205	0.807	
	N	341	341	341	341	341	341	341	
** Correlation is significant at the 0.0004 level (2-tailed).									

Medication Review and Issues	Abnormal blood test results	Correlation Coefficient	.105	.098	.194**	.055	.095	.186	.264**
		Sig. (2-tailed)	0.052	0.072	0.0003	0.312	0.080	0.001	0.00000
		N	341	341	341	341	341	341	341
	Adverse side effects of medication	Correlation Coefficient	.026	.080	.118	.046	.222**	.131	.255**
		Sig. (2-tailed)	0.626	0.142	0.029	0.402	0.00003	0.016	0.00000
		N	341	341	341	341	341	341	341
	Higher risk groups (risk reduction medications)	Correlation Coefficient	.044	.116	.159	.078	.206**	.145	.235**
		Sig. (2-tailed)	0.416	0.033	0.003	0.152	0.0001	0.007	0.00001
		N	341	341	341	341	341	341	341
Ineffective medication	Correlation Coefficient	.015	.085	.145	.044	.149	.139	.274**	
	Sig. (2-tailed)	0.776	0.117	0.007	0.420	0.006	0.010	0.00000	
	N	341	341	341	341	341	341	341	
Issues with polypharmacy	Correlation Coefficient	.038	.145	.187	.120	.195**	.163	.302**	
	Sig. (2-tailed)	0.488	0.007	0.001	0.026	0.0003	0.002	0.00000	
	N	341	341	341	341	341	341	341	
Misuse of medication	Correlation Coefficient	-.005	.130	.156	.101	.188**	.128	.203	
	Sig. (2-tailed)	0.929	0.017	0.004	0.063	0.0005	0.018	0.0002	
	N	341	341	341	341	341	341	341	
Overuse of medication	Correlation Coefficient	.041	.083	.230**	.099	.197**	.122	.243**	
	Sig. (2-tailed)	0.451	0.127	0.00002	0.068	0.0002	0.024	0.00001	
	N	341	341	341	341	341	341	341	
Poor compliance with medication	Correlation Coefficient	.071	.105	.135	.103	.144	.110	.191**	
	Sig. (2-tailed)	0.188	0.052	0.012	0.058	0.008	0.042	0.0004	
	N	341	341	341	341	341	341	341	
** Correlation is significant at the 0.0008 level (2-tailed).									
Musculoskeletal	Difficulty with movement	Correlation Coefficient	.054	.104	.113	.036	.023	.023	.072
		Sig. (2-tailed)	0.317	0.055	0.037	0.508	0.669	0.668	0.186
		N	341	341	341	341	341	341	341
	Minor injury	Correlation Coefficient	-.007	.082	.061	-.049	.040	-.020	-.023
		Sig. (2-tailed)	0.902	0.129	0.265	0.369	0.467	0.709	0.669
		N	341	341	341	341	341	341	341
Pain	Correlation Coefficient	.057	.051	.153	.070	.019	.063	.039	
	Sig. (2-tailed)	0.296	0.346	0.005	0.198	0.725	0.249	0.472	
	N	341	341	341	341	341	341	341	
Redness	Correlation Coefficient	.051	.164	.146	.031	.092	.006	.093	
	Sig. (2-tailed)	0.350	0.002	0.007	0.569	0.090	0.907	0.086	
	N	341	341	341	341	341	341	341	
Stiffness	Correlation Coefficient	.064	.100	.128	.040	.062	.042	.112	
	Sig. (2-tailed)	0.240	0.064	0.018	0.456	0.253	0.442	0.039	
	N	341	341	341	341	341	341	341	
Swelling	Correlation Coefficient	.033	.133	.152	.027	.093	.023	.077	
	Sig. (2-tailed)	0.540	0.014	0.005	0.617	0.087	0.679	0.155	
	N	341	341	341	341	341	341	341	
** Correlation is significant at the 0.001 level (2-tailed).									
Neurological	Altered gait	Correlation Coefficient	.062	.165	.018	.095	.075	.019	.053
		Sig. (2-tailed)	0.251	0.002	0.743	0.081	0.169	0.729	0.326
		N	341	341	341	341	341	341	341
	Altered level of consciousness	Correlation Coefficient	.024	.170	.054	.081	.156	-.012	.036
		Sig. (2-tailed)	0.656	0.002	0.320	0.136	0.004	0.820	0.508
		N	341	341	341	341	341	341	341
	Altered level of consciousness	Correlation Coefficient	.013	.176	.039	.068	.149	-.022	.064
		Sig. (2-tailed)	0.812	0.001	0.472	0.209	0.006	0.687	0.239
		N	341	341	341	341	341	341	341
	Altered power, tone or sensitivity	Correlation Coefficient	.039	.120	.119	.044	.101	.096	.065
		Sig. (2-tailed)	0.473	0.027	0.028	0.423	0.062	0.076	0.231
		N	341	341	341	341	341	341	341
	Confusion	Correlation Coefficient	.071	.229**	.012	.070	.116	.017	.128
		Sig. (2-tailed)	0.190	0.00002	0.827	0.196	0.032	0.753	0.018
		N	341	341	341	341	341	341	341
	Dizziness	Correlation Coefficient	.101	.061	.125	.004	.042	.144	.092
		Sig. (2-tailed)	0.061	0.258	0.021	0.937	0.436	0.008	0.090
		N	341	341	341	341	341	341	341
	Facial palsy	Correlation Coefficient	.017	.131	.080	.086	.185	.051	.184
		Sig. (2-tailed)	0.754	0.015	0.138	0.112	0.001	0.347	0.001
		N	341	341	341	341	341	341	341
Fits faints and funny turns	Correlation Coefficient	.096	.110	.118	-.016	.118	.069	.060	
	Sig. (2-tailed)	0.078	0.043	0.030	0.762	0.029	0.204	0.268	
	N	341	341	341	341	341	341	341	
Head injury	Correlation Coefficient	-.028	.029	.092	-.053	.068	.037	.001	
	Sig. (2-tailed)	0.605	0.593	0.088	0.330	0.207	0.498	0.989	
	N	341	341	341	341	341	341	341	
Headache	Correlation Coefficient	.103	.046	.195	-.046	.025	.172	.153	
	Sig. (2-tailed)	0.057	0.396	0.0003	0.396	0.643	0.001	0.005	
	N	341	341	341	341	341	341	341	
Memory problems	Correlation Coefficient	.090	.178	-.028	.075	.084	.032	.130	
	Sig. (2-tailed)	0.098	0.001	0.607	0.166	0.120	0.553	0.016	
	N	341	341	341	341	341	341	341	
Paraesthesia	Correlation Coefficient	.017	.081	.189	.057	.211	.139	.199	
	Sig. (2-tailed)	0.758	0.138	0.0005	0.298	0.0001	0.010	0.0002	
	N	341	341	341	341	341	341	341	
Speech changes	Correlation Coefficient	.031	.224**	.011	.049	.184	.014	.097	
	Sig. (2-tailed)	0.567	0.00003	0.841	0.367	0.001	0.797	0.073	
	N	341	341	341	341	341	341	341	
Tremor	Correlation Coefficient	.039	.127	.031	.013	.134	.042	.099	
	Sig. (2-tailed)	0.474	0.019	0.568	0.813	0.014	0.440	0.067	
	N	341	341	341	341	341	341	341	
Weakness	Correlation Coefficient	.104	.133	.068	.025	.050	.032	.030	
	Sig. (2-tailed)	0.054	0.014	0.210	0.650	0.361	0.550	0.581	
	N	341	341	341	341	341	341	341	
** Correlation is significant at the 0.0004 level (2-tailed).									

Paediatrics	Abdominal pain	Correlation Coefficient	341	341	341	341	341	341	341
		Sig. (2-tailed)	0.334	0.977	0.00000	0.811	0.002	0.00000	0.00000
		N	.053	-.002	.293**	-.013	.171	.249**	.260**
	Acute bowel symptoms	Correlation Coefficient	.040	.014	.254**	-.058	.144	.217**	.234**
		Sig. (2-tailed)	0.461	0.800	0.00000	0.285	0.008	0.00005	0.00001
		N	341	341	341	341	341	341	341
	Constipation	Correlation Coefficient	.049	.052	.266**	.001	.134	.248**	.294**
		Sig. (2-tailed)	0.371	0.335	0.00000	0.987	0.013	0.00000	0.00000
		N	341	341	341	341	341	341	341
	Cough/wheeze/ stridor/respiratory distress/nasal symptoms	Correlation Coefficient	.043	-.032	.249**	.005	.109	.203	.148
		Sig. (2-tailed)	0.433	0.557	0.00000	0.923	0.045	0.0002	0.006
		N	341	341	341	341	341	341	341
	Crying baby	Correlation Coefficient	-.025	-.048	.296**	-.069	.149	.214	.192
		Sig. (2-tailed)	0.639	0.372	0.00000	0.201	0.006	0.0001	0.0004
		N	341	341	341	341	341	341	341
	Diarrhoea	Correlation Coefficient	.059	.009	.246**	-.046	.149	.237**	.230**
		Sig. (2-tailed)	0.280	0.866	0.00000	0.393	0.006	0.00001	0.00002
		N	341	341	341	341	341	341	341
	Eye injury	Correlation Coefficient	.003	.061	.116	-.042	.197	.117	.146
		Sig. (2-tailed)	0.961	0.260	0.032	0.434	0.0002	0.030	0.007
N		341	341	341	341	341	341	341	
Minor injury	Correlation Coefficient	-.074	-.030	.155	-.039	.190	.081	.092	
	Sig. (2-tailed)	0.174	0.583	0.004	0.472	0.0004	0.137	0.090	
	N	341	341	341	341	341	341	341	
Musculoskeletal symptoms	Correlation Coefficient	-.031	-.024	.247**	.015	.173	.158	.167	
	Sig. (2-tailed)	0.572	0.660	0.00000	0.778	0.001	0.003	0.002	
	N	341	341	341	341	341	341	341	
Otagia/otorrhoea	Correlation Coefficient	.070	-.024	.273**	-.010	.139*	.190	.223**	
	Sig. (2-tailed)	0.196	0.663	0.00000	0.851	0.010	0.0004	0.00003	
	N	341	341	341	341	341	341	341	
Pyrexia of unknown origin	Correlation Coefficient	.004	-.063	.265**	-.048	.090	.225**	.145	
	Sig. (2-tailed)	0.947	0.248	0.00000	0.372	0.097	0.00003	0.007	
	N	341	341	341	341	341	341	341	
Rashes	Correlation Coefficient	.023	-.039	.261**	-.007	.142	.208	.238**	
	Sig. (2-tailed)	0.671	0.472	0.00000	0.904	0.009	0.0001	0.00001	
	N	341	341	341	341	341	341	341	
Red eye/discharge	Correlation Coefficient	.045	.035	.222**	.026	.212	.193	.253**	
	Sig. (2-tailed)	0.405	0.517	0.00003	0.628	0.0001	0.0003	0.00000	
	N	341	341	341	341	341	341	341	
Sore throat	Correlation Coefficient	.053	-.020	.270**	.003	.099	.224**	.185	
	Sig. (2-tailed)	0.327	0.713	0.00000	0.962	0.067	0.00003	0.001	
	N	341	341	341	341	341	341	341	
Vomiting	Correlation Coefficient	.066	.008	.262**	-.053	.149	.224**	.225**	
	Sig. (2-tailed)	0.227	0.885	0.00000	0.333	0.006	0.00003	0.00003	
	N	341	341	341	341	341	341	341	
Vulnerable child	Correlation Coefficient	-.059	.103	.200**	.022	.175	.159	.196**	
	Sig. (2-tailed)	0.279	0.057	0.0002	0.686	0.001	0.003	0.0003	
	N	341	341	341	341	341	341	341	
** Correlation is significant at the 0.0004 level (2-tailed).									
Pain	Acute pain	Correlation Coefficient	.100	.071	.160	.053	.096	.127	.122
		Sig. (2-tailed)	0.066	0.190	0.003	0.326	0.076	0.019	0.024
		N	341	341	341	341	341	341	341
	Change in type of pain	Correlation Coefficient	.028	.079	.121	.048	.079	.017	.133
		Sig. (2-tailed)	0.606	0.145	0.026	0.373	0.148	0.750	0.014
		N	341	341	341	341	341	341	341
Worsening pain	Correlation Coefficient	.052	.079	.140	.046	.035	.050	.090	
	Sig. (2-tailed)	0.337	0.144	0.010	0.398	0.523	0.359	0.097	
	N	341	341	341	341	341	341	341	
** Correlation is significant at the 0.002 level (2-tailed).									
Palliative and End of Life Care	Discussions about advanced care planning	Correlation Coefficient	.047	.205**	-.093	.051	.168	-.043	.071
		Sig. (2-tailed)	0.382	0.0001	0.088	0.349	0.002	0.433	0.190
		N	341	341	341	341	341	341	341
	Symptom management	Correlation Coefficient	.056	.205**	-.046	.051	.089	-.029	.044
Sig. (2-tailed)		0.300	0.0001	0.399	0.349	0.103	0.593	0.418	
N		341	341	341	341	341	341	341	
** Correlation is significant at the 0.003 level (2-tailed).									

Renal and Genitourinary	Acute groin swelling/pain	Correlation Coefficient	.017	.155	.175	.076	.174	.141	.259**
		Sig. (2-tailed)	0.750	0.004	0.001	0.161	0.001	0.009	0.0000
		N	341	341	341	341	341	341	341
	Groin pain	Correlation Coefficient	.104	.135	.184	-.064	.110	.126	.260**
		Sig. (2-tailed)	0.055	0.012	0.001	0.238	0.041	0.020	0.0000
		N	341	341	341	341	341	341	341
	Haematuria	Correlation Coefficient	.132	.134	.156	.075	.116	.111	.226**
		Sig. (2-tailed)	0.015	0.014	0.004	0.165	0.032	0.041	0.0000
		N	341	341	341	341	341	341	341
	Inability to pass urine	Correlation Coefficient	.048	.206**	.046	.039	.131	.064	.101
		Sig. (2-tailed)	0.378	0.0001	0.400	0.471	0.016	0.240	0.063
		N	341	341	341	341	341	341	341
	Kidney disease	Correlation Coefficient	.090	.209**	.127	.028	.074	.119	.204**
Sig. (2-tailed)		0.099	0.0001	0.019	0.601	0.173	0.028	0.0001	
N		341	341	341	341	341	341	341	
Loin pain	Correlation Coefficient	.093	.109	.189**	.027	.143	.143	.266**	
	Sig. (2-tailed)	0.086	0.044	0.0004	0.622	0.008	0.008	0.0000	
	N	341	341	341	341	341	341	341	
Penile pain	Correlation Coefficient	.037	.151	.095	.003	.162	.097	.271**	
	Sig. (2-tailed)	0.495	0.005	0.079	0.949	0.003	0.073	0.0000	
	N	341	341	341	341	341	341	341	
Profuse vaginal bleeding	Correlation Coefficient	-.044	-.006	.153	.067	.157	.117	.130	
	Sig. (2-tailed)	0.416	0.917	0.005	0.218	0.004	0.031	0.017	
	N	341	341	341	341	341	341	341	
Recurrent infection	Correlation Coefficient	.100	.141	.055	.058	-.016	.053	.081	
	Sig. (2-tailed)	0.065	0.009	0.313	0.283	0.762	0.332	0.134	
	N	341	341	341	341	341	341	341	
Testicular pain/swelling	Correlation Coefficient	.017	.129	.211**	.035	.215**	.182	.351**	
	Sig. (2-tailed)	0.755	0.017	0.0001	0.517	0.0001	0.001	0.0000	
	N	341	341	341	341	341	341	341	
Urinary symptoms	Correlation Coefficient	.136	.058	.089	.022	-.073	.060	.097	
	Sig. (2-tailed)	0.012	0.282	0.102	0.691	0.181	0.266	0.074	
	N	341	341	341	341	341	341	341	
** Correlation is significant at the 0.0006 level (2-tailed).									
Respiratory	Acute Covid-19	Correlation Coefficient	.005	.121	.125	-.079	.029	.063	.069
		Sig. (2-tailed)	0.931	0.026	0.021	0.148	0.588	0.248	0.202
		N	341	341	341	341	341	341	341
	Breathing difficulties	Correlation Coefficient	.069	.111	.114	.023	.105	.097	.129
		Sig. (2-tailed)	0.202	0.041	0.036	0.678	0.052	0.074	0.017
		N	341	341	341	341	341	341	341
	Cough (including haemoptysis)	Correlation Coefficient	.090	.129	.133	-.005	.054	.126	.140
		Sig. (2-tailed)	0.097	0.017	0.014	0.934	0.321	0.020	0.010
		N	341	341	341	341	341	341	341
	Cyanosis	Correlation Coefficient	-.054	.143	.058	.021	.144	.068	.125
		Sig. (2-tailed)	0.317	0.008	0.284	0.693	0.008	0.213	0.021
		N	341	341	341	341	341	341	341
	Pain on breathing	Correlation Coefficient	.107	.104	.118	-.009	.088	.107	.106
Sig. (2-tailed)		0.047	0.055	0.030	0.872	0.105	0.048	0.051	
N		341	341	341	341	341	341	341	
Pallor	Correlation Coefficient	-.038	.174	.060	.064	.120	.026	.108	
	Sig. (2-tailed)	0.482	0.001	0.272	0.242	0.026	0.638	0.046	
	N	341	341	341	341	341	341	341	
Post Covid-19 syndrome	Correlation Coefficient	-.028	.090	.042	-.062	.034	.072	.093	
	Sig. (2-tailed)	0.603	0.097	0.435	0.252	0.535	0.186	0.087	
	N	341	341	341	341	341	341	341	
Shortness of breath	Correlation Coefficient	.064	.126	.082	-.011	.067	.076	.107	
	Sig. (2-tailed)	0.241	0.020	0.130	0.833	0.218	0.162	0.048	
	N	341	341	341	341	341	341	341	
Suspected or recurrent infection	Correlation Coefficient	.077	.080	.090	.035	-.015	.100	.052	
	Sig. (2-tailed)	0.154	0.138	0.097	0.515	0.789	0.064	0.342	
	N	341	341	341	341	341	341	341	
Wheeze	Correlation Coefficient	.086	.128	.126	.046	.100	.121	.146	
	Sig. (2-tailed)	0.113	0.018	0.020	0.393	0.066	0.026	0.007	
	N	341	341	341	341	341	341	341	
** Correlation is significant at the 0.0007 level (2-tailed).									

Appendix K: Correlations between clinical examinations and demographics of paramedics

			Clinical Supervision	Hours worked	Job Title	Length of time in primary care	Level of Education	Prescribing Status
Spearman's rho	Abdominal examination	Correlation Coefficient	.062	.116	.129	.091	.113	.117
		Sig. (2-tailed)	0.254	0.032	0.017	0.094	0.036	0.031
		N	341	341	341	341	341	341
	Assessment for lymphadenopathy	Correlation Coefficient	.062	.019	.186	.148	.211**	.257**
		Sig. (2-tailed)	0.254	0.730	0.001	0.006	0.0001	0.0000
		N	341	341	341	341	341	341
	Blood pressure	Correlation Coefficient	.064	.094	.072	.058	.071	.017
		Sig. (2-tailed)	0.238	0.085	0.183	0.284	0.190	0.751
		N	341	341	341	341	341	341
	Cardiovascular examination	Correlation Coefficient	.081	.113	.111	.065	.087	.066
		Sig. (2-tailed)	0.138	0.037	0.040	0.230	0.109	0.226
		N	341	341	341	341	341	341
	Cranial nerve examination	Correlation Coefficient	.048	.088	.166	.139	.155	.132
		Sig. (2-tailed)	0.376	0.106	0.002	0.010	0.004	0.015
		N	341	341	341	341	341	341
	Digital rectal examination	Correlation Coefficient	.007	.141	.217**	.195	.264**	.444**
		Sig. (2-tailed)	0.902	0.009	0.0001	0.0003	0.0000	0.0000
		N	341	341	341	341	341	341
	Echocardiogram (Echo)	Correlation Coefficient	-.066	.065	.052	.082	.091	.138
		Sig. (2-tailed)	0.228	0.236	0.343	0.133	0.096	0.011
		N	339	339	339	339	339	339
Electrocardiograph (ECG)	Correlation Coefficient	-.047	.150	.053	.127	.027	.055	
	Sig. (2-tailed)	0.388	0.005	0.329	0.019	0.616	0.311	
	N	341	341	341	341	341	341	
Eye examination	Correlation Coefficient	-.036	.017	.105	.204**	.212**	.255**	
	Sig. (2-tailed)	0.513	0.753	0.054	0.0002	0.0001	0.000	
	N	341	341	341	341	341	341	
FeNO testing	Correlation Coefficient	-.193	.015	.026	.060	.091	.121	
	Sig. (2-tailed)	0.0003	0.790	0.632	0.271	0.094	0.025	
	N	341	341	341	341	341	341	
Imaging	Correlation Coefficient	-.005	.084	.214**	.129	.127	.185	
	Sig. (2-tailed)	0.924	0.124	0.0001	0.018	0.019	0.001	
	N	341	341	341	341	341	341	
Jugular venous pressure	Correlation Coefficient	.077	.062	.089	.124	.137	.181	
	Sig. (2-tailed)	0.155	0.256	0.099	0.022	0.011	0.001	
	N	341	341	341	341	341	341	
Mental health examination	Correlation Coefficient	.092	.037	.073	.126	.129	.178	
	Sig. (2-tailed)	0.089	0.496	0.177	0.020	0.017	0.001	
	N	341	341	341	341	341	341	
Mid-stream urine culture	Correlation Coefficient	.113	.179	0.075	0.013	0.093	.129	
	Sig. (2-tailed)	0.037	0.001	0.167	0.807	0.088	0.017	
	N	341	341	341	341	341	341	
Mini mental state examination (MMSE)	Correlation Coefficient	.094	.126	.040	.128	.081	.084	
	Sig. (2-tailed)	0.082	0.020	0.464	0.018	0.135	0.120	
	N	341	341	341	341	341	341	
Musculoskeletal examination	Correlation Coefficient	.017	.086	.153	.133	.112	.073	
	Sig. (2-tailed)	0.758	0.113	0.005	0.014	0.039	0.180	
	N	340	340	340	340	340	340	
Neurological examination	Correlation Coefficient	.008	.084	.125	.067	.124	.052	
	Sig. (2-tailed)	0.887	0.123	0.021	0.217	0.022	0.335	
	N	341	341	341	341	341	341	

Otoscopy	Correlation Coefficient	.058	.053	.162	.088	.088	.193
	Sig. (2-tailed)	0.282	0.332	0.003	0.106	0.104	0.0003
	N	341	341	341	341	341	341
Oxygen saturations	Correlation Coefficient	.048	.080	.029	.029	-.067	-.105
	Sig. (2-tailed)	0.372	0.142	0.593	0.599	0.217	0.052
	N	341	341	341	341	341	341
Peak Expiratory Flow Rate	Correlation Coefficient	-.006	.045	.036	.183	.037	.123
	Sig. (2-tailed)	0.909	0.407	0.510	0.001	0.491	0.023
	N	341	341	341	341	341	341
Phlebotomy	Correlation Coefficient	.016	.220**	-.105	-.085	-.047	.033
	Sig. (2-tailed)	0.762	0.0000	0.053	0.116	0.385	0.539
	N	341	341	341	341	341	341
Pulse rate, rhythm, volume and character	Correlation Coefficient	-.016	.057	.044	.054	-.077	-.055
	Sig. (2-tailed)	0.774	0.292	0.422	0.320	0.156	0.310
	N	341	341	341	341	341	341
Referral to specialism or specialist services	Correlation Coefficient	.086	.168	.061	.143	.118	.190
	Sig. (2-tailed)	0.111	0.002	0.258	0.008	0.029	0.0004
	N	341	341	341	341	341	341
Respiratory examination	Correlation Coefficient	-.012	.085	.087	.085	.038	.034
	Sig. (2-tailed)	0.829	0.116	0.109	0.116	0.480	0.527
	N	341	341	341	341	341	341
Respiratory rate	Correlation Coefficient	.013	.084	.024	.018	-.058	-.063
	Sig. (2-tailed)	0.813	0.121	0.666	0.742	0.285	0.248
	N	340	340	340	340	340	340
Skin and/or nail scrapings/samples	Correlation Coefficient	.045	.124	.072	.149	.042	.296**
	Sig. (2-tailed)	0.410	0.022	0.183	0.006	0.444	0.0000
	N	341	341	341	341	341	341
Spirometry	Correlation Coefficient	-.015	.004	.022	-.001	.032	.046
	Sig. (2-tailed)	0.778	0.940	0.687	0.986	0.561	0.402
	N	341	341	341	341	341	341
Sputum sample	Correlation Coefficient	.134	.209**	.084	.152	.118	.290**
	Sig. (2-tailed)	0.013	0.0001	0.121	0.005	0.030	0.0000
	N	341	341	341	341	341	341
Stool sample	Correlation Coefficient	.212**	.107	.126	.049	.142	.257**
	Sig. (2-tailed)	0.0001	0.049	.021	0.363	0.009	0.0000
	N	341	341	341	341	341	341
Swabs	Correlation Coefficient	.126	.211**	.082	.089	.090	.277**
	Sig. (2-tailed)	0.020	0.0001	0.133	0.099	0.097	0.0000
	N	341	341	341	341	341	341
Temperature	Correlation Coefficient	.023	.067	-.023	-.019	-.103	-.114
	Sig. (2-tailed)	0.676	0.215	0.672	0.733	0.057	0.035
	N	341	341	341	341	341	341
Throat examination	Correlation Coefficient	.071	.072	.153	.063	.082	.102
	Sig. (2-tailed)	0.193	0.183	0.005	0.243	0.129	0.061
	N	341	341	341	341	341	341
Urinalysis	Correlation Coefficient	.071	.104	.029	.050	-.004	.033
	Sig. (2-tailed)	0.193	0.056	0.592	0.356	0.947	0.548
	N	341	341	341	341	341	341

** . Correlation is significant at the 0.0002 level (2-tailed).

Appendix L: Correlations between the request and interpretation of blood tests and demographics of paramedics

			Clinical Supervision	Hours worked	Job Title	Length of time registered as a paramedic	Length of time in primary care	Level of Education	Prescribing Status	Salary
Spearman's rho	ACR	Correlation Coefficient	.093	.232	.094	-.021	.116	.123	.230	.236
		Sig. (2-tailed)	0.085	0.001	0.082	0.705	0.033	0.023	0.001	0.001
		N	341	341	341	341	341	341	341	341
	Amylase	Correlation Coefficient	.077	.118	.150	.059	.115	.198	.306	.266
		Sig. (2-tailed)	0.156	0.030	0.005	0.274	0.033	0.001	0.001	0.001
		N	341	341	341	341	341	341	341	341
	Anti CCP	Correlation Coefficient	.080	.047	.147	.035	.087	.165	.248	.195
		Sig. (2-tailed)	0.139	0.389	0.007	0.514	0.108	0.002	0.001	0.001
		N	341	341	341	341	341	341	341	341
	Autoimmune antibodies	Correlation Coefficient	.100	.084	.129	-.025	.041	.198	.197	.223
		Sig. (2-tailed)	0.065	0.120	0.017	0.649	0.448	0.001	0.001	0.001
		N	341	341	341	341	341	341	341	341
	B12	Correlation Coefficient	.125	.100	.158	-.005	.011	.149	.245	.273
		Sig. (2-tailed)	0.021	0.066	0.003	0.922	0.835	0.006	0.001	0.001
		N	341	341	341	341	341	341	341	341
	BNP/NT-proBNP	Correlation Coefficient	.153	.228	.095	.022	.109	.134	.278	.297
		Sig. (2-tailed)	0.005	0.001	0.081	0.687	0.044	0.013	0.001	0.001
		N	341	341	341	341	341	341	341	341
	CA125	Correlation Coefficient	.092	.161	.148	.005	.115	.186	.268	.257
Sig. (2-tailed)		0.091	0.003	0.006	0.923	0.034	0.001	0.001	0.001	
N		341	341	341	341	341	341	341	341	
Calcium	Correlation Coefficient	.130	.165	.110	.055	.025	.166	.251	.214	
	Sig. (2-tailed)	0.016	0.002	0.043	0.312	0.643	0.002	0.001	0.001	
	N	341	341	341	341	341	341	341	341	
Coeliac screen	Correlation Coefficient	.077	.086	.146	-.054	.126	.197	.305	.326	
	Sig. (2-tailed)	0.153	0.114	0.007	0.322	0.020	0.0003	0.001	0.001	
	N	341	341	341	341	341	341	341	341	
CRP	Correlation Coefficient	.153	.189	.099	.009	.083	.108	.246	.296	
	Sig. (2-tailed)	0.005	0.001	0.068	0.871	0.124	0.047	0.001	0.001	
	N	341	341	341	341	341	341	341	341	
Drug levels	Correlation Coefficient	.025	.181	.011	.007	.037	.095	.172	.164	
	Sig. (2-tailed)	0.641	0.001	0.836	0.895	0.498	0.079	0.001	0.002	
	N	341	341	341	341	341	341	341	341	
ESR	Correlation Coefficient	.158	.114	.104	.091	-.028	.158	.189	.201	
	Sig. (2-tailed)	0.003	0.036	0.055	0.094	0.600	0.003	0.001	0.001	
	N	341	341	341	341	341	341	341	341	
Estosterone	Correlation Coefficient	.009	.090	.044	-.023	.013	.117	.134	.144	
	Sig. (2-tailed)	0.869	0.097	0.415	0.671	0.806	0.030	0.013	0.008	
	N	341	341	341	341	341	341	341	341	
FBC	Correlation Coefficient	.176	.125	.136	.009	.015	.167	.20	.267	
	Sig. (2-tailed)	0.001	0.021	0.012	0.871	0.789	0.002	0.001	0.001	
	N	341	341	341	341	341	341	341	341	
Free androgen index	Correlation Coefficient	-.054	.019	.024	-.044	.022	.129	.098	.104	
	Sig. (2-tailed)	0.320	0.732	0.657	0.415	0.686	0.017	0.070	0.055	
	N	341	341	341	341	341	341	341	341	
FSH/LH +/- prolactin	Correlation Coefficient	.005	.071	.089	.018	.032	.144	.161	.132	
	Sig. (2-tailed)	0.920	0.189	0.101	0.746	0.552	0.008	0.003	0.015	
	N	341	341	341	341	341	341	341	341	
Glandular fever screen	Correlation Coefficient	.061	.104	.168	.123	.223	.204**	.342**	.324	
	Sig. (2-tailed)	0.264	0.056	0.002	0.023	0.001	0.0001	0.0000	0.001	
	N	341	341	341	341	341	341	341	341	
Haematinics	Correlation Coefficient	.080	.201	.152	.069	.086	.144	.304	.279	
	Sig. (2-tailed)	0.140	0.001	0.005	0.206	0.111	0.008	0.00100	0.001	
	N	341	341	341	341	341	341	341	341	

HbA1c	Correlation Coefficient	.155	.142	.118	-.064	.002	.162	.202**	.249**
	Sig. (2-tailed)	0.004	0.009	0.029	0.235	0.971	0.003	0.0002	0.0000
	N	341	341	341	341	341	341	341	341
Hepatitis	Correlation Coefficient	.076	.087	.127	-.015	.120	.156	.193	.234
	Sig. (2-tailed)	0.164	0.107	0.019	0.779	0.027	0.004	0.0003	0.001
	N	341	341	341	341	341	341	341	341
HIV	Correlation Coefficient	.045	.069	.137	-.034	.154	.136	.192	.208
	Sig. (2-tailed)	0.407	0.205	0.011	0.526	0.004	0.012	0.001	0.001
	N	341	341	341	341	341	341	341	341
Iron studies	Correlation Coefficient	.139	.115	.104	-.017	-.004	.135	.162	.198
	Sig. (2-tailed)	0.010	0.034	0.055	0.760	0.938	0.013	0.003	0.0002
	N	341	341	341	341	341	341	341	341
LFT	Correlation Coefficient	.175	.129	.137	-.006	-.007	.165	.183	.247
	Sig. (2-tailed)	0.001	0.017	0.011	0.911	0.900	0.002	0.001	0.001
	N	341	341	341	341	341	341	341	341
Lipid profile	Correlation Coefficient	.104	.071	.158	-.003	.077	.192	.278	.341
	Sig. (2-tailed)	0.054	0.192	0.003	0.957	0.157	0.0004	0.001	0.001
	N	341	341	341	341	341	341	341	341
PSA	Correlation Coefficient	.123	.195	.137	-.008	.002	.205	.297	.293
	Sig. (2-tailed)	0.023	0.001	0.011	0.876	0.977	0.001	0.001	0.001
	N	341	341	341	341	341	341	341	341
Rheumatoid factor	Correlation Coefficient	.082	.085	.154	.019	.081	.196	.248	.235
	Sig. (2-tailed)	0.130	0.117	0.004	0.727	0.137	0.001	0.001	0.001
	N	341	341	341	341	341	341	341	341
SHBG	Correlation Coefficient	-.034	.008	.027	-.009	.020	.155	.132	.101
	Sig. (2-tailed)	0.530	0.885	0.623	0.867	0.707	0.004	0.014	0.063
	N	341	341	341	341	341	341	341	341
TFT	Correlation Coefficient	.133	.138	.154	.039	.081	.201**	.276	.276
	Sig. (2-tailed)	0.014	0.011	0.004	0.476	0.136	0.00019	0.001	0.001
	N	341	341	341	341	341	341	341	341
U&Es	Correlation Coefficient	.175	.146	.123	.006	-.007	.152	.185	.261
	Sig. (2-tailed)	0.001	0.007	0.024	0.906	0.898	0.005	0.001	0.001
	N	341	341	341	341	341	341	341	341
Urate	Correlation Coefficient	.141	.193	.122	.063	.133	.167	.256	.288
	Sig. (2-tailed)	0.009	0.001	0.025	0.244	0.014	0.002	0.001	0.001
	N	341	341	341	341	341	341	341	341
Vitamin D	Correlation Coefficient	.142	.090	.095	-.066	-.027	.147	.183	.192
	Sig. (2-tailed)	0.009	0.098	0.078	0.225	0.623	0.006	0.001	0.000
	N	341	341	341	341	341	341	341	341

** . Correlation is significant at the 0.0002 level (2-tailed).

Appendix M: CUREC approved letter of access and debriefing statement

phase II

MEDICAL SCIENCES INTERDIVISIONAL RESEARCH ETHICS COMMITTEE
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CONFIDENTIAL

Georgette Eaton
Nuffield Department of Primary Care Health Sciences
University of Oxford
Radcliffe Observatory Quarter
Woodstock Road
Oxford

9 November 2021

Dear Georgette,

Research Ethics Approval - CUREC 2

Ethics Approval Reference: R77299/RE001

Study title: An analytic auto-netnography of online social spaces for paramedics working in primary care

Short title: Understanding the perceptions posted on social media by paramedics about their role in primary care

The above application has been considered on behalf of the Medical Sciences Interdivisional Research Ethics Committee (MS IDREC) in accordance with the University's procedures for ethical approval of all research involving human participants.

I am pleased to inform you that, on the basis of the information provided to the IDREC, the proposed research has been judged as meeting appropriate ethical standards, and approval has been granted for a period of **18 months**, commencing on **9th November 2021**.

You will be required to submit an annual progress report on each anniversary of study approval, until the study is completed, and your study may be selected for review during an annual audit.

Amendments

Should there be any subsequent changes to the study, you should submit details to the MS IDREC for consideration and approval. Details of changes must be listed on an [amendment form](#).

Yours Sincerely

A handwritten signature in black ink, appearing to read 'H. Barnby-Porridd'.

Dr Helen Barnby-Porridd
Research Ethics Manager

Appendix N: CMOCs developed from realist evaluation phase II

Font Key:

Grey = CMOCs that could not be refined due to the data collected, but may still be relevant

Black = Previously developed CMOCs relevant to findings within this work package

Bold = New CMOC based on the analysis of data derived from this work package.

Concept 1: Expectations of paramedics working in primary care

Patient Perspectives

1. Patients want to know what paramedics do in their General Practice. When the paramedic role in General Practice is clear to patients (C) they understand how the role is appropriate in relation to their care needs (M), and so have increased confidence when they are treated by paramedics (O)
2. When a trusted source explains the role and value of seeing a paramedic (C), patients understand how the role is appropriate in relation to their care needs (M), and so are supportive of the introduction of these new roles (O) and have increased confidence when they are treated by paramedics (O)
3. When the care provided by paramedics meets the patients' expectations (C), they will be more willing to be seen by a paramedic in the future (O) and more satisfied with the appointment outcome (O) because they are reassured with the level of care provided (M)
4. When a paramedic uses their longer appointment time to listen and understand a patient's problem (C), patients are more willing to see them again (O), because they value this approach (M)
5. When paramedics have a therapeutic relationship with the patients they see (C), these patients are reassured with the level of care provided (M) and more willing to be seen by a paramedic in the future (O) and more satisfied with the appointment outcome (O)
6. When patients want to be seen by their usual GP (C), they do not wish to be seen by a paramedic (O) as this is not what they expect (M).

GP Perspectives

7. GPs do not regard paramedics as diagnosticians (O) and so employ them in assessment-only roles (C) as they consider the paramedic to be 'out of depth' in primary care (M)
8. When the employer does not consider the paramedic to have the skills and competencies relevant for their needs (C) employers may be less likely to employ paramedics (O) because they don't consider them to be useful (M)
9. When the paramedics can demonstrate that they can help to reduce the workload of GPs (C), because this is valued by GPs (M) paramedics continue to be actively recruited into primary care (O)
10. Paramedics are actively recruited into primary care (O) when gaps within the workforce exist (C) because they are perceived to be able to support general practice (M)

Paramedic Perspectives

11. Paramedics who perceive their role as a generalist (C) will look for opportunities for employment in primary care (O) because they believe they can enjoy and work in that environment (M)
12. Paramedics working in rotational roles between emergency medical services and primary care (C) feel able to apply their knowledge learnt in one area to another (M) to provide improved patient care (O)
13. **Paramedics who are comfortable with their professional identity (C) experience less work-related frustration and stress in primary care (O) because they understand their position within the workforce (M)**
14. **Paramedics working in primary care perceive colleagues as lacking a comprehensive grasp of their duties, or those who do not conform to the majority's interpretation of the role (C) they tend "other" those individuals (O) because are protective toward their profession (M)**

Contribution to Primary Care Teams

15. When Emergency medical services use rotational models for paramedics to work in both the ambulance service and primary care (C) the needs of both organisations are more likely to be met (such as EMS workforce retention and increased workforce capacity in primary care) (O) because paramedic staff retention rates and satisfaction is higher (M).
16. When sufficient financial reimbursement is offered for paramedic roles in primary care (C) because paramedics are viewed as a credible addition to the

team by employers (M) they are considered for recruitment into the practice workforce (O)

17. The existing skills and knowledge of paramedics is perceived by commissioners and stakeholders to correlate well into primary care (C) and so paramedics are actively recruited into primary care (O) because what they can offer is valued (M)
18. Paramedics who are judged by employers to lack clinical experience and education (C) are employed in an eyes and ears approach in primary care (O) because they lack the clinical acumen sufficient for primary care (M)
19. When paramedics are prevented by legislation or policy from seeing the full range of conditions that present to primary care (C), they feel frustrated in their role (O), because they feel they cannot contribute in the fullest way (M)

For whom: Rural workforces/teams

20. When paramedics provide access to healthcare which otherwise would not be available (C) they are considered a community asset (O) because what they do is highly valued by patients and service commissioners and providers (M)

Concept 2: Transition into primary care roles

Education

21. Paramedics are able to transition into advanced practice roles (O) when they are supported by their employers in primary care (M) with clinical supervision (C) and access to formal education (C)
22. As paramedics transition from EMS to primary care roles (C), paramedics move away from their traditional scope of practice (O) because of the change in the clinical conditions they have to manage (M)
23. **Due to the geographical nature of primary care work (C), paramedics tend to use online social spaces to exchange insights regarding their role (O) and support each other (O) because it is a convenient way to engage with others (M)**
24. **The lack of a structured curriculum to support primary care education (C) means that paramedics learn through practical experience of working in primary care (M) leading to variations in the implementation of the role (O)**

Supervision

25. When paramedics are clinically supported in general practice (C), because they feel better supported (M) they will continue to advance and/or develop their capabilities and confidence within their role (O)
26. When paramedics are provided with clinical feedback, advice, and supervision in general practice (C), because they feel better supported (M), they have higher satisfaction with their role (O)
27. When clinical supervision is accessible for paramedics (C), they have higher satisfaction with their role (O) because they feel better supported (M)

Experience

28. Paramedics at a junctional point within their career (C) value the opportunity to develop themselves (M) and so look for opportunities for employment in primary care (O)
29. Paramedics are pluripotent (C). Because of the breadth of issues with which they can deal (M) paramedics are considered a useful addition to the primary care team (O)
30. Paramedics who are dissatisfied with their work in the ambulance service (C) will look for opportunities for employment in primary care (O) because they believe this will afford them a better work/life balance (M)
31. Paramedics who are experienced by virtue of their work in the ambulance service (C) fulfil an increased clinical role in primary care (O) because they have practical experience to draw upon (M)
32. When paramedics are not allowed to see some patient groups due to the clinical guidelines that exist in their work in ambulance services (C) they are prevented from gaining experience in the whole range of conditions that present to primary care (O) because they don't have these relevant opportunities to learn from (M)
33. **When paramedics have newly transitioned into working in primary care settings (C) effective time management poses a challenge for them (O) because they lack the experience needed (M)**
34. **When paramedics have no previous experience of working in primary care (C), they are surprised about the magnitude and type of work they are required to do (O) owing to an absence of adequate preparation for such responsibilities (M)**

Concept 3: Role and Responsibilities

Working in a Team

35. When the professional role boundaries of paramedics overlap with existing health care professionals in General Practice (C) there may be resistance of the paramedic role and responsibilities by these other health care professionals (O), because they feel threatened (M)
36. Paramedics experience frustrations in their role (O) when the role and responsibilities of the paramedic are unclear (C). When this occurs, paramedics are less likely to be empowered (M)
37. When the paramedics capabilities have been demonstrated (C) they are viewed by practice staff as a credible addition to the team (M) and are accepted into the practice workforce (O)
38. When the boundaries of the paramedic scope of practice are understood by the practice team (C), paramedics are viewed as a credible addition to the team (M) and are accepted into the practice workforce (O)
- 39. Working in primary care (C) requires paramedics to reframe their professional identity (M) in order to integrate into the workforce (O)**

Interpersonal skills

40. When paramedics demonstrate to the GP practice their awareness of their professional competencies (C), other health care professionals are more likely to accept the paramedic role in the practice (O), because they develop trust in their abilities (M)
41. When paramedics in a patient consultation display strong interpersonal skills and enthusiasm (C) patients are more likely to be satisfied (O) because patients use these to judge the quality of care they received (M)

Clinical role

42. Paramedics who have a higher level of education and clinical experiences (C) fulfil an increased clinical role in primary care (O) because they have greater knowledge and capabilities (M)
43. Paramedics who can independently prescribe medicines (C) fulfil an increased clinical role in primary care (O) because they are able to complete a broader range of clinical (M)

Appendix O: Semi-structured interview guide realist evaluation phase III

Paramedic interview schedule

- Questions about daily schedule
- Questions about their perceptions on their role
- Questions about work/life balance
- Questions about education, knowledge, and skills

Patient interview schedule

- Questions about the perception of the paramedic role/profession
- Questions about the perception of the paramedic working in primary care
- Questions about 'what matters most' to them regarding the care they receive

Healthcare professional/administrative staff interview schedule

- Questions about their perception of the paramedic role/profession
- Questions about the perception of the paramedic working in primary care
- Questions about their work/life balance in primary care, with the paramedic in their role.
- Questions about implementation experiences (eg. Barriers)

Appendix P: HRA approval for focused observations and interviews



Ymchwil Iechyd
a Gofal Cymru
Health and Care
Research Wales



Dr Stephanie Tierney
Radcliffe Primary Care Building, Radcliffe Observatory
Quarter
Woodstock Rd,
Oxford
OX2 6GGN/A

Email: approvals@hra.nhs.uk
HCRW.approvals@wales.nhs.uk

03 May 2022

Dear Dr Tierney

**HRA and Health and Care
Research Wales (HCRW)
Approval Letter**

Study title: Understanding the role and work of paramedics in primary care: Focussed observations of paramedics and semi-structured interviews with paramedics, patients and other health care professionals within the primary care workforce

IRAS project ID: 308242

Protocol number: PID16039

REC reference: 22/NW/0097

Sponsor University of Oxford

I am pleased to confirm that [HRA and Health and Care Research Wales \(HCRW\) Approval](#) has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications received. You should not expect to receive anything further relating to this application.

Please now work with participating NHS organisations to confirm capacity and capability, in line with the instructions provided in the “Information to support study set up” section towards the end of this letter.

How should I work with participating NHS/HSC organisations in Northern Ireland and Scotland?

HRA and HCRW Approval does not apply to NHS/HSC organisations within Northern Ireland and Scotland.

If you indicated in your IRAS form that you do have participating organisations in either of these devolved administrations, the final document set and the study wide governance report

(including this letter) have been sent to the coordinating centre of each participating nation. The relevant national coordinating function/s will contact you as appropriate.

Please see [IRAS Help](#) for information on working with NHS/HSC organisations in Northern Ireland and Scotland.

How should I work with participating non-NHS organisations?

HRA and HCRW Approval does not apply to non-NHS organisations. You should work with your non-NHS organisations to [obtain local agreement](#) in accordance with their procedures.

What are my notification responsibilities during the study?

The standard conditions document "[After Ethical Review – guidance for sponsors and investigators](#)", issued with your REC favourable opinion, gives detailed guidance on reporting expectations for studies, including:

- Registration of research
- Notifying amendments
- Notifying the end of the study

The [HRA website](#) also provides guidance on these topics, and is updated in the light of changes in reporting expectations or procedures.

Who should I contact for further information?

Please do not hesitate to contact me for assistance with this application. My contact details are below.

Your IRAS project ID is **308242**. Please quote this on all correspondence.

Yours sincerely,
Natasha Bridgeman

Approvals Specialist

Email: approvals@hra.nhs.uk

Copy to: *RGEA RGEA*

Appendix Q: OxTREC approval for international data collection for focused observations and interviews

Oxford Tropical Research Ethics Committee

University of Oxford
Research Services, Research Governance, Ethics & Assurance
Boundary Brook House, Churchill Drive, Oxford OX3 7GB
Tel. +44 (0)1865 (2)82106
E-mail: oxtrece@admin.ox.ac.uk



Dr Stephanie Tierney
Radcliffe Primary Care Building,
Radcliffe Observatory Quarter,
Woodstock Rd,
Oxford OX2 6GG

13 May 2022

Dear Dr Tierney

Full Title of Study: Understanding the role and work of community paramedics in Canada: Focused observations of paramedics and semi-structured interviews with paramedics, patients and other health care professionals within the primary care workforce

OxTREC Reference: 524-22

Thank you for your email of 11/05/22, and for your updated minimal risk application form.

I am pleased to confirm that approval has now been granted for this study. This is valid for the planned duration of the study as detailed in the application and is subject to receiving local ethical approval (if this approval has not yet been received).

The documents approved for this study are as follows:

Documents:	Version:	Date:
OxTrec Participant Information Sheet- Paramedic	1.2	13/05/22
OxTrec Participant Information Sheet- Patients	1.2	13/05/22
OxTrec Participant Information Sheet- Professional or administrative staff	1.2	13/05/22
OxTrec Remote Consent Form - Observation of consultation	1.2	13/05/22
OxTrec Remote Consent Form	1.2	13/05/22

Tel: +44 (0)1865 (2)82106
Email: oxtrece@admin.ox.ac.uk Web: <https://researchsupport.admin.ox.ac.uk/governance/ethics>

Summary CV for student		06 February 2022
Summary CV for supervisor (student research)		06 February 2022
Summary, synopsis or diagram (flowchart) of protocol in non technical language	V1.0	06 February 2022

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website: <http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/>

HRA Learning

We are pleased to welcome researchers and research staff to our HRA Learning Events and online learning opportunities– see details at: <https://www.hra.nhs.uk/planning-and-improving-research/learning/>

IRAS project ID: 308242 Please quote this number on all correspondence

With the Committee's best wishes for the success of this project.

Yours sincerely

William Lyse

Approvals Administrator

On Behalf of

**Professor Karen Wright
Chair**

Email: preston.rec@hra.nhs.uk

Enclosures: "After ethical review – guidance for researchers"

Lead Nation England: approvals@hra.nhs.uk

PARAMEDIC SERVICE
EMERGENCY SERVICES
DEPARTMENT



9 INTERNATIONAL DRIVE
PEMBROKE, ON, CANADA
K8A 6W5
(613) 735-7288
Toll Free: 1-800-273-0183

May 16, 2022

Georgette Eaton
NIHR Doctoral Research Fellow
Nuffield Department of Primary Care Health Sciences, University of Oxford
Radcliffe Observatory Quarter, Woodstock Road,
Oxford, OX2 6GG

Dear Ms. Eaton

Full Title of Study: Understanding the role and work of community paramedics in Canada: Focused observations of paramedics and semi-structured interviews with paramedics, patients and other health care professionals within the primary care workforce - **OxTREC Reference: 524-22**

This research does not involve formal collaboration with a Canadian academic institution as outlined in TCPS-2 (Chapter 8). Therefore, the County of Renfrew is pleased to facilitate your research as outlined in the minimal-risk ethics approval 524-22 from the Oxford Tropical Research Ethics Committee dated 13 May 2022. Access to our staff will be granted by usual procedures required here.

Sincerely,

Chief Michael Nolan
Director, Emergency Services
County of Renfrew Paramedic Service

Appendix R: CMOCs developed from realist evaluation phase III

Font Key:

Grey = CMOCs that could not be refined due to the data collected, but may still be relevant

Black = Previously developed CMOCs relevant to findings within this work package

Bold = New CMOC based on the analysis of data derived from this work package.

Concept 1: Expectations of paramedics working in primary care

Patient Perspectives

1. Patients want to know what paramedics do in their General Practice. When the paramedic role in General Practice is clear to patients (C) they understand how the role is appropriate in relation to their care needs (M), and so have increased confidence when they are treated by paramedics (O)
2. When a trusted source explains the role and value of seeing a paramedic (C), patients understand how the role is appropriate in relation to their care needs (M), and so are supportive of the introduction of these new roles (O) and have increased confidence when they are treated by paramedics (O)
3. When the care provided by paramedics meets the patients' expectations (C), they will be more willing to be seen by a paramedic in the future (O) and more satisfied with the appointment outcome (O) because they are reassured with the level of care provided (M)
4. When a paramedic uses their longer appointment time to listen and understand a patient's problem (C), patients are more willing to see them again (O), because they value this approach (M)
5. When paramedics have a therapeutic relationship with the patients they see (C), these patients are reassured with the level of care provided (M) and more willing to be seen by a paramedic in the future (O) and more satisfied with the appointment outcome (O)
6. When patients want to be seen by their usual GP (C), they do not wish to be seen by a paramedic (O) as this is not what they expect (M).
7. **Patients develop confidence and trust in paramedics (O) when paramedics need to seek advice about their care (C), because they understand there is clinical oversight from a GP (M).**

GP Perspectives

<i>Existing</i>	<i>Refined</i>
GPs do not regard paramedics as diagnosticians (O) and so employ them in assessment-only roles (C) as they consider the paramedic to be 'out of depth' in primary care (M)	When primary care providers do not regard paramedics as diagnosticians (O) they employ them in assessment-only roles (C) until they develop trust in the paramedics' capabilities to function effectively in the primary care (M)

8. When the employer does not consider the paramedic to have the skills and competencies relevant for their needs (C) employers may be less likely to employ paramedics (O) because they don't consider them to be useful (M)
9. When the paramedics can demonstrate that they can help to reduce the workload of GPs (C), because this is valued by GPs (M) paramedics continue to be actively recruited into primary care (O)
10. Paramedics are actively recruited into primary care (O) when gaps within the workforce exist (C) because they are perceived to be able to support general practice (M)
11. **For GPs to provide support to paramedics in primary care roles (C), they require time allocated during their working day (M) to offer clinical supervision (O)**
12. **GPs believe (O) that paramedics with substantial experience in the ambulance service (C) are better prepared to make a successful transition and work effectively in the primary care workforce (M)**

Paramedic Perspectives

13. Paramedics who perceive their role as a generalist (C) will look for opportunities for employment in primary care (O) because they believe they can enjoy and work in that environment (M)
14. Paramedics working in rotational roles between emergency medical services and primary care (C) feel able to apply their knowledge learnt in one area to another (M) to provide improved patient care (O)
15. Paramedics who are comfortable with their professional identity (C) experience less work-related frustration and stress in primary care (O) because they understand their position within the workforce (M)

16. Paramedics working in primary care perceive colleagues as lacking a comprehensive grasp of their duties, or those who do not conform to the majority's interpretation of the role (C) they tend "other" those individuals (O) because are protective toward their profession (M)

17. Fear of loss of personal professional registration (M) remains important for paramedics in primary care (C) who consider a heightened level of professional responsibility in comparison to their roles in the ambulance service (O)

Contribution to Primary Care Teams

18. When Emergency medical services use rotational models for paramedics to work in both the ambulance service and primary care (C) the needs of both organisations are more likely to be met (such as EMS workforce retention and increased workforce capacity in primary care) (O) because paramedic staff retention rates and satisfaction is higher (M).

19. When sufficient financial reimbursement is offered for paramedic roles in primary care (C) because paramedics are viewed as a credible addition to the team by employers (M) they are considered for recruitment into the practice workforce (O)

20. The existing skills and knowledge of paramedics is perceived by commissioners and stakeholders to correlate well into primary care (C) and so paramedics are actively recruited into primary care (O) because what they can offer is valued (M)

21. Paramedics who are judged by employers to lack clinical experience and education (C) are employed in an eyes and ears approach in primary care (O) because they lack the clinical acumen sufficient for primary care (M)

22. When paramedics are prevented by legislation or policy from seeing the full range of conditions that present to primary care (C), they feel frustrated in their role (O), because they feel they cannot contribute in the fullest way (M)

23. When paramedics are prevented by legislation or policy from seeing the full range of conditions that present to primary care (C), other clinicians in the primary care workforce are frustrated (O), because this increases their workload (M)

For whom: Rural workforces/teams

24. When paramedics provide access to healthcare which otherwise would not be available (C) they are considered a community asset (O) because what they do is highly valued by patients and service commissioners and providers (M)

Concept 2: Transition into primary care roles

Education

- 25. When employers provide clinical supervision (C) and access to formal education to paramedics (C) they are better able to transition into primary care roles (O) because they feel supported (M)**
26. Paramedics are able to transition into advanced practice roles (O) when they are supported by their employers in primary care (M) with clinical supervision (C) and access to formal education (C)
27. As paramedics transition from EMS to primary care roles (C), paramedics move away from their traditional scope of practice (O) because of the change in the clinical conditions they have to manage (M)
28. Due to the geographical nature of primary care work (C), paramedics tend to use online social spaces to exchange insights regarding their role (O) and support each other (O) because it is a convenient way to engage with others (M)
29. The lack of a structured curriculum to support primary care education (C) means that paramedics learn through practical experience of working in primary care (M) leading to variations in the implementation of the role (O)
- 30. Paramedics recognise that working in primary care (C) requires additional study (M) which is often undertaken in their own time and has an impact on their work/life balance (O)**

Supervision

31. When paramedics are clinically supported in general practice (C), because they feel better supported (M) they will continue to advance and develop their capabilities and confidence within their role (O)
32. When paramedics are provided with clinical feedback, advice, and supervision in general practice (C), because they feel better supported (M), they have higher satisfaction with their role (O)
33. When clinical supervision is accessible for paramedics (C), they have higher satisfaction with their role (O) because they feel better supported (M)

Experience

34. Paramedics at a junctional point within their career (C) value the opportunity to develop themselves (M) and so look for opportunities for employment in primary care (O)

35. Paramedics are pluripotent (C). Because of the breadth of issues with which they can deal (M) paramedics are considered a useful addition to the primary care team (O)
36. Paramedics who are dissatisfied with their work in the ambulance service (C) will look for opportunities for employment in primary care (O) because they believe this will afford them a better work/life balance(M)
37. Paramedics who are experienced by virtue of their work in the ambulance service (C) fulfil an increased clinical role in primary care (O) because they have practical experience to draw upon (M)
38. When paramedics are not allowed to see some patient groups due to the clinical guidelines that exist in their work in ambulance services (C) they are prevented from gaining experience in the whole range of conditions that present to primary care (O) because they don't have these relevant opportunities to learn from (M)
39. When paramedics have newly transitioned into working in primary care settings (C) effective time management poses a challenge for them (O) because they lack the experience needed (M)
40. When paramedics have no previous experience of working in primary care (C), they are surprised about the magnitude and type of work they are required to do (O) owing to an absence of adequate preparation for such responsibilities (M)
- 41. Paramedics consider that their experiences in the ambulance service (C) are important in preparing them to work effectively in primary care (O) as working in the emergency ambulance setting has enabled them to develop their professional praxis (M)**
- 42. Experienced paramedics in primary care (C) complement the role of the GP (M) and are able to increase workforce capacity (O) by improving patient access to consultations (O)**

Concept 3: Role and Responsibilities

Working in a Team

43. When the professional role boundaries of paramedics overlap with existing health care professionals in General Practice (C) there may be resistance of the paramedic role and responsibilities by these other health care professionals (O), because they feel threatened (M)
44. Paramedics experience frustrations in their role (O) when their role and responsibilities are unclear (C). When this occurs, paramedics are less likely to be empowered (M)
45. When the paramedics capabilities have been demonstrated (C) they are viewed by practice staff as a credible addition to the team (M) and are accepted into the practice workforce (O)

<i>Existing</i>	<i>Refined</i>
When the boundaries of the paramedic scope of practice are understood by the practice team (C), paramedics are viewed as a credible addition to the team (M) and are accepted into the practice workforce (O)	When the role of paramedics is clear and well defined (C) the paramedic integrates well in the primary care workforce (O), because their contribution is clear (M)

46. Working in primary care (C) requires paramedics to reframe their professional identity (M) in order to integrate into the workforce (O)
47. **The paramedic profession (C) is poorly understood by primary care teams (O), who associate it with the provision of emergency care in an ambulance only (M)**
48. **Primary care teams consider that length of experience in the ambulance service (C) is important in preparing paramedics to work effectively in primary care (O) because they have a broad range of practical experience to draw upon (M)**

Interpersonal skills

49. When paramedics demonstrate to the GP practice their awareness of their professional competencies (C), other health care professionals are more likely

to accept the paramedic role in the practice (O), because they develop trust in their abilities (M)

<i>Existing</i>	<i>Refined</i>
When paramedics in a patient consultation display strong interpersonal skills and enthusiasm (C) patients are more likely to be satisfied (O) because patients use these to judge the quality of care they received (M)	For patients, the interpersonal skills of the paramedic are one of the most important components of the consultation (C). Where paramedics display empathy, active listening and a holistic approach to the patient (M), the patient develops trust and confidence in the paramedic (O).

50. Successful integration of paramedics into primary care teams (O) is attributed to the interpersonal skills and enthusiasm of the paramedic (C) because primary care team members use these to judge the type of person they work alongside (M)

Clinical role

51. Paramedics who have a higher level of education and clinical experiences (C) fulfil an increased clinical role in primary care (O) because they have greater knowledge and capabilities (M)

52. Paramedics who can independently prescribe medicines (C) fulfil an increased clinical role in primary care (O) because they are able to complete a broader range of consultations (M)

Appendix S: Overview of data sources from realist review and illustrative examples of data that have contributed to

CMOC development for Concept 1: Expectations of paramedics working in primary care

Patient Perspectives					
Initial CMOC	Realist Review	Realist Evaluation			Final CMOC
		Phase I	Phase II	Phase III	
<p>Patients want to know what paramedics do in their General Practice. When the paramedic role in General Practice is clear to patients (C) they understand how the role is appropriate in relation to their care needs (M), and so have increased confidence when they are treated by paramedics (O)</p>	<p>Dainty et al., 2018; Martin et al., 2016; O'Meara et al., 2016</p>	<p><i>"Some patients do not understand my role/skill set and just want a GP"</i> (RID 143; Advanced Paramedic),</p>		<p><i>"having a heads-up that they've got paramedics working there would be good"</i> (UK804: Patient)</p>	<p>CMOC 1: When a trusted source explains the role of a paramedic in primary care (C), patients understand how the role may be appropriate to their care needs (M), and are receptive to the introduction of paramedics in the primary care workforce (O)</p>
<p>When a trusted source explains the role and value of seeing a paramedic (C), patients understand how the role is appropriate in relation to their care needs (M), and so are supportive of the introduction of these new roles (O) and have increased confidence when they are treated by paramedics (O)</p>				<p><i>"I suppose generally we're very happy with our GP surgery. So yeah... I would be quite trusting of them anyway and whoever they sent"</i> (UK404: Patient carer)</p>	

<p>When the care provided by paramedics meets patients' expectations (C), they will be more willing to be seen by a paramedic in the future (O) and more satisfied with the appointment outcome (O) because they are reassured with the level of care provided (M)</p>	<p>Brydges et al., 2016; Dalgarno, 2016; Martin et al., 2016; Proctor, 2019</p>			<p><i>"...when you walk away, have you been dealt with properly or are you not very happy? You know, that's the main thing. And ((name)) certainly consoled me, you know. Put my mind at rest anyway."</i> (UK1004: Patient)</p>	<p>CMOC 2: When the care provided by paramedics meets patients' expectations (C), they will be more willing to be seen by a paramedic in the future (O) and more satisfied with the appointment outcome (O) because they are reassured with the level of care provided (M)</p>
<p>When a paramedic uses their longer appointment time to listen and understand a patient's problem (C), patients are more willing to see them again (O), because they value this approach (M)</p>	<p>Brydges et al., 2016; Martin et al., 2016; O'Meara et al., 2016; Sibley et al., 2018</p>			<p><i>"...if they're like he is and can give you that five minutes extra time and can answer your questions without constantly looking at the screen, then yes I would be more than happy to go to any paramedic."</i> (Uk1503: Patient).</p>	<p>CMOC 3: When a paramedic uses their longer appointment time to listen and understand a patient's problem (C), patients are more willing to see them again (O), because they value this approach (M)</p>
<p>When paramedics have a therapeutic relationship with the patients they see (C), these patients are reassured with the level of care provided (M) so are more willing to be seen by a paramedic in the future (O) and are more satisfied</p>	<p>Abrashkin et al., 2018; Dalgarno, 2016; Proctor, 2019; Rasku et al., 2021</p>			<p><i>"I have no qualms about seeing him again, in fact I wanted to see him again today because it was my second appointment and I felt it was good to stay with the same person... If he was going to be my GP</i></p>	<p>CMOC 4: When paramedics have a therapeutic relationship with the patients they see (C), these patients are reassured with the level of care provided (M) so are more willing to be seen by a paramedic in</p>

with the appointment outcome (O)				<i>for the rest of my life I'd be really happy..."</i> (UK1402: Patient).	the future (O) and are more satisfied with the appointment outcome (O)
When patients want to be seen by their usual GP (C), they do not wish to be seen by a paramedic (O) as this is not what they expect (M)	Halter et al., 2007; Proctor, 2019; RSM UK Group, 2017	Ten paramedics (3% of participants) who responded to the survey outlined sentiments such as <i>"patients still question why they are being seen by a paramedic"</i> (RID 76; Advanced Paramedic Practitioner) and <i>"some are only reassured once they see a doctor"</i> (RID 270; Primary Care Practitioner).			CMOC 5: When patients want to be seen by their usual GP (C), they do not wish to be seen by a paramedic (O) as this is not what they expect (M)
Patients develop confidence and trust in paramedics (O) when paramedics need to seek advice about their care if needed (C), because they understand there is clinical oversight from a GP (M)				<i>"Interviewer: And you don't mind that she has to go to the GP and chat before she might be able to give you a treatment?"</i> <i>Participant: Not at all. Not at all, no because at least you've got to talk to somebody who knows what they're talking about you know."</i> (UK104: Patient).	CMOC 6: Patients develop confidence and trust in paramedics (O) when paramedics need to seek advice about their care if needed (C), because they understand there is clinical oversight from a GP (M)

GP Perspectives

Initial CMOC	Realist Review	Realist Evaluation			Final CMOC
		Phase I	Phase II	Phase III	
When primary care providers do not regard paramedics as diagnosticians (O) they employ them in assessment-only roles (C) until they develop trust in the paramedic's capabilities to function effectively in primary care (M)	Abrams et al., 2020; Abrashkin et al., 2016; Burns, 2018; Clay & Stern, 2015; Cope, 2015; Flomenbaum, 2017; Hambleton Richmondshire and Whitby Clinical Commissioning Group, 2014; Huang et al., 2018; Moule et al., 2018; NHS Salford Clinical Commissioning Group, 2016; North Dakota Center For Nursing, 2014; Ruest et al., 2017; Schofield et al., 2020.			<p><i>"...some of the stuff that they come in for with the GP, the tricky stuff, I don't think [the paramedic would] have experience..."</i> (UK403: Administrative Support Staff).</p> <p><i>"[the paramedic] can take some patients but then they still need to be discussed afterwards."</i> (UK802: Practice Manager).</p> <p><i>"I can't be in two places at the same time, but they allow me to effectively by having assessed the patient on my behalf."</i> (UK702: Practice Partner).</p> <p><i>"...when you're talking to a physician and, if you have the proper training for a skill –</i></p>	CMOC 7: When primary care providers do not regard paramedics as diagnosticians (O) they employ them in assessment-only roles (C) until they develop trust in the paramedic's capabilities to function effectively in primary care (M)

				<i>you're explaining the medical procedure – medication that you would like to give a client – and they're confident in your skills... sky's the limit, and they could write you a prescription for whatever you need, or support you in anyway you need for patient care."</i> (CAN303: CP Supervisor)	
When the employer does not consider the paramedic to have the skills and competencies relevant for their needs (C) employers may be less likely to employ paramedics (O) because they do not consider them to be useful (M)	Barr, 2011; Burns, 2018; Cameron & Carter, 2019; Imison et al., 2016; Long, 2017; Martin & O'Meara, 2019; Mason et al., 2012; Moule et al., 2018; Sawyer & Coburn, 2017; Scott & Carney, 2004; Wagstaff & Mistry, 2020				CMOC 8: When the employer does not consider the paramedic to have the skills and competencies relevant for their needs (C) employers may be less likely to employ paramedics (O) because they do not consider them to be useful (M)
When paramedics can demonstrate that they can help to reduce the workload of GPs (C), because this is valued by GPs (M), paramedics continue to be	Dixon, 2020; Mid Essex Clinical Commissioning Group, 2020; Mogridge, 2017; NHS Castle Point and Rochford Clinical			<i>"We're glad to have them because there's a limit to how much we ourselves and our salaried doctors are able to assess patients and some patients just</i>	CMOC 9: When paramedics can demonstrate that they can help to reduce the workload of GPs (C), because this is valued by GPs (M), paramedics

actively recruited into primary care (O)	Commissioning Group and NHS Southend Clinical Commissioning Group, 2019; Northumberland Clinical Commissioning Group, 2016; Proctor, 2019; RSM UK Group, 2017; Schofield et al., 2020; Sibley et al., 2018; Spence, 2017; Ulintz, 2017; Watkins, 2020			<i>need to be assessed as to, you know, have they got heart failure, have they got chest infection or is it a combination of both. So we value them” (UK702: Practice Partner).</i>	continue to be actively recruited into primary care (O)
Paramedics are actively recruited into primary care (O) when gaps within the workforce exist (C) because they are perceived to be able to support general practice (M)	Cameron & Carter, 2019; Goldberg, 2014; Mulholland et al., 2009; Pang et al., 2019; Turner & Williams, 2018			<i>“If I was looking to fill a GP slot within the partnership, I’d be looking for a GP, if I was looking for maybe a salaried GP and couldn’t get one but I could get a paramedic practitioner, then I’d quite happily take one.” (UK1302: GP Trainer).</i> <i>“...the NHS is changing and I think we have to go with it and increase care and capacity to patients in whatever way we can. I don’t</i>	CMOC 10: Paramedics are actively recruited into primary care (O) when gaps within the workforce exist (C) because they are perceived to be able to support general practice (M)

				<i>think, oh god I'm a GP, you shouldn't be doing my work, because I think at the end of the day if we can see more patients and treat them better, I think that's what we're here to do really."</i> (UK603: Salaried GP).	
When GPs are provided with allocated during their working day to provide support to paramedics in primary care roles (C), they are more likely to offer clinical supervision (O) because they are empowered to do so (M)				<p><i>"So I think [paramedics] supplements [primary care] really well as long as the support is there..."</i> (UK603: Salaried GP).</p> <p><i>"I think it's important that there's actually some time allocated in the working week for the paramedic to actually discuss cases that they found difficult or challenging, with an experienced GP."</i> (UK502: Salaried GP).</p>	CMOC 11: When GPs are provided with allocated during their working day to provide support to paramedics in primary care roles (C), they are more likely to offer clinical supervision (O) because they are empowered to do so (M)
GPs believe (O) that paramedics with substantial experience in the ambulance service (C) are better prepared to make a		This idea of substantive experience was found in job descriptions included in the realist		<i>"...[experience] in emergency medicine is more helpful for, you know, to work as a GP... and I'm sure the</i>	CMOC 12: Paramedics with substantial experience in the ambulance service (C) are perceived to be better

<p>successful transition and work effectively in the primary care workforce (M)</p>		<p>review, where an essential criterion commonly outlined the need for five years of experience as a paramedic (Eaton et al., 2021). In phase I of this research (Chapter 4), most respondents had 3–5 years (n=93) or 6–10 years (n=93) experience of working as a paramedic prior to working in primary care.</p>		<p><i>ambulance service is the same. You know you get that, you know you learn so much. You just encounter so many different problems in a short space of time.</i>” (UK203: Practice Partner)</p> <p><i>“a paramedic who's been working for a good 5/10 years you know on the ambulances so has had lots of experience.”</i> (UK304: Practice Partner)</p>	<p>prepared by GPs (M) to make a successful transition into the primary care workforce (O)</p>
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Paramedic Perspectives					
Initial CMOC	Realist Review	Realist Evaluation			Final CMOC
		Phase I	Phase II	Phase III	
Paramedics who perceive their role as a generalist (C), will look for opportunities for employment in primary care (O) because they believe they can enjoy and work in that environment (M)	Booker & Voss, 2019; Brown, 2017; Clarke, 2018; Daly, 2012; Eaton et al., 2018; Health Education England, 2018b; Nolan, 2013	<i>"Paramedics are very competent primary care practitioners due to their generalist backgrounds"</i> (RID 11; Advanced Paramedic)	<i>"...it's the origins of paramedics that enable them to work in an advanced practice capacity [in primary care] and be effective at it."</i> (Immersion Journal)		CMOC 13: Paramedics who perceive their role as a generalist (C), will look for opportunities for employment in primary care (O) because they believe they can enjoy and work in that environment (M)
Paramedics working in rotational roles between emergency medical services and primary care (C) feel able to apply knowledge learnt in one area to another (M) to provide improved patient care (O)		<i>"My rotational role increases understanding between ambulance & primary care, increases my knowledge & understanding..."</i> (RID 36; Specialist Paramedic).		<i>"I think working in [the ambulance service] compliments primary care and I think primary care really does compliment working for [the ambulance service]."</i> (UK1401: Advanced Paramedic Practitioner) <i>"I feel like doing community paramedic has improved my frontline, because now I ask different questions. My questions aren't only geared to the triaging"</i>	CMOC 14: Paramedics working in rotational roles between emergency medical services and primary care (C) feel able to apply knowledge learnt in one area to another (M) to provide improved patient care (O)

				<p><i>life and death situations, I'm trying to formulate a diagnosis... go to the more whole health."</i> (CAN201: Community Paramedic)</p>	
<p>Paramedics who are comfortable with their professional identity (C) experience less work-related frustration and stress in primary care (O) because they understand their position within the workforce (M)</p>			<p>An "understanding [of] professional identity and role within the team" (Immersion Journal) was considered to be an important component for paramedics to enter primary care work, especially since "paramedics are not giving up their identity and substituting for other healthcare staff" (Immersion Journal).</p>	<p><i>"A lot of my patients ask me the question, oh so what are you now? Or are you still a paramedic? And I think my response to them is always yeah, I'm still a paramedic. No, I don't feel like a typical paramedic in the fact that I don't work on an ambulance and I don't wear green and I don't pick people up off the floor and do those things that I think everybody thinks of as a paramedic, I don't go to [road traffic collisions], I don't do stuff like that, but I've still got that knowledge and I've still had that training and yeah, I feel like a paramedic but I feel like I'm a paramedic who</i></p>	<p>CMOC 15: Paramedics who are comfortable with their professional identity (C) experience less work-related frustration and stress in primary care (O) because they understand their position within the workforce (M)</p>

				<i>just works in a different setting.” (UK601: Paramedic Practitioner)</i>	
Paramedics working in primary care perceive colleagues as lacking a comprehensive grasp of their duties, or those who do not conform to the majority's interpretation of the role (C) they tend to "other" those individuals (O) because they are protective toward their profession (M)			This CMOC encapsulates the discussions observed during the analytic auto-netnography, (Chapter 5). This shows that individuals outside the paramedic circle in primary care, including paramedics in the ambulance service, clinicians, non-clinical primary care staff, and policymakers, were seen as outsiders in understanding the role. This relates to the paramedics' identity shaped by their unique work environment, fostering protectiveness of their role when among fellow primary care paramedics.	<i>“I am still a paramedic but I don't think I'm doing the job that is traditionally seen as paramedicine” (UK1301: Advanced Paramedic Practitioner)</i>	CMOC 16: Paramedics working in primary care perceive colleagues as lacking a comprehensive grasp of their duties, or those who do not conform to the majority's interpretation of the role (C). They tend to "other" those individuals (O) because they are protective toward their profession (M)

<p>Fear of loss of personal professional registration (M) remains important for paramedics in primary care (C) who consider a heightened level of professional responsibility in comparison to their roles in the ambulance service (O)</p>				<p>Paramedics who were interviewed recognised their accountability in primary care, and considered it to be heightened in regards to their previous work in the ambulance service (as in Chapter 6). This accountability was developed "<i>from the ambulance service [where you] are drummed into you to cover your backside and protect your registration</i>" (UK101: Paramedic Practitioner).</p>	<p>CMOC 17: Fear of loss of personal professional registration (M) remains important for paramedics in primary care (C) who consider a heightened level of professional responsibility in comparison to their roles in the ambulance service (O)</p>
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Perceived contribution to primary care teams					
Initial CMOC	Realist Review	Realist Evaluation			Final CMOC
		Phase I	Phase II	Phase III	
When emergency medical services use rotational models for paramedics to work in both the ambulance service and primary care (C) the needs of both organisations are more likely to be met (such as EMS workforce retention and increased workforce capacity in primary care) (O) because paramedic staff retention rates and satisfaction is higher (M).	Eaton, 2017; Goldberg, 2014; Health Education England, 2018c; B. Jones, 2020; London Ambulance Service, 2016; Mason et al., 2007a; Misner, 2005; NHS Leeds Clinical Commissioning Group, 2018; Oxford Primary Care Commissioning Committee, 2019; Primary Care One, 2020; Turner & Williams, 2018; Wickware, 2018	<i>"I find that having both [ambulance work] and [primary care] works well in terms of gaining a better understanding for my patient management."</i> (RID 17; Paramedic).	<i>A short thread on Twitter today, about the use of clinical skills in one setting being transferred and used in another. This is in the context that paramedics are expected to transfer skills from the ambulance service into primary care, but this does not work for paramedics in primary care to bring their skills into the ambulance service if they work 'bank' on a zero-hour contract. The example used is the ability to undertake urinalysis and liaise with a GP for relevant treatment – avoiding attendance at hospital and GP practice. However, as</i>	<i>"...we had an informal agreement that [primary care providers] wouldn't poach any of our staff, but everybody said that they got an offer – 'Would you come and work for us full-time?' – and nobody left. That was really interesting, so we retained everybody on a rotational model..."</i> (UK1101: Advanced Paramedic Practitioner). <i>"So the ability to flip back and forth [between EMS and primary care] maybe be good for someone working that position, so they don't ever feel like they're giving up something. So if they have an autonomy to move back and forth, it would probably help longevity</i>	CMOC 18: When the use of emergency medical services rotational models for paramedics enables them to work and transfer their skills between the ambulance service and primary care (C) the workforce needs of both organisations are more likely to be met (such as EMS workforce retention and increased workforce capacity in primary care) (O) because paramedic staff satisfaction is higher (M).

			<p><i>this is outside the scope of role for ambulance paramedics, it is not supported by my Trusts – leading to frustration, and threats that paramedics will discontinue their bank work. (Immersion Journal).</i></p>	<p><i>and stuff like that.” (CN201: Community Paramedic).</i></p> <p>“...he’s six weeks on and six weeks off, so we can’t depend on his presence, so he’s always on top of what we’re doing, what we already provide, so to know that he’s here... for example, today he’s taken two visits off me, and.. what that’s meant is probably a good hour of my time... That’s what it means when he takes home visits off us – it’s physical time.” (UK803: Salaried GP).</p>	
<p>Paramedics are considered for recruitment into the primary care workforce (O) when employers perceive them as an addition to the team (M) due to the availability of adequate financial reimbursement for their roles (C)</p>	<p>Baird et al., 2020; NHS England, 2021; Schofield et al., 2020</p>			<p><i>“I think ARRS for us was probably the reason why we actually plumped for a paramedic” (UK102: Practice Partner)</i></p>	<p>CMOC 19: Paramedics are considered for recruitment into the primary care workforce in England (O) when employers perceive them as an addition to the team (M) due to the availability of adequate</p>

					financial reimbursement for their roles (C).
When the existing skills and knowledge of paramedics are perceived by commissioners and stakeholders to correlate well into primary care (C) paramedics are actively recruited into primary care (O) because what they can offer is valued (M)	Clarke, 2018; Fisher et al., 2019; Health Education England, 2017, 2018a, 2018b, 2021; Health Education England & College of Paramedics, 2016; NHS England, 2015; NHS Wales, 2018; Oxford Primary Care Commissioning Committee, 2019; Wessex Academic Health Science Network, 2017			<i>“...we then started to carve out our own role in managing those patients in what we perceived as our practice environment, being in the community”</i> (S102: Operations Lead).	CMOC 20: When the existing skills and knowledge of paramedics are perceived by commissioners and stakeholders to correlate well into primary care (C) paramedics are actively recruited into primary care (O) because what they can offer is considered useful (M)
Paramedics who are judged by employers to lack clinical experience and education (C) are employed in an eyes and ears approach in primary care (O) because they lack the clinical acumen sufficient for primary care (M)		Data gained from phase I of the realist evaluation demonstrated that when paramedics have a lack of clinical experience or knowledge, their ability to develop sufficient clinical acumen to work in primary care is decreased and they are subsequently			CMOC 21: Paramedics with limited clinical experience and education (C) are usually employed in home visiting roles within primary care (O) because their employers judge they have insufficient clinical expertise for more challenging clinical decisions (M)

		<p>employed in an assessment-only ('eyes and ears') role. This was demonstrated through quantitative analysis (Appendix J, Appendix K).</p> <p><i>“work under the supervision of a GP trainer” (RID 287: Specialist Paramedic)</i></p> <p><i>“intensity of supervision has reduced with time and confidence/capability, but have the opportunity to discuss cases or get second opinion at any time” (RID 135: Advanced Clinical Practitioner).</i></p>			
When paramedics are prevented by legislation or policy from seeing the full range of conditions that present to primary care (C), they feel frustrated in their role (O), because they feel		The impact of legislation or policy restricting paramedic clinical practice was found in phase I, where the inability to prescribe Schedule 2	Supported from the information gathered during phase II, where prescribing – particularly of controlled medicines – was a frequent		CMOC 22: When paramedics are prevented by legislation or policy from seeing the full range of conditions that present to primary care (C), they feel

they cannot contribute in the fullest way (M)		controlled medicines (outlined in The Misuse of Drugs Regulations 2001), or to provide patients with a Statement of Fitness for Work were frequently cited as frustrations for paramedics.	topic of concern across the social media channels. Data from phase II confirms this is about patient care, and avoiding duplication in appointments or impact on GPs, holding true to the mechanism proposed in the CMOC.		frustrated in their role (O), because they feel they cannot contribute in the fullest way (M)
When paramedics are prevented by legislation or policy from seeing the full range of conditions that present to primary care (C), other clinicians in the primary care workforce are frustrated (O), because this increases their workload (M)				<p><i>“It’s strange what they are and aren’t allowed to prescribe, it’s odd signing scripts for co-codamol when potentially they don’t need to sign scripts for what I would consider bigger, harder drugs, I find that a little bit odd” (UK1302: GP Trainer).</i></p> <p><i>“It’s certain medications – obviously because, if he wants CDs, (paramedic’s name)…he can’t prescribe controlled drugs – so that has to be with the GP.”</i></p>	CMOC 23: When paramedics are prevented by legislation or policy from seeing the full range of conditions that present to primary care (C), other clinicians in the primary care workforce are frustrated (O), because this increases their workload (M)

				<p>(UK902: Practice Manager).</p> <p><i>“we’re doing that on top of our day-to-day work. It’s very hard at the moment – we can’t recruit GPs so, fortunately, none of us ever make them feel that they can’t ask questions, but it’s hard for us – I can’t lie.”</i></p> <p>(UK1002: GP Trainer).</p>	
<p>When paramedics provide access to healthcare which otherwise would not be available (C) they are considered a community asset (O) because what they do is highly valued by patients and service commissioners and providers (M)</p>	<p>Bennett et al., 2018; Blacker et al., 2009; Eaton, 2017; Hauswald et al., 2005; Martin et al., 2016; Mason et al., 2007b; Misner, 2005; Mulholland et al., 2009; O’Meara et al., 2012; Patterson et al., 2016; Pennel et al., 2016; Stirling et al., 2007; Wilcox, 2016; Wiley K., 2011</p>			<p><i>“the local hospital is twenty-five miles away – a fifty-minute journey by ambulance due to the winding roads away from the coast. Health access is poor in this part of the country, and the local population is heavily reliant on the services provided by the practice. Hence, he will suture, managing minor injury and perform minor operations. He’s always on standby too, he nods to the</i></p> <p>[emergency response]</p>	<p>CMOC 24: When paramedics provide access to healthcare which otherwise would not be available (C) they are considered a community asset (O) because what they do is highly valued by patients and service commissioners and providers (M)</p>

				<p><i>bags in the corner of the room.” (UK 12: Fieldnotes).</i></p> <p><i>“...the good thing about community paramedics is you can formulate it to whatever your area needs. If you're in a large urban centre and it has tons of services, and your community paramedic role is going to be a lot more focused. Whereas here in county we have limited amount of resources, our community paramedic programme is very broad, because we'll try to help wherever we can and fill gaps or be partners in patient care.” (CN201: Community Paramedic).</i></p>	
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**Appendix T: Overview of data sources from realist review and illustrative examples of data that have contributed to
CMOC development for Concept 2: Transition to primary care roles**

Education					
Initial CMOC	Realist Review	Realist Evaluation			Final CMOC
		Phase I	Phase II	Phase III	
When employers provide clinical supervision (C) and access to formal education to paramedics (C) they are better able to transition into primary care roles (O) because they feel supported (M)				<p><i>“I think clinical supervision, access to courses and the time to be given to actually improve skills and improve learning would be the best way to support my role at the moment.” (UK401: Paramedic)</i></p> <p><i>“I think that needs to be structured, definitely and having spoken to the other paramedics started the same time as me, they would be like, so overwhelmed as well. I didn’t have a clue and we did pick it up, but I feel like it would have been so much less overwhelming if we’d</i></p>	CMOC 26: When employers provide clinical supervision (C) and access to formal education to paramedics (C) they are better able to transition into primary care roles (O) because they feel supported (M)

				have just had that structure.” (UK501: Paramedic)	
Paramedics are able to transition into advanced practice roles (O) when they are supported by their employers in primary care (M) with clinical supervision (C) and access to formal education (C)	Bowles et al., 2017; Eaton et al., 2021; Graham, 2018; Health Education England, 2021; Health Education Kent Surrey and Sussex, 2014; O’Meara et al., 2014	<i>“I am at a very early stage in my 3-year ACP program (~8 months in), and therefore supervision is key to my practice as I develop my own competency and scope of practice. My primary care surgery are very supportive and helpful, and appear invested in my development.”</i> (RID 305: Trainee Advanced Clinical Practitioner)			
As paramedics transition from EMS to primary care roles (C), they move away from their traditional scope of practice (O) because of the change in clinical conditions they have to manage (M)	Agarwal et al., 2017; Bowles et al., 2017; Chan et al., 2019; Colver et al., 2016; Dixon, 2020; Evans et al., 2014; Griffin, 2015; Kusel & Savino, 2016; Lau et al., 2018; Long, 2017; Montera, 2016; Murray, 2018; O’Hara et al.,	Understanding of the clinical presentations and scope of role were developed from phase I of the realist evaluation through quantitative analysis (Appendix J). These highlight a significant move from the scope of role required of	Supported in phase II, where conversations between paramedics revealed that “actually the scope of role being practised is actually far wider than even that set out in the Roadmap.” (Immersion Journal).	expansion in scope of role was also observed during phase III, where paramedics were witnessed to deal with dermatology and medication management for chronic conditions – two distinct areas lacking in the traditional scope of role	CMOC 27: As paramedics transition from EMS to primary care roles (C), they move away from their traditional scope of practice (O) because of the change in clinical conditions they have to manage (M)

	2012; O’Keeffe et al., 2011; Ruest et al., 2017; Stirling et al., 2007; Wiley K., 2011; Woollard, 2006	paramedics in ambulance services, both in terms of clinical examination skills, but also in terms of capabilities required for primary care (Appendix I).		for paramedics in UK ambulance services (Joint Royal Colleges Ambulance Liaison Committee, 2017). An expansion in the scope of role was also outlined by community paramedics in Canada, who are able to undertake point of care blood and microbiology testing from a procedural skill point of view and now undertook these skills more regularly than their emergency care skills (CN1: Fieldnotes).	
Due to the geographical nature of primary care work (C), paramedics tend to use online social spaces to exchange insights regarding their role (O) and support each other (O) because it is a convenient way to engage with others (M)			<i>“I’m reminded of the importance of this community for sharing resources and building learning. But, for paramedics in primary care not on Facebook, what communities of practice do they belong to?”</i> (Immersion Journal).	<i>“It’s double-edged – it’s wonderful because I’m left alone – do what I do – lots of autonomy but, at the same time, there isn’t a community in practice – there isn’t somebody to kick things round with...”</i> (CN301: Community Paramedic). <i>“You always had that buffer. You had</i>	CMOC 28: When professional isolation exists for paramedics in primary care (C), paramedics tend to use online social spaces to exchange insights regarding their role (O) and support each other (O) because it is a convenient way to engage with others (M)

				<p><i>somebody else there going, yeah, that's right or no, that's wrong. In primary care, you're on your own... solitary probably is a better word..."</i> (UK1301: Advanced Paramedic Practitioner).</p> <p><i>The other thing for me, moving out into primary care, when you say about barriers, it's quite lonely because there is nobody else that's done it before, so you're well away from the Ambulance Service, a system that you know, you recognise and you've been through..."</i> (UK1101: Advanced Paramedic Practitioner).</p>	
<p>The lack of a structured curriculum to support primary care education (C) means that paramedics learn through practical experience of working in primary care (M) leading to</p>		<p><i>"Someone on Facebook has requested recommendations for courses to improve their examination and assessment of</i></p>		<p><i>"I would say is that academia is one thing, experience is another and the thing that will make a clinician brilliant is the experience."</i></p>	<p>Final CMOC 29: Lack of a structured curriculum to support primary care education (C) means that paramedics learn through practical experience of working in primary care</p>

<p>variations in the implementation of the role (O)</p>		<p><i>musculoskeletal conditions. Replies range from e-learning for health, local conferences/study days in some PCNs, to diplomas organised by independent companies. I guess this is the problem with no standardised education level or content for working in primary care.</i>" (Immersion Journal).</p>		<p>(UK1201: Advanced Paramedic).</p> <p><i>"I haven't particularly done any courses – I've done a Blood Interpretation course – that's probably the only course I've done, but it's just general day-to-day, you pick things up and you go, 'Oh, I didn't know that – I didn't know what the meant!' but I haven't got a list of what I have learnt – just general knowledge."</i> (UK701: Home visiting paramedic).</p> <p><i>"I know how to find what I need to know about chronic disease. But we don't necessarily get taught what we need to know. So, I learnt how to go about finding it"</i> (CN301: Community Paramedic).</p>	<p>(M) leading to diverse approaches to role implementation (O)</p>
<p>When paramedics recognise that working in primary care requires</p>				<p><i>"I will still spend one of my days off just studying because I just</i></p>	<p>CMOC 30: When paramedics recognise that working in primary</p>

<p>additional study (C) they will often undertake this in their own time (which has an impact on their work/life balance) (O) because they want to do their job well (M)</p>				<p><i>want to have a bit more ease with knowing stuff easier with patients.”</i> (UK1301: Advanced Paramedic Practitioner).</p> <p><i>“...so I spend one afternoon at home a week doing e-learning...”</i> (UK801: Urgent Care Practitioner Paramedic).</p> <p><i>“It was only one day a week at uni, and then I did study in the evenings, but when you sign up to these things, you know you’re gonna have to put a bit of your own time into it, but it worked quite well.”</i> (UK1001: Paramedic Practitioner)</p> <p><i>“I do lots of professional development – knowledge acquisition. I’ll see something that I’m not familiar with – I will be looking at that this weekend. You know</i></p>	<p>care requires additional study (C) they will often undertake this in their own time (which has an impact on their work/life balance) (O) because they want to do their job well (M)</p>
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				<i>what I mean? – just because I need to know more. You know like that kind of stuff – so, I’ll do that, for sure – all the time – but I think that’s just professional development.” (CN301: Community Paramedic).</i>	
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Supervision					
Initial CMOC	Realist Review	Realist Evaluation			Final CMOC
		Phase I	Phase II	Phase III	
When paramedics are clinically supported in general practice (C), because they feel better supported (M) they will continue to advance and develop their capabilities and confidence within their role (O)	Baird et al., 2020; Brooke Petter Associates, 2019; Chellappa et al., 2018; Hauswald et al., 2005; Health Education Kent Surrey and Sussex, 2014; Moule et al., 2018; Ruston & Tavabie, 2011	<i>"Intensity of supervision has reduced with time and confidence/ capability, but have the opportunity to discuss cases or get second opinion at any time."</i> (RID 135: Advanced Clinical Practitioner)	<i>"A common feature has been those struggling with placement or supported hours due to the lack of supervision available during Covid-19. This has had a significant effect on ability to complete modules – but more fundamentally to have the relevant supported exposure to case presentations in primary care."</i> (Immersion Journal)	<i>"...the senior partner here – before he retired – he said to me, 'Whatever we threw at ya, you took on and you learnt from it.' He said, 'When you first started here, you were a paramedic' – he said, 'You're more than that now,' really. He says, 'Your skill level's come on because you've developed and you took on the feedback and developed'".</i> (UK901: Paramedic Practitioner)	CMOC 31: When paramedics are provided with clinical feedback and supervision in general practice (C), because they feel supported and valued (M) they will develop their capabilities and confidence within their role (O)
When paramedics are provided with clinical feedback, advice, and supervision in general practice (C), because they feel better supported (M), they have higher satisfaction with their role (O)		<i>"I have a GP trainer as my mentor who is a very experienced GP. The knowledge that I gain from spending time with her is valuable to me as it helps me improve as a clinician"</i>	<i>"...several comments from primary care paramedics – outlining the cancellation of teaching/clinical supervision this year as their practices have responded to"</i>	<i>"I think clinical supervision, access to courses and the time to be given to actually improve skills and improve learning would be the best way to improve my role at the"</i>	

		<p><i>and means I'm very happy in my work."</i> (RID 240: Emergency Care Practitioner)</p>	<p><i>the Covid-19 pandemic. One went as far to say that they had left primary care precisely because of this..."</i> (Immersion Journal)</p>	<p><i>moment."</i> (UK401: Paramedic)</p>	
<p>When clinical supervision is accessible for paramedics (C), they have higher satisfaction with their role (O) because they feel better supported (M)</p>		<p><i>"I have access to GP support when required and regularly discuss more complex patients for learning and development"</i> (RID 203: Consultant Paramedic)</p> <p>85.6% indicated that they received clinical supervision in their role, however only 8% reported that they experienced a regular and structured clinical supervision model that adequately met their needs.</p>		<p><i>"If I didn't have that support there or I didn't feel I could approach the doctors, that would be a whole different ball game because I would feel anxious going to ask, but it doesn't bother me 'cause I know I've got that support and guidance and I wouldn't just guess."</i> (UK501: Paramedic)</p>	

Experience					
Initial CMOC	Realist Review	Realist Evaluation			Final CMOC
		Phase I	Phase II	Phase III	
Paramedics at a junctional point within their career (C) value the opportunity to develop themselves (M) and so look for opportunities for employment in primary care (O)	Brown, 2017; NHS Wiltshire, 2020	<p><i>“To develop my career because unable to develop in the ambulance service.” (RID 46: Emergency Care Practitioner)</i></p> <p><i>“Career Progression via the paramedic pathway to primary care. To further develop my clinical skills and knowledge. To have the opportunity to undertake an ACP Msc and independent prescribing” (RID 270: Primary Care Practitioner)</i></p>			CMOC 32: Paramedics at a junctional point within their career (C) value the opportunity to develop themselves (M) and so look for opportunities for employment in primary care (O)
Paramedics are pluripotent (C). Because of the breadth of issues with which they can deal (M) paramedics are considered a useful addition to the primary care team (O)	Brackenridge, 2018; Eaton, 2017; Kizer, 2016; NHS England, 2016; Wilcox, 2016			<i>“...it is absolutely great that we are transitioning into this space. It’s exactly where we need to be and we’re definitely capable of doing it. I think it helps</i>	CMOC 33: Paramedics are pluripotent (C). Because of the breadth of issues with which they can deal (M) paramedics are considered a useful

				<p><i>relieve pressures by bringing another AHP into a system” (UK1101: Advanced Paramedic Practitioner)</i></p> <p><i>“[paramedics] do a lot of different types of patients rather than physiotherapists who tend to be much more linked to specific people who need it, musculoskeletal problems. So they can be more diverse in the types of patients that they can see.” (UK102: GP Partner)</i></p>	<p>addition to the primary care team (O)</p>
<p>Paramedics who are dissatisfied with their work in the ambulance service (C) will look for opportunities for employment in primary care (O) because they believe this will afford them a better work/life balance(M)</p>		<p><i>“To get away from shift work, have a better work/life balance and thought primary care was the way forwards after being a paramedic on the road for a long time. Didn’t enjoy the trauma aspect either on the road anymore.” (RID 107: Paramedic)</i></p>	<p><i>“Paramedics are expected to provide definitive care through the ambulance service due to a high degree of low acuity/primary care prescriptions – so no wonder paramedics look for opportunities to move to primary care (and</i></p>	<p><i>“...I was struggling after a couple of horrendous jobs I went to, so I went to two cardiac arrests in quick succession, and really affected my mental health... and I just needed to prioritise my own wellbeing to make a move out of the Ambulance Service.” (UK701: Home Visiting Paramedic)</i></p>	<p>CMOC 34: Paramedics who are dissatisfied with their work in the ambulance service (C) will look for opportunities for employment in primary care (O) because they believe this will afford them a better work/life balance(M)</p>

			<p><i>not work nights”</i> (Immersion Journal)</p>	<p><i>“When I first joined the ambulance service, you might have four or five jobs in a 12 hour shift and some night shifts you wouldn't go out at all. Where now I think you book on your 12 hours and you are out 12 hours, you've got a fight to get a break, you're always late from your 12 hour shift...Where now there's a lot more opportunities, especially in primary care. You know come and work with us, work Monday to Friday, have a normal life, have a weekend off, have leave when you want it you know.”</i> (UK301: Specialist Paramedic)</p>	
<p>Paramedics who are experienced by virtue of their work in the ambulance service (C) fulfil an increased clinical role in primary care (O) because</p>		<p><i>“The Paramedic ACP provides a skilled independent clinician who can manage a large variety of presentations</i></p>	<p><i>“A short thread on Twitter today, about the use of clinical skills in one setting being transferred and</i></p>	<p><i>“With the Ambulance Service, you just see everybody, everything, don't you, that calls an ambulance, you will</i></p>	<p>CMOC 35: Paramedics who are experienced by virtue of their work in the ambulance service (C) fulfil an increased clinical role in primary care (O)</p>

<p>they have practical experience to draw upon (M)</p>		<p><i>autonomously in environments that other clinicians are less comfortable working in.</i> (RID 26: Trainee Advanced Clinical Practitioner)</p> <p><i>"We are used to seeing acute patients, often needing to use problem solving skills having come from an ambulance background."</i> (RID 28: Paramedic Practitioner)</p> <p><i>"I feel I am a versatile and flexible clinician and my practice can use me and my skills in various capacities."</i> (RID 117: Emergency Care Practitioner)</p>	<p><i>used in another"</i> (Immersion Journal)</p> <p><i>"The value paramedics bring to primary care is built on 999 experience – significant experience in spotting sick people makes a safer clinician in primary care."</i> (Immersion Journal)</p>	<p><i>see"</i> (UK1001: Paramedic Practitioner)</p> <p><i>"I've got a couple of seasons under my belt and I've got quite a lot of pre-hospital experience with the ambulance service. Before I undertook my master's I'd been a paramedic for over ten years, so I had a solid grounding of patient assessment skills that you do pick up over the years, and not only that, also your continual development and your learning of other conditions and how conditions are managed."</i> (Uk1401: Advanced Paramedic Practitioner)</p>	<p>because they have practical experience to draw upon (M)</p>
<p>When paramedics are not allowed to see some patient groups due to the clinical guidelines that exist in their work in ambulance services (C) they are prevented from gaining</p>		<p>Patient groups not seen reported to be:</p> <ul style="list-style-type: none"> • Chronic conditions • Men's health • Palliative Care • Children <2 years 			<p>CMOC 36: When paramedics are not allowed to see some patient groups due to the clinical guidelines that exist in their work in ambulance services (C)</p>

<p>experience in the whole range of conditions that present to primary care (O) because they don't have these relevant opportunities to learn from (M)</p>		<ul style="list-style-type: none"> • Women's health 			<p>they are prevented from gaining experience in the whole range of conditions that present to primary care (O) because they don't have these relevant opportunities to learn from (M)</p>
<p>When paramedics have newly transitioned into working in primary care settings (C) effective time management poses a challenge for them (O) because they lack the experience needed (M)</p>			<p>“...for home visits between sessions, I had 2 hours and would see up to 4 patients. I didn't need to report back to a GP until at the end of the day, which is when my catch-up time was. The longer I was there, the more visits I needed to do, in less time.” (Immersion Journal)</p> <p>“Condensing any patient assessment and history take into a 10-15 appointment was considered to be the biggest learning curve when moving into primary care. I agree, we just don't</p>	<p>“...you could be with a patient for an hour in the ambulance service...but that's not Primary Care – that's one of the obstacles I had to overcome. I still have 15 minutes – GPs only have 10 minutes – I still have 15-minute appointments – but it was learning how to deal with the patients and sometimes you run a little bit over – sometimes you don't.” (UK901: Paramedic Practitioner)</p> <p>“I'm still struggling to keep on time and that's me a couple of years into the job whereas at the beginning, it was</p>	<p>CMOC 37: When paramedics have newly transitioned into working in primary care settings (C) effective time management poses a challenge for them (O) because they lack the experience needed (M)</p>

			<i>have the time pressure in the ambulance service.”</i> (Immersion Journal)	<i>near impossible.”</i> (UK1301: Advanced Paramedic Practitioner)	
When paramedics have no previous experience of working in primary care (C), they are surprised about the magnitude and type of work they are required to do (O) owing to an absence of adequate preparation for such responsibilities (M)			<i>“However, whilst busy, the ambulance service is nowhere near as busy as primary care.”</i> (Immersion Journal) <i>“...pieces of advice include:</i> • <i>Being prepared for the increase of workload.</i> • <i>That it is rewarding, but hard work.”</i> (Immersion Journal)	<i>“it was a really, really, really steep learning curve”</i> (UK101: Paramedic Practitioner) <i>“Moving into primary care, there’s always that first little imposter syndrome. Yes I know what I can do with emergency care. Moving to primary care, it’s a big step and a steep learning curve.”</i> (UK401: Paramedic)	CMOC 38: When paramedics have no previous experience of working in primary care (C), they are surprised about the magnitude and type of work they are required to do (O) owing to an absence of adequate preparation for such responsibilities (M)
Paramedics consider that their experiences in the ambulance service (C) are important in preparing them to work effectively in primary care (O) as working in the emergency ambulance setting has enabled them to develop their professional praxis (M)				<i>“I would say that you would need more experience on the road to come in because you still need to kind of have that sixth sense and understand when someone’s not quite right, maybe their observations all look alright but actually there’s something about them that’s not</i>	CMOC 39: Paramedics consider that their experiences in the ambulance service (C) are important in preparing them to work effectively in primary care (O) as working in the emergency ambulance setting has enabled them to develop their professional praxis (M)

				<p><i>recognising unwell patients because I think that's probably what we're quite good at."</i> (Uk101: Paramedic Practitioner)</p> <p><i>"Our skill and our background and our training as autonomous clinicians is that we get dropped into any situation and we have to figure it out and work with the resources that we've got, and that is what makes us dynamic when you move into primary care."</i> (UK1101: Advanced Paramedic Practitioner)</p>	
<p>Experience paramedics in primary care (C) complement the role of the GP (M) and are able to increase workforce capacity (O) by improving patient access to consultations (O)</p>		<p><i>"We compliment the PC team. We can bridge between GP type work as well as the more acute presentations that we may be more used to dealing with."</i> (RID 32: Paramedic)</p>		<p>"These people or some of them haven't been to a doc in six years... when you're in someone's home dealing with their health concerns, keeping them at home, keeping them out of hospital, keeping them as healthy as we can keep them, safe at</p>	<p>CMOC 40: Experience paramedics in primary care (C) complement the role of the GP (M) and are able to increase workforce capacity (O) by improving patient access to consultations (O)</p>

				<p>home as we can” (CN101: Community Paramedic)</p> <p><i>“Without a doubt, paramedics have the ability to plug a workforce gap, I think but more than that, that’s disingenuous to say that’s all they can do. I’m saying they can plug a workforce gap, they can be a completely valuable member of your team”</i> (UK102: GP Partner)</p> <p><i>“The workload, that’s off the GPs, off the nurses. I’ve got two home visits sat there, that’s two home visits that GP doesn’t have to do.”</i> (UK801: Urgent Care Practitioner)</p>	
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Appendix U: Overview of data sources from realist review and illustrative examples of data that have contributed to CMOC development for Concept 3: Roles and responsibilities

Working in a team					
Initial CMOC	Realist Review	Realist Evaluation			Final CMOC
		Phase I	Phase II	Phase III	
When the professional role boundaries of paramedics overlap with existing health care professionals in General Practice (C) there may be resistance of the paramedic role and responsibilities by these other health care professionals (O), because they feel threatened (M)	Barr, 2011; Coleman et al., 2011; Imison et al., 2016; Rasku et al., 2019; Thurman et al., 2020	<p><i>“not feeling part of the primary care team”</i> (RID 104: Specialist Paramedic)</p> <p><i>“still feel that there is a lack of understanding, or clear delineation between roles and this can mean I’m not welcomed”</i> (RID 305: Trainee Advanced Paramedic Practitioner)</p>			CMOC 41: When the professional role boundaries of paramedics overlap with existing health care professionals in General Practice (C) there may be resistance of the paramedic role and responsibilities by these other health care professionals (O), because they feel threatened (M)
Paramedics experience frustrations in their role (O) when their role and responsibilities are unclear (C). When this occurs, paramedics are less likely to be empowered (M)	Leyenaar, McLeod, et al., 2019; Leyenaar, Strum, et al., 2019; Long, 2017; Montera, 2016; Murray, 2018	<p><i>“That on occasion other clinicians think I can do more than I’m comfortable with doing”</i> (RID 57: Emergency Care Practitioner)</p>			CMOC 42: Paramedics experience frustrations in their role (O) when their role and responsibilities are unclear (C). When this occurs, paramedics

		<i>"...the scope of role so broad its hard to delineate and develop formally."</i> (RID 121: Paramedic)			are less likely to be empowered (M)
When the paramedics capabilities have been demonstrated (C) they are viewed by practice staff as a credible addition to the team (M) and are accepted into the practice workforce (O)	Burns, 2018; Flomenbaum, 2017; Kizer, 2016; Long, 2017; Martin & O'Meara, 2019; Moule et al., 2018; O'Meara et al., 2012; Schofield et al., 2020; Thurman et al., 2020; Turner & Williams, 2018			<i>"...he's a good support to the nursing team, so he can do basically anything, ((Name)) can – he's fabulous"</i> (UK1002: Practice Manager) <i>"it's actually turned out that they have taught me so much and vice versa."</i> (UK703: Home Visiting District Nurse)	CMOC 43: When the paramedics capabilities have been demonstrated (C) they are viewed by practice staff as a credible addition to the team (M) and are accepted into the practice workforce (O)
When the role of paramedics is clear and well defined (C) the paramedic integrates well in the primary care workforce (O), because their contribution is clear (M)	Flomenbaum, 2017; Kizer, 2016; M. Leyenaar et al., 2018; M. S. Leyenaar, Strum, et al., 2019; Long, 2017; Martin & O'Meara, 2019; O'Meara et al., 2012; Thurman et al., 2020; Turner & Williams, 2018		<i>"A small (happy) thread on Twitter – talking about the successes of PCNs. With general responses regarding vaccine delivery (in the minds of many recently, I guess) also outlined is the extra resources afforded to practices under the ARRs scheme –</i>	<i>"We all work together really well and pass things around to the most appropriate people to deal. Yeah, very integrated, I would say."</i> (UK1001: Paramedic Practitioner)	CMOC 44: When the role of paramedics is clear and well defined (C) the paramedic integrates well in the primary care workforce (O), because their contribution is clear (M)

			<p><i>particularly paramedics, who are versatile and flexible, both in home visiting and routine appointments.”</i> [Immersion Journal]</p>		
<p>Working in primary care (C) requires paramedics to reframe their professional identity (M) in order to integrate into the workforce (O)</p>			<p><i>“...paramedics are not giving up their identity and substituting for other healthcare staff – it's the origins of paramedics that enable them to work in an advanced practice capacity and be effective at it.”</i> [Immersion Journal]</p> <p><i>“So, what do I think are the bare essentials for paramedics to work in primary care? ... Understanding professional identity and role within the team”</i> [Immersion Journal]</p>	<p><i>“It does feel like a different role altogether, from being a paramedic. When I was with the Ambulance Service”</i> (UK1001: Paramedic Practitioner)</p> <p><i>“I think by trade, I'm still a paramedic but in what people would recognise as a paramedic isn't what I do now. I still introduce myself as a paramedic 'cause that is what I am. It's a loaded question. I am still a paramedic but I don't think I'm doing the job that is traditionally seen as paramedicine [resulting in] a kind of loss of identity as a paramedic”</i> (UK1301:</p>	<p>CMOC 45: Working in primary care (C) requires paramedics to reframe their professional identity (M) in order to integrate into the workforce (O)</p>

				Advanced Paramedic Practitioner)	
<p>The paramedic profession (C) is poorly understood by primary care teams (O), who associate it with the provision of emergency care in an ambulance only (M)</p>				<p><i>"The first thing I think of, if I'm honest, is somebody that comes in a paramedic ambulance..."</i> (UK604: Advanced Nurse Practitioner)</p> <p><i>"It's sort of like just knowing from seeing like casualty or something"</i> (UK103: Receptionist)</p> <p><i>"My idea of the job description is a competent medical professional to provide first aid – more than that – to help a patient survive in a life-threatening situation that will include, CPR, defibrillator, things like that... they are more than welcome to join in and give a hand, but it is not really what they have been trained to do in particular, which is</i></p>	<p>CMOC 46: The paramedic profession (C) is poorly understood by primary care teams (O), who associate it with the provision of emergency care in an ambulance only (M)</p>

				<i>the response to 999 and emergency medical care.” (UK1104: Salaried GP)</i>	
Primary care teams consider that length of experience in the ambulance service (C) is important in preparing paramedics to work effectively in primary care (O) because they have a broad range of practical experience to draw upon (M)				<p><i>“Other paramedics who would be coming straight from, say, the ambulance service would be much more limited in their ability when they first arrive.” (UK102: GP Partner)</i></p> <p><i>“So he’s had a massive exposure to a massive number of ailments from you know, really minor to major trauma so I’d feel that he can deal with anything.” (UK304: GP Partner)</i></p>	CMOC 47: Primary care teams consider that length of experience in the ambulance service (C) is important in preparing paramedics to work effectively in primary care (O) because they have a broad range of practical experience to draw upon (M)

Interpersonal skills					
Initial CMOC	Realist Review	Realist Evaluation			Final CMOC
		Phase I	Phase II	Phase III	
When paramedics demonstrate to the GP practice their awareness of their professional competencies (C), other health care professionals are more likely to accept the paramedic role in the practice (O), because they develop trust in their abilities (M)	Burns, 2018; Flomenbaum, 2017; Kizer, 2016; Long, 2017; Martin & O'Meara, 2019; Moule et al., 2018; O'Meara et al., 2012; Schofield et al., 2020; Thurman et al., 2020; Turner & Williams, 2018	<p><i>"Good use of my assessment skills. Easy to talk to. Happy to explain things in simple ways Admits when doesn't know."</i> (RID 46: Emergency Care Practitioner)</p>		<p><i>"...he's a good support to the nursing team, so he can do basically anything, ((Name)) can – he's fabulous"</i> (UK1002: Practice Manager)</p> <p><i>"it's actually turned out that they have taught me so much and vice versa."</i> (UK703: Home Visiting District Nurse)</p>	CMOC 42: When the paramedics capabilities have been demonstrated (C) they are viewed by practice staff as a credible addition to the team (M) and are accepted into the practice workforce (O)
For patients, the interpersonal skills of the paramedic are one of the most important components of the consultation (C). Where paramedics display empathy, active listening and a holistic approach to the patient (M), the patient develops trust and confidence in the paramedic (O).	Hall, 2005; Clarke, 2018; Hill et al., 2014; Lau et al., 2018; Martin & O'Meara, 2019; Rasku et al., 2019	<p><i>"Patients feel that they are seen by a professional who listens to them"</i> (RID 41: Advanced Paramedic Practitioner)</p> <p><i>"I believe the public has a lot of trust in the paramedic profession and this impacts on patients' confidence in you as</i></p>		<p><i>"the bedside manner, you know, especially when you're feeling ill and being understanding is everything."</i> (UK1102: Patient)</p> <p><i>"I'd just like to say he's a real gentleman, a great paramedic, a great people's person, he's got great people</i></p>	CMOC 48: For patients, the interpersonal skills of the paramedic are one of the most important components of the consultation (C). Where paramedics display empathy, active listening and a holistic approach to the patient (M), the patient develops trust and confidence in the paramedic (O).

		<i>a clinician.” (RID 192: Emergency Care Practitioner)</i>		<p><i>skills” (UK204: Patient Relative)</i></p> <p><i>“Compassion – paramedics are more compassionate, I find, than a lot of people, generally” (CAN104: Patient)</i></p>	
<p>Successful integration of paramedics into primary care teams (O) is attributed to the interpersonal skills and enthusiasm of the paramedic (C) because primary care team members use these to judge the type of person they work alongside (M)</p>				<p><i>“I think a lot of it is personality. He gets on with everybody here in the surgery. I don’t think there’s anybody who doesn’t get on with ((name)).” (UK1504: Practice Nurse)</i></p> <p><i>“He is a very wonderful person with a lovely character, so it’s definitely about his personality, but no – his role within the practice also.” (UK103: Deputy Practice Manager)</i></p> <p><i>“She’s friendly. She’s open and approachable. I think they’re always the key things ultimately. I think she’s</i></p>	<p>CMOC 49: Successful integration of paramedics into primary care teams (O) is attributed to the interpersonal skills and enthusiasm of the paramedic (C) because primary care team members use these to judge the type of person they work alongside (M)</p>

				<i>very good at engaging with others and communicating. She gets involved. She's wanted to fit in."</i> (UK502: Salaried GP)	
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Clinical role					
Initial CMOC	Realist Review	Realist Evaluation			Final CMOC
		Phase I	Phase II	Phase III	
Paramedics who have a higher level of education and clinical experiences (C) fulfil an increased clinical role in primary care (O) because they have greater knowledge and capabilities (M)		Understanding of the clinical presentations and scope of role were developed from phase I of the realist evaluation through quantitative analysis (Appendix J). This highlights the relationship between level of education, experience as a paramedic, and the breadth of role undertaken (Appendix I).	<p><i>“The value paramedics bring to primary care is built on 999 experience – significant experience in spotting sick people makes a safer clinician in primary care.”</i></p> <p><i>“The idea of holistic assessments has been raised again – which is linked to increased education”.</i></p> <p><i>“Also featured today a very limited chat on education level for paramedics in primary care, outlining that Level 6 (BSc) is enough for the clinical role. I’m on the fence about this. I don’t believe Level 7 learning gives new knowledge (the</i></p>	<p><i>“I guess I’m going to move on a see a different class or level of patients and conditions once I’ve done the Master’s, really. I’m obviously gonna learn and I think it’s gonna be beneficial to my practice, isn’t it, to do that extra study.”</i></p> <p>(UK1001: Paramedic Practitioner)</p> <p><i>“It’s not enough to have a master’s degree. You need a master’s degree plus quite a lot of experience in primary care and maybe also in your base profession”</i></p> <p>(UK1301: Advanced Paramedic Practitioner)</p>	CMOC 50: Paramedics who have a higher level of education and clinical experiences (C) fulfil an increased clinical role in primary care (O) because they have greater knowledge and capabilities (M)

			<p><i>facts don't change from Level 6 to 7), but the way we think about clinical presentations in advanced practice, at Level 7, is different. Is Level 7, therefore, critical thinking and decision-making applied to patient presentations?" (Immersion Journal</i></p>		
<p>Paramedics who can independently prescribe medicines (C) fulfil an increased clinical role in primary care (O) because they are able to complete a broader range of consultations (M)</p>		<p>Understanding of the clinical presentations and scope of role were developed from phase I of the realist evaluation through quantitative analysis (Appendix J). This highlights the relationship between the ability to independently prescribe and the breadth of role undertaken (Appendix I).</p>	<p><i>"...on Twitter are comments following a commentary focused on paramedic prescribing in primary care. The other comments on the broad scope of prescribing practice paramedics require in primary care, and lists recommended resources based on practical experience of the author. Comments to this are generally positive, acknowledging the</i></p>	<p>"Prescribing is essential. It's a busy environment, so you don't want to bother GPs all the time if you can manage stuff." <i>(UK1001: Paramedic Practitioner)</i></p> <p><i>"His prescribing practice now is different to his practice when he started. He feels he can contribute more now than he could in the fifteen years in primary care before he was a</i></p>	<p>CMOC 51: Paramedics who can independently prescribe medicines (C) fulfil an increased clinical role in primary care (O) because they are able to complete a broader range of consultations (M)</p>

			<i>advantage of the ability for paramedics to prescribe in primary care” (Immersion Journal).</i>	<i>prescriber” (UK12: Field notes)</i>	
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Appendix V: Final programme theory

Concept 1: Expectations of paramedics working in primary care

Patient Perspectives

CMOC 1: When a trusted source explains the role of a paramedic in primary care (C), patients understand how the role may be appropriate to their care needs (M), and are receptive to the introduction of paramedics in the primary care workforce (O)

CMOC 2: When the care provided by paramedics meets patients' expectations (C), they will be more willing to be seen by a paramedic in the future (O) and more satisfied with the appointment outcome (O) because they are reassured with the level of care provided (M)

CMOC 3: When a paramedic uses their longer appointment time to listen and understand a patient's problem (C), patients are more willing to see them again (O), because they value this approach (M)

CMOC 4: When paramedics have a therapeutic relationship with the patients they see (C), these patients are reassured with the level of care provided (M) so are more willing to be seen by a paramedic in the future (O) and are more satisfied with the appointment outcome (O)

CMOC 5: When patients want to be seen by their usual GP (C), they do not wish to be seen by a paramedic (O) as this is not what they expect (M)

CMOC 6: Patients develop confidence and trust in paramedics (O) when paramedics need to seek advice about their care if needed (C), because they understand there is clinical oversight from a GP (M)

GP Perspectives

CMOC 7: When primary care providers do not regard paramedics as diagnosticians (O) they employ them in assessment-only roles (C) until they develop trust in the paramedic's capabilities to function effectively in primary care (M)

CMOC 8: When the employer does not consider the paramedic to have the skills and competencies relevant for their needs (C) employers may be less likely to employ paramedics (O) because they do not consider them to be useful (M)

CMOC 9: When paramedics can demonstrate that they can help to reduce the workload of GPs (C), because this is valued by GPs (M), paramedics continue to be actively recruited into primary care (O)

CMOC 10: Paramedics are actively recruited into primary care (O) when gaps within the workforce exist (C) because they are perceived to be able to support general practice (M)

CMOC 11: When GPs are provided with allocated during their working day to provide support to paramedics in primary care roles (C), they are more likely to offer clinical supervision (O) because they are empowered to do so (M)

CMOC 12: Paramedics with substantial experience in the ambulance service (C) are perceived to be better prepared by GPs (M) to make a successful transition into the primary care workforce (O)

Paramedic Perspectives

CMOC 13: Paramedics who perceive their role as a generalist (C), will look for opportunities for employment in primary care (O) because they believe they can enjoy and work in that environment (M)

CMOC 14: Paramedics working in rotational roles between emergency medical services and primary care (C) feel able to apply knowledge learnt in one area to another (M) to provide improved patient care (O)

CMOC 15: Paramedics who are comfortable with their professional identity (C) experience less work-related frustration and stress in primary care (O) because they understand their position within the workforce (M)

CMOC 16: Paramedics working in primary care perceive colleagues as lacking a comprehensive grasp of their duties, or those who do not conform to the majority's interpretation of the role (C) they tend to "other" those individuals (O) because they are protective toward their profession (M)

CMOC 17: Fear of loss of personal professional registration (M) remains important for paramedics in primary care (C) who consider a heightened level of professional responsibility in comparison to their roles in the ambulance service (O)

Contribution to Primary Care Teams

CMOC 18: When the use of rotational models for paramedics enables them to work and transfer their skills between the ambulance service and primary care (C) the workforce needs of both organisations are more likely to be met (such as EMS workforce retention and increased workforce capacity in primary care) (O) because paramedic staff satisfaction is higher (M).

CMOC 19: Paramedics are considered for recruitment into the primary care workforce in England (O) when employers perceive that they are a cost-effective way of increasing the primary care team capacity (M) due to the availability of adequate financial reimbursement for their roles (C).

CMOC 20: When the existing skills and knowledge of paramedics are perceived by commissioners and stakeholders to correlate well into primary care (C) paramedics are actively recruited into primary care (O) because what they can offer is considered useful (M)

CMOC 21: Paramedics with limited clinical experience and education (C) are usually employed in home visiting roles within primary care (O) because their employers judge they have insufficient clinical expertise for more challenging clinical decisions (M)

CMOC 22: When paramedics are prevented by legislation or policy from seeing the full range of conditions that present to primary care (C), they feel frustrated in their role (O), because they feel they cannot contribute in the fullest way (M)

CMOC 23: When paramedics are prevented by legislation or policy from seeing the full range of conditions that present to primary care (C), other clinicians in the primary care workforce are frustrated (O), because this increases their workload (M)

CMOC 24: When paramedics provide access to healthcare which otherwise would not be available (C) they are considered a community asset (O) because what they do is highly valued by patients and service commissioners and providers (M)

Concept 2: Transition into primary care roles

Education

CMOC 26: When employers provide clinical supervision (C) and access to formal education to paramedics (C) they are better able to transition into primary care roles (O) because they feel supported (M)

CMOC 27: As paramedics transition from emergency medical services (EMS) to primary care roles (C), they move away from their traditional scope of practice (O) because of the change in clinical conditions they have to manage (M)

CMOC 28: When professional isolation exists for paramedics in primary care (C), paramedics tend to use online social spaces to exchange insights regarding their role (O) and to support each other (O) because it is a convenient way to engage with others (M)

CMOC 29: Lack of a structured curriculum to support primary care education (C) means that paramedics learn through practical experience of working in primary care (M) leading to diverse approaches to role implementation (O)

CMOC 30: When paramedics recognise that working in primary care requires additional study (C) they will often undertake this in their own time (which has an impact on their work/life balance) (O) because they want to do their job well (M)

Supervision

CMOC 31: When paramedics are provided with clinical feedback and supervision in general practice (C), because they feel supported and valued (M) they will develop their capabilities and confidence within their role (O)

Experience

CMOC 32: Paramedics at a junctional point within their career (C) value the opportunity to develop themselves (M) and so look for opportunities for employment in primary care (O)

CMOC 33: Paramedics are pluripotent (C). Because of the breadth of issues with which they can deal (M) paramedics are considered a useful addition to the primary care team (O)

CMOC 34: Paramedics who are dissatisfied with their work in the ambulance service (C) will look for opportunities for employment in primary care (O) because they believe this will afford them a better work/life balance(M)

CMOC 35: Paramedics who are experienced by virtue of their work in the ambulance service (C) fulfil an increased clinical role in primary care (O) because they have practical experience to draw upon (M)

CMOC 36: When paramedics are not allowed to see some patient groups due to the clinical guidelines that exist in their work in ambulance services (C) they are prevented from gaining experience in the whole range of conditions that present to primary care (O) because they don't have these relevant opportunities to learn from (M)

CMOC 37: When paramedics have newly transitioned into working in primary care settings (C) effective time management poses a challenge for them (O) because they lack the experience needed (M)

CMOC 38: When paramedics have no previous experience of working in primary care (C), they are surprised about the magnitude and type of work they are required to do (O) owing to an absence of adequate preparation for such responsibilities (M)

CMOC 39: Paramedics consider that their experiences in the ambulance service (C) are important in preparing them to work effectively in primary care (O) as working in the emergency ambulance setting has enabled them to develop their professional praxis (M)

CMOC 40: Experienced paramedics in primary care (C) complement the role of the GP (M) and are able to increase workforce capacity (O) by improving patient access to consultations (O)

Concept 3: Role and Responsibilities

Working in a Team

CMOC 41: When the professional role boundaries of paramedics overlap with existing health care professionals in General Practice (C) there may be resistance of the paramedic role and responsibilities by these other health care professionals (O), because they feel threatened (M)

CMOC 42: Paramedics experience frustrations in their role (O) when their role and responsibilities are unclear (C). When this occurs, paramedics are less likely to be empowered (M)

CMOC 43: When the paramedics capabilities have been demonstrated (C) they are viewed by practice staff as a credible addition to the team (M) and are accepted into the practice workforce (O)

CMOC 44: When the role of paramedics is clear and well defined (C) the paramedic integrates well in the primary care workforce (O), because their contribution is clear (M)

CMOC 45: Working in primary care (C) requires paramedics to reframe their professional identity (M) in order to integrate into the workforce (O)

CMOC 46: The paramedic profession (C) is poorly understood by primary care teams (O), who associate it with the provision of emergency care in an ambulance only (M)

CMOC 47: Primary care teams consider that length of experience in the ambulance service (C) is important in preparing paramedics to work effectively in primary care (O) because they have a broad range of practical experience to draw upon (M)

Interpersonal skills

CMOC 48: For patients, the interpersonal skills of the paramedic are one of the most important components of the consultation (C). Where paramedics display empathy, active listening and a holistic approach to the patient (M), the patient develops trust and confidence in the paramedic (O).

CMOC 49: Successful integration of paramedics into primary care teams (O) is attributed to the interpersonal skills and enthusiasm of the paramedic (C) because primary care team members use these to judge the type of person they work alongside (M)

Clinical role

CMOC 50: Paramedics who have a higher level of education and clinical experiences (C) fulfil an increased clinical role in primary care (O) because they have greater knowledge and capabilities (M)

CMOC 51: Paramedics who can independently prescribe medicines (C) fulfil an increased clinical role in primary care (O) because they are able to complete a broader range of consultations (M)