

45 Qualifications: BEd

46

47 Tim Rapley⁶ – <https://orcid.org/0000-0003-4836-4279>

48 Job title: Professor of Applied Health Care Research

49 Qualifications: BA (Hons), MA, PhD

50

51 Eliot L Rees⁷ – <https://orcid.org/0000-0002-6458-5808>

52 Job title: Senior Lecturer in Primary Care and Medical Education

53 Qualifications: MBChB, MA, PGDip, MRCP, FHEA

54

55 Etienne Royer-Gray⁸ – <https://orcid.org/0009-0006-7079-4442>

56 Job title: NIHR SPCR Intern and Medical Student

57 Qualifications: iBSc (Hons)

58

59 Gillian Vance² – <https://orcid.org/0000-0003-0895-4960>

60 Job title: Professor of Medical Education and Honorary Consultant in Paediatric Allergy

61 Qualifications: PhD, MRCPCH, MA, MBBChir

62

63 Geoff Wong¹ – <https://orcid.org/0000-0002-5384-4157>

64 Job title: GP and Associate Professor of Primary Care

65 Qualifications: MA, MBBS, FHEA, MD(Res), FRCGP

66

67 Sophie Park¹ – <https://orcid.org/0000-0002-1521-2052>

68 Job title: GP and Professor Primary Care and Clinical Education

69 Qualifications: MBChB, M.Med.Sci (dist), EdD, SFHEA, FRCGP

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71

72 **Affiliations**

73 ¹ Nuffield Department of Primary Care Health Sciences, University of Oxford, Oxford, UK

74 ² School of Medicine, Newcastle University, Newcastle Upon Tyne, UK

75 ³ School of Clinical Medicine, University of Cambridge, Cambridge, UK

76 ⁴ Faculty of Medical Sciences, University College London, London, UK

77 ⁵ Centre for Research in Public Health and Community Care, University of Hertfordshire,

78 Hatfield, UK

79 ⁶ Department of Social Work, Education and Community Wellbeing, Northumbria

80 University, Newcastle Upon Tyne, UK

81 ⁷ St George's School of Health and Medical Sciences, City St George's, University of

82 London, London, UK

83 ⁸ Research Department of Primary Care and Population Health, University College London,

84 London, UK

85

86 Corresponding author: Emily Owen-Boukra, Nuffield Department of Primary Care Health

87 Sciences, University of Oxford, Radcliffe Observatory Quarter, Woodstock Road, Oxford,

88 OX2 6GG, UK. Email: Emily.owen-boukra@phc.ox.ac.uk

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90 **Abstract**

91 **Background:** Global and United Kingdom (UK) primary care face significant General
92 Practitioner (GP) workforce shortages. Worldwide strategies to address this issue include the
93 introduction of additional healthcare professionals and increasing technology utilisation, to
94 reduce GP workload. However, whether these strategies can sustain the GP workforce
95 remains unclear. Our review examines the factors that sustain and enable GPs to flourish.

96 **Aim:** To examine how general practice work and healthcare systems support GP workforce
97 sustainability and effective and equitable patient care.

98 **Design & setting:** A realist review of existing empirical and grey literature. The search
99 strategy encompassed six electronic databases.

100 **Method:** Realist synthesis involved (1) finding existing theories, (2) searching for evidence,
101 (3) selecting articles, (4) extracting data, and (5) synthesising evidence/drawing conclusions.
102 Context-Mechanism-Outcome Configurations were developed using extracted data and
103 patient and public involvement/stakeholder suggestions to refine our programme theory.

104 **Results:** 168 documents were included. Findings underscore the importance of meaningful
105 work and engagement; relationships across individuals, organisations, and communities; and
106 learning and development. We emphasise the need for congruence between GPs' core values
107 and their work; cumulative-knowledge building; system agility; psychological safety; and
108 direct human connections.

109 **Conclusion:** General practice structures, policies, and practices, and the interactions they
110 facilitate, are crucial for the sustainability of the workforce. Collaboration among GPs, the
111 public, and national policymakers is essential for implementing the principles from this
112 review. Future systems should enable personalised care; sustain meaningful work and

113 relationships; facilitate meaning-making; and promote agency, agility, and flexibility to
114 enable GPs to utilise, adapt, and cultivate expertise.

115

116 **Keywords:** General Practice; Workforce Sustainability; Healthcare systems; Retention;
117 Equitable Patient Care; Realist Review.

118

119 How this fits in:

120 Global and UK primary care are experiencing a crisis due to GP workforce shortages.

121 Previous UK GP workforce research has emphasised individual-level factors and solutions,
122 including well-being, self-efficacy, training readiness, resilience, and professional identity

123 shifts. This realist review examines the organisational and system-level factors affecting GPs

124 in their work and proposes recommendations to support a sustainable GP workforce and
125 equitable patient care.

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134 **Introduction**

135 Improving healthcare access, quality, and efficiency in general practice requires multiple
136 factors including the availability, expertise, and distribution of healthcare professionals
137 (HCP) (1). Global and United Kingdom (UK) primary care is experiencing a crisis
138 characterised by substantial General Practitioner (GP) workforce shortages (2-6). UK GPs
139 report low job satisfaction and high workload burden (1). Many GPs have left or are
140 considering leaving their profession (7-9). The GP shortage crisis is critical for the
141 affordability and sustainability of future healthcare systems and patient care; GPs provide
142 safe, high-quality, holistic, and comprehensive care (10, 11). They balance gate-keeping (e.g.
143 limiting patient medicalisation and investigation) and gate-opening (e.g. advocacy) activities,
144 enhancing patient safety, health system efficiency, and health equity (10, 12-14).

145 Worldwide policies and strategies aimed at addressing GP shortages and workloads
146 encompass additional funding schemes, investments in technology and infrastructure, the
147 introduction of additional HCPs, and multidisciplinary teams (15-17). These strategies have
148 the potential to enhance workforce sustainability (1, 18). However, evidence to guide
149 decisions regarding key causal factors and the effectiveness of specific strategies in diverse
150 contexts remains limited.

151 This review examines the factors that support GPs to flourish in their work, focusing on
152 the organisational- and system-level characteristics that influence workforce sustainability.
153 Previous UK GP workforce research has conceptualised challenges as individual-level factors
154 or ‘choices’ producing individual-focused perspectives and solutions. These include
155 wellbeing, GP self-efficacy, training readiness, resilience, and professional identity (5, 19,
156 20). Campbell et al. (21) and Sturmberg et al. (11) emphasised the need to explore GP
157 workforce sustainability as part of a social system and the related social interactions that

158 shape GP work. Our review addresses this gap by identifying and analysing the wider
159 system-level factors that enable (or inhibit) GPs to thrive and continue their work in general
160 practice. In essence, this review explored which broader system factors contribute to or
161 detract from ‘joy’ in a GP’s role, informing recommendations to sustain a GP workforce
162 capable of delivering effective and equitable patient care.

163 **Method**

164 Realist review is a theory-driven approach to synthesising diverse and complex evidence
165 (22, 23). It formulates causal explanations of what works, for whom, and under what
166 circumstances by identifying interactions between contexts, mechanisms, and outcomes,
167 forming Context-Mechanism-Outcome Configurations (CMOCs). These configurations
168 iteratively shape an emerging programme theory, or an overall explanation of the topic and
169 research question(s). Realist reviews draw on diverse literature to understand complex
170 interventions from multiple perspectives (23), incorporating experiential expertise through
171 patient and public involvement (PPI) and stakeholders, enhancing the research team’s critical
172 engagement with data during analysis. Our review, registered on PROSPERO
173 (CRD42023395583), adheres to the Realist and Meta-narrative Evidence Synthesis: Evolving
174 Standards (RAMESES) quality and reporting standards (24, 25), with methods explained in
175 our published protocol (26).

176 Initial programme theory (IPT) development involved a literature scoping review in
177 conjunction with individual and small group PPI and stakeholder discussions regarding
178 factors that contribute to ‘joy’ in general practice and facilitate (or create conditions
179 conducive to) effective and equitable patient care (26). These discussions identified numerous
180 challenges while also elucidating important positive factors for further investigation (e.g.
181 meaningful interactions, connections, kindness, and collaboration). Formal searches
182 conducted in April 2023 (Supplementary Information 1) used six electronic databases

183 (MEDLINE, Embase, PsycINFO, CINAHL, HMIC, and Web of Science Core Collection
184 (SCIE, SSCI, AHCI)), encompassing academic and grey literature from health-focused and
185 broader disciplines. These searches initially yielded 1,463 documents. The inclusion and
186 exclusion criteria are summarised in Box 1. Documents were assessed based on their
187 relevance (whether they contained data related to context, mechanisms, and outcomes and
188 contributed to the IPT refinement) and rigour (whether the methods used to generate the
189 relevant data were credible, plausible, and trustworthy) (23, 24).

190 Box 1. Inclusion and exclusion criteria

191 Inclusion:

- 192 • Publications from 2013 onward
- 193 • UK publication
- 194 • GP or UK general practice focus
- 195 • Content pertains to relationship between GPs and work, or meaning attributed to work

196 Exclusion:

- 197 • Only trainee participants
- 198 • Recruitment only (i.e. nothing about retention)
- 199 • No rich or detailed information relevant to IPT

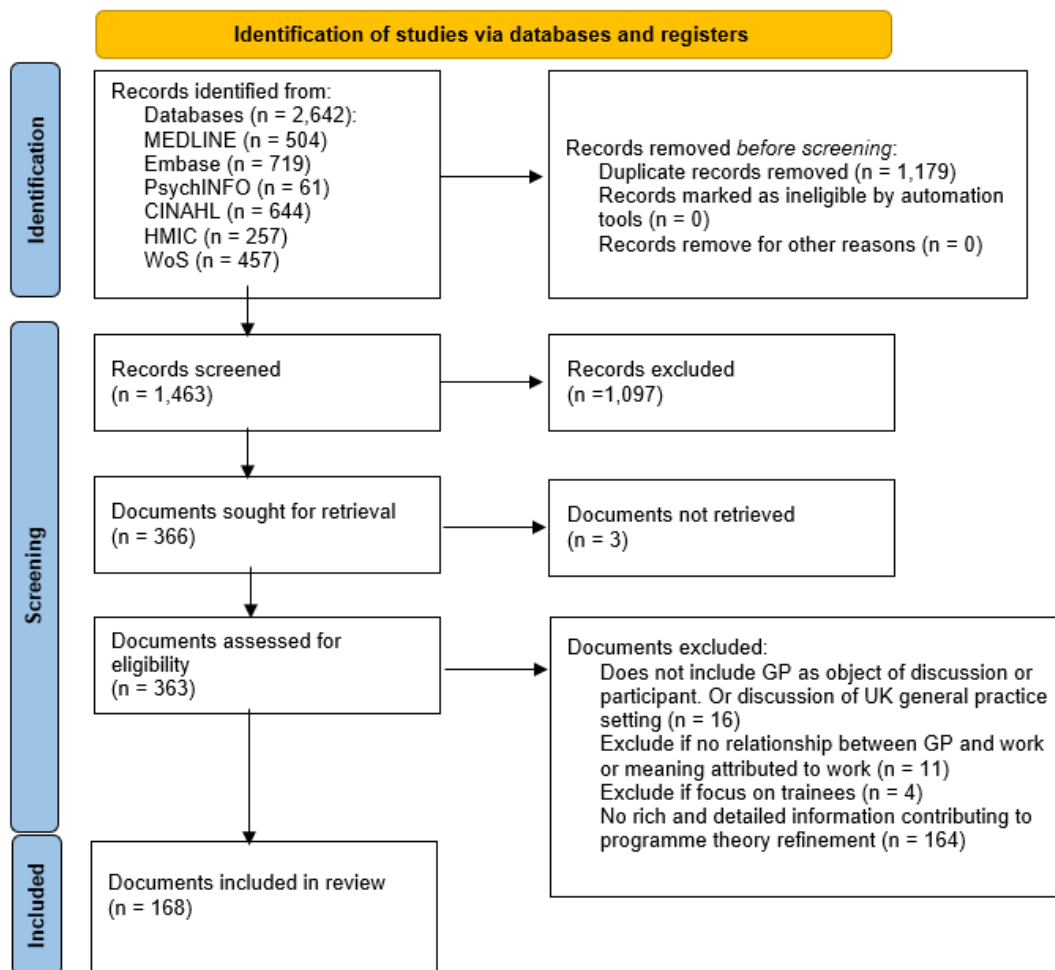
200 Programme theory refinement involved a synthesis of the literature and PPI/stakeholder
201 consultations, to scrutinise the data sources and formulate explanatory CMOCs. Document
202 characteristics were extracted (HD, VF, and EOB) into a Microsoft word document (see
203 Supplementary Table 1). Relevant data interpreted by the authors (EOB, SP, and GW) were
204 coded and synthesised using a realist logic of analysis. CMOCs were formulated with
205 narrative summaries and direct quotations relating to each configuration (EOB and ERG).
206 The emerging analytical findings and CMOCs were then critically discussed by the research
207 team (SP, EOB, BB, CD, HD, VF, CG, EIL, TR, ER, ERG, GV, and GW), including our PPI

208 co-applicants (TC, MO, and CH), to support CMOC modification, expansion, and refinement
209 (see Supplementary Table 2 for CMOCs and supporting evidence).

210 **Results**

211 A total of 168 documents published between 2013 and 2023 were included, comprising
212 106 published research articles, 2 conference abstracts, and 60 other types (e.g. policy
213 reports, guidance articles, editorials, and books) (see Figure 1). Supplementary Table 1
214 presents the main characteristics of the included documents. Our findings encompass three
215 overarching and interrelated categories: meaningful work and engagement (contributing and
216 mitigating factors); relationships across individuals, organisations, and communities
217 (knowledge accumulation: long-term patient-GP relationships; connection-rich contexts;
218 relationships with allied HCPs), and learning and development (enabling cultures and
219 organisations). Each category is influenced by opportunities for direct interactions and
220 connections within work. The CMOCs and selected excerpts are presented in Table 1, with
221 narrative summaries below.

222 **Figure 1. PRISMA summary of searching and selection processes.**



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224 **Table 1. CMOCs and illustrative excerpts.**

CMOCs	Illustrative excerpts
<p><u>Meaningful work and engagement</u></p> <p><i>Contributing and mitigating factors</i></p> <p>1. Meaningful aspects of clinical practice</p> <p>When GPs can allocate time to aspects of their practice they consider meaningful (C), they are more engaged in their work (O), because they experience a sense of congruence between their core values and the nature of work (M).</p>	<p>“As front-line clinicians, GPs reported fulfilment, excitement, and a sense of purpose, achieved through responding to patients’ needs and offering long-term support.” (27).</p> <p>“Yeoman (2020) regards meaningful work as an orientation towards taking care of significant things of independent value and that offers autonomy, freedom and dignity. In turn, this work is experienced as worthwhile. Meaningful work relies on mutuality, with</p>

	<p>shared ethics and appropriate structural enablers needed to allow people to contribute with dignity and autonomy around a common goal.” (28).</p>
<p>2. The commodification of GP work</p> <p>When policies and guidelines emphasise the compartmentalisation (e.g. single disease management) and commodification (e.g. payment/reward) of GP work (C), this can change the doctor-patient relationship (O), because GPs feel pressurised into reducing opportunities for therapeutic connections, situated knowledge, and continuity of care (M).</p>	<p>“Of particular significance was the 2004 contract in which the Quality and Outcomes Framework (QOF) linked payment to targets in the management of certain chronic conditions rather than for provision of services to patients. Studies confirmed that GPs responded to achieve those targets, though possibly with relative inattention to other aspects of medical care.” (27).</p> <p>“Most often GPs described a slow process of disillusionment and burnout, feeling alienated from a system that had changed the role of general practice from a community-based, person-centred profession that offered continuity of care, to a managed service emphasising targets and budgets. Being increasingly squeezed between administrative and patient demands, and having ever less discretion, respect and collegial support afforded to them, sapped their job of pleasure.” (29).</p>
<p>3. Reciprocal caring: mutual acts of compassion</p> <p>If a patient feels they know or are known by a practice or particular clinicians (C), they are more likely to trust and feel cared for by them (M), maximising collaborative preparation (e.g. pre-empting problems), facilitating patient care for practitioners, and minimising a sense of crisis and perceived urgency of need in relation to their health concerns (O).</p>	<p>“[W]hen you are ready, you’re gonna go to that person ‘cause you’ve built that trust along the way. I trust that they’re not gonna railroad me into something”(patient with lived experience) (30).</p> <p>“I soon realised that I was enfolded into a mindful and concerned network that had anchorage in personal familiarity. The patients, professional, and support staff together functioned largely through shared experiences and individual understandings. From these grew bonds of trust, support, and affection. Such relationships were the threads weaving a nexus of care: how we could both look after, and look out for, one another. Yes, occasionally such benign webs broke — there would be shards of error, misunderstanding, and grievance, even more rarely, bad faith. But mostly the webs held.” (31).</p>
<p>4. Imbalance between work demands and resources available</p>	

<p>When there is an imbalance between demands (e.g. workload), and resources available (e.g. finance, peer, and organisational support) (C), GPs may be more likely to disengage (O), as they perceive the quality and/or nature of their work as unsustainable (M).</p>	<p>“It comes back to the GP numbers again ... I know there’s some days I’m going in that I’m doing the job of two people ... When I have medical students ... I mean I’m 56 years old — I often leave them ten metres behind me because I’m moving, physically moving so quickly ... and that sort of pressure, the pressure of time that you’re working under.” (32).</p> <p>“Job dissatisfaction is most influenced by work-related variables. In particular, these include increased workload intensity and volume to meet the requirements of external agencies, having insufficient time to do the job justice, increased administration and bureaucracy, increased demand and expectation from patients, increasing work complexity, lack of support from colleagues, lack of professional recognition, and long working hours.” (5).</p>
<p style="text-align: center;">5. Resource/work mismatch</p> <p>When GPs consistently have high-workloads and time pressures with limited resources and respite (C) they are at risk of burnout (O) because they feel out of control and overwhelmed (M).</p> <p>When GPs persistently see patients with complex conditions without adequate time (C), they become dissatisfied with their work (O) because they feel unable to deliver good quality care (M).</p>	<p>“I found the continuing long hours, despite working part time, caused continual tiredness and exhaustion and I was concerned that this would affect my competence.” (33).</p> <p>“If you’re trying to deal with someone with really complex needs in the middle of an absolutely overbooked on-call clinic with 50 calls, and you’re just trying to get through the session safely..., you are going to really struggle to provide the empathetic, whole person care that you might want to provide. So structurally, you need to put clinicians in a place where they’ve got the headspace and the opportunity to be kind and trauma-informed and aware of that person’s needs. Otherwise, it’s just not fair on either person.” (30).</p>
<p style="text-align: center;">6. The shift to remote consulting</p> <p>Despite the assumption that remote work is quicker, the transformation from face-to-face to remote consulting (C), can paradoxically increase GP workload (O), due to increased patient access, expectation/demand, and limited time for GPs to schedule breaks and/or time with colleagues (M).</p>	<p>“Patients think it’s much easier to, obviously to reach us now, so perhaps before they would say: “Oh you know, I’ll wait a day or so.” But now: “Oh, I’ll just ring the doctor, they can give advice.” So, I actually think, funny [sic] enough, it has actually increased our workload.” (19).</p>

	<p>“Digital first approaches, now widespread, can paradoxically increase overall GP workload and a recent study warns of extra GP work by up to a third.” (34).</p>
<p><u>Relationships across individuals, organisations, and communities</u></p> <p><i>Knowledge accumulation: long-term patient-GP relationships</i></p> <p>7. Cumulative knowledge</p> <p>When GP work and services are designed to accumulate knowledge about individuals (people) and communities (place) (C), it enables more appropriate patient care (O), as GPs can draw upon their expanded and deeper understanding in GP-patient and GP-peer encounters (M).</p>	<p>“Trainers often had longstanding service in the practice and knew a lot about the lives of their patients. General practice specialty trainees recognised that a considerable number of patients had spent many years in their practice and had an extended family in the area. Trainers had extensive knowledge of the histories of these extended families and acted as oral historians, able to recall what had happened to patients, their families and the locality, through decades of continuing practice in some cases. “He [GP trainer] knows exactly who everybody was, and the relationship and you know the granddaughter who took an overdose and died and the nephew that was murdered and how that impacts on every single one of them and that’s invaluable, it’s amazing.” (35).</p> <p>“Those who have achieved mastery are fluent, even creative, in using their knowledge, skills and understanding in key performance challenges and contexts. It usually takes several years after obtaining fellowship qualifications to reach the validated high-level standards of mastery level performance. Confidence in how a person practises includes knowing how to test and refine knowledge in the face of new challenges and unexpected patient presentations.” (11).</p>
<p>8. Agency/partnership</p> <p>When GPs, patients, and peers have opportunities to shape and co-create management plans and potential solutions (C), this may facilitate patient and practitioner enablement and satisfaction (M), leading</p>	<p>“Co-producing service-improvements encouraged empathy, human connection and was rewarding to professionals and marginalised patients. Patients and staff were enthusiastic about the benefits of the changes they had made and outcomes for patients, primary care and collaborating organisations.” (30).</p>

<p>to higher levels of peer and patient trust and improved self-management capacity (O).</p>	<p>“A couple of lived experience participants reflected that their experience of collaborating with general practice staff helped them empathise with them and feel more comfortable and empowered to engage with general practice...“it’s actually kind of broken down my own barriers towards GPs... it’s made me a little bit more confident to speak up and sort of put my view across and know that I’m able to do that; this is just another human being I’m talking to” (patient with lived experience) (30).</p>
<p><i>Connection-rich contexts</i></p> <p>9. Direct connections</p> <p>Direct interactions and connections (e.g. a phone call with a colleague or patient or filing/actioning results of a known patient), nurture opportunities for meaningful practice, development and use of cumulative knowledge, and agile/adaptable approaches to personalise care (M), enabling GPs to flourish and experience psychological safety in their negotiations with risk, uncertainty, and ambiguity in practice (O).</p>	<p>“...the aspects of work that are less meaningful e.g. documentation, data entry) edge out the more meaningful aspects of practice (time spent talking with patients, working with the rest of the health care team) and lead to a less joyful practice.” (36).</p> <p>“Such ‘families’ extended beyond the nuclear; GPs then got to know kindred professionals — hospital specialists and their secretaries; locality district, health visitor, and psychiatric nurses; probation and social workers; housing officers and charity conveners; local pharmacists — these were all people whose faces, voices, and work we got to know... Our exchanges were mostly personal, conversational, and direct. In such ‘extended families’ we often felt we were helping one another shoulder the burdens of what can be very difficult work.” (31).</p>
<p>10. Depersonalisation</p> <p>When GPs experience reduced human connection with colleagues and patients (C), this can contribute to isolation, reduced sensitivity, and (O), because work becomes depersonalised (M).</p>	<p>“GPs talked of the consultation becoming less rich, more transactional, and more awkward in nature, characterised by less active listening and less attention to the emotional dynamics of the interaction (risk 2B) as the following comment illustrates: ‘... And I think it’s all a wee bit false and artificial ... on the video ... probably a wee bit more conscious of myself and my body language and all that sort of stuff. And that there’s less ... I think there’s less informal chats.’” (37).</p> <p>“The higher administrative workload reduced the time available to spend with their patients, leading to a fundamental change in the doctor-patient relationship:</p>

	<p>“You see it does change the doctor-patient relationship because it changes how you react to people and how you interact with people. I mean it’s obvious stuff, but when you’re really stressed and you’ve still got 15 people to see, you don’t have the time for people, you don’t have the interest.” (38).</p>
<p><i>Relationships with allied HCPs</i></p> <p>11. Paradox of delegation</p> <p>When tasks usually undertaken by the GP are delegated to other healthcare professionals (C), this can allow GPs to focus on more complex patients (O) but can increase ‘indirect’ care (e.g. supervising or holding responsibility for another’s work and management) (M).</p> <p>When patients with less complex problems are seen by practice members other than the GP (C), this can produce high levels of uninterrupted clinical complexity and challenge (M), leading to relentless emotional and cognitive load (O).</p>	<p>“The financial cost of employing new role professionals against evidence of their value and contribution in general practice needs to be considered, since the very initiatives aimed at alleviating pressure may paradoxically place increased strain on staff, at least initially, and mean that GPs incur extra workload in supervision or mentoring.” (39).</p> <p>“...If all the clinically straightforward consultations are done by others, GPs are left with wall-to-wall, dawn-to-dusk complex patients, which is a sure recipe for burnout. Sometimes we long for a simple sore throat or infected ingrown toenail to interrupt the flow of patients with multiple symptoms and too many medications, severe depression, or cancer...” (40)</p>
<p>12. Supporting cross-disciplinary learning</p> <p>When there is a mismatch between service-learning expectations and needs for HCP roles in general practice (C), successful integration can be challenging to establish (O) unless adequate time and resource is allocated for GPs to provide generalist training to colleagues (M).</p> <p>When other members of the clinical team need supervision, 'second opinions', or prescribing by GPs (C) this can increase GP workload (O) because they have responsibility to manage risks and related additional tasks to do (M).</p>	<p>“There is wide literature on managing uncertainty in healthcare contexts involving different conceptual models, however it is recognised that general practice is characterised by the presentation of undifferentiated and wide-ranging problems, meaning trainee and qualified GPs need to develop strong skills in dealing with uncertainty and risk. The issues raised by stakeholders in this study about adequately preparing new roles professionals to manage risk in general practice speak to the tension between how professionals’ previous experience and potentially more protocol-driven training maps on to the often ‘unpredictable’ setting of general practice. If unaddressed, this may be a significant barrier to the sustainability of new professional roles in general practice.” (39).</p> <p>“In particular, there is a crucial need for training leads and general practice staff (with the time and skills for adequate on-the-job supervision) to help role holders</p>

	develop appropriate risk-management skills over time.” (39).
<p><u>Learning and development</u></p> <p><i>Enabling cultures and organisations</i></p> <p>13. Learning systems</p> <p>Where regular connection with colleagues and exchange of knowledge is established (C), GPs feel connected and able to adapt and cope better (M), which can inform clinical expertise and patient care (O).</p>	<p>“The most effective and efficient way for GPs to achieve mastery is a local community-based, peer-supported network (aka community of practice) that provides a safe peer learning environment in which to explore the interdependencies between patients’ health, illness and disease care needs within an inevitably constrained health system.” (11).</p> <p>“Previous work by the RCP has shown that the breakdown of the medical team was a central factor contributing to low morale and disengagement. It is therefore conceivable that developing a sense of collegiality and togetherness across a transgenerational grouping of GPs may boost morale and engagement, leading to greater resilience within the GP workforce.” (41).</p>
<p>14. Informal interaction and peer support (professional and personal)</p> <p>When there are opportunities for informal interaction and peer support (e.g. group practice meetings, quality circles, mentoring systems, coffee breaks, and dinners) (C), GPs feel part of a community (O), which enables them to learn and flourish (grow, develop, and thrive) (M).</p>	<p>“But I think also, looking after each other.... I think we’re quite good at looking over our shoulder at the other person (...) if you see somebody’s got a really full load, getting them a cup of tea, or going and seeing one of their extras, (...) is quite a positive thing about our team that we tend to do.” (42).</p> <p>“For people to be motivated to do their job, they must feel part of a community that supports and enables them to flourish both as an individual and collectively. Collective working enables individual strengths and values to be developed and utilised while contributing to broader goals.” (43).</p>
<p>15. Coordination of care: primary, secondary and community care</p> <p>When exchanges between GPs and secondary/community care colleagues are personal, direct, and frequent (C), this may increase patient safety and reduce fragmentation of care (O), as there are higher levels of personal and local/community</p>	<p>“They also appreciated being in large health centres which included community care, mental health teams, and social work departments (social services). We had the CPN [community psychiatric nurse] in the building, we had substance misuse in the building. We had the social workers upstairs so it... I went upstairs</p>

<p>knowledge, understanding, and coordination between the two (M).</p>	<p>and sat with, I went to kind of all parts in the building, the big health centre... I knew exactly where to send folk to and direct them” (35).</p> <p>“For GPs, good personal relationships with specific specialists led to a sense of being better supported with patient management, of facilitating direct communication with specialists, and of easing patient transitions (“smoothing the waters” as one clinician described it).” (44).</p>
<p>16. Climate of psychological safety</p> <p>When there is a climate of psychological safety (e.g. supportive organisational practices and patient trust) (C), GPs are more able to tolerate risk, ambiguity, and diagnostic uncertainty (O), as they feel supported, trusted, and valued (M).</p>	<p>“Organisational interventions tend to develop a ‘psychosocial safety climate’ that comprises clearly communicated managerial participation and commitment to, and prioritisation of, employee psychological health; enhancement of (procedural and relational) organisational justice and team-based interventions to promote mental resources and resilience. Research is sparse regarding an organisational, integrated systems approach to addressing doctors’ potential stressors. Although person-directed resilience training has been recommended to proactively prepare doctors for ‘inevitable’ stressors, a distal-focused approach may be more appropriate.” (45).</p> <p>Access to personal, relational and environmental resources are protective factors for good mental health and well-being and impact on individuals’ resilience. Crucially, collegial support is a protective factor for good mental health—support from mentors, supervisors and colleagues is associated with resilience and reduced sickness. Balint groups or similarly structured group work or supervision continue to be employed in general practice and are valued by GPs, yet are not used across all practices. Individual or group supervision aims to provide a safe and supportive space where staff can openly discuss the pressures and emotional challenges of their work and may, as previous evidence suggests, provide GPs with the support they need while offering protection against compassion fatigue and burn-out.” (46).</p>
<p>17. Time for care: appropriate consultation time</p> <p>When GPs have longer consultations and/or time with patients (C), this may facilitate patients’ active involvement in decision-making (M), leading to improved patient outcomes and more cost-effective care (O).</p>	<p>“Research has illuminated the considerable value of the human side of general practice. Over 20 years ago we learned that longer consultations and the patient knowing the GP are significantly associated with</p>

<p>Increasing the duration of expert generalist consultations (C), may avoid unnecessary investigations and reduce downstream referral costs (O), leading to improved patient care and satisfaction (M).</p>	<p>enablement — an important outcome of GP care. GPs are not interchangeable.” (34).</p> <p>“Time to care: The growing complexity of patients - notably, those with multiple long-term conditions - require GPs to have the option of moving to longer appointments for those with multiple long-term conditions. Currently, the average appointment is approximately 10 minutes, where basing workforce planning off a 15-minute appointment would relieve significant strain. This is the best thing for both patients (who need more support) and for staff (who need time to care).” (47).</p>
<p>18. Agile and flexible systems</p> <p>When GPs can adapt standard systems (C), they can apply their expertise in agile and flexible ways (M) to meet individual circumstances or personal needs (O).</p>	<p>“Prioritise flexible access and longer appointments to patients in greater need: One practice dovetailed the care coordinator role with a specialist inclusion health clinic for marginalised patients; in the other the care coordinator had a direct telephone line they provided to patients and priority access to appointments when needed. One practice also had protected appointment slots that could be used by drug and alcohol workers who could use this for one of their clients if needed.” (30).</p> <p>“It was understood that flexible practices would only be sustainable if they matched patient, practice and individual needs. Co-creation and collaboration with the practice team is important to understand how work practices and job design could be improved to help both working time and work intensity.” (48).</p>

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226 ***Meaningful work and engagement***

227 ***Contributing and mitigating factors***

228 For many GPs, it is essential that their work is purposeful, significant, and aligns with
 229 their core values (11, 30, 49-51). When GPs are able to allocate time to aspects of their
 230 practice they consider meaningful (e.g. direct doctor-patient interactions, or administrative
 231 tasks pertaining to known patients), they are more engaged in their work, because they
 232 experience a sense of congruence or alignment between their core values and the nature of

233 work (CMOC1) (5, 27, 43, 49-55). The experiences and perceptions of meaningful work
234 varied among GPs. GPs derive unity, purpose, and meaning through long-term therapeutic
235 relationships with patients and families, in addition to performing patient advocacy, health
236 promotion work, community participation, and improving local service provision (5, 11, 27,
237 30, 35, 46, 49, 54, 56-62).

238 GPs find intellectual stimulation in managing ill-defined illnesses, chronic complex
239 multimorbidity, and accurate diagnoses (5, 27, 38, 49, 56, 62-64). GPs indicated the highest
240 level of satisfaction and meaning when experiencing feelings of competency and mastery (5,
241 11, 56), and from consultations in which they perceived their personal contributions to have
242 resulted in successful patient outcomes (27, 49). The act of mentoring and teaching medical
243 students and junior colleagues through involvement in undergraduate and postgraduate
244 training schemes is also particularly meaningful (43, 49, 52, 62, 65). Many GPs value the
245 opportunity to contribute to the professional development of others and to reciprocate the
246 support they received during their own training (27).

247 Various challenges prevent GPs from engaging in meaningful work. To address these
248 challenges, work must be proportionate and structured to enable GPs to maintain meaning. In
249 contexts where policies and guidelines emphasise GP work as compartmentalised (e.g. single
250 disease management) and/or commodified (e.g. payment/reward), this can distort the doctor-
251 patient relationship, as GPs experience pressure to reduce opportunities for therapeutic
252 connections, situated knowledge, and continuity of care (CMOC2) (27, 29, 66). This can
253 compromise GPs' ability to address diverse patient needs, disproportionately affecting the
254 most vulnerable and socioeconomically disadvantaged patients (19, 27, 50, 54, 57, 65). Many
255 GPs find aspects of their work intellectually stimulating, fulfilling, and meaningful. However,
256 most report pressure to balance patient/carer needs against target-driven accountability,
257 stringent bureaucratic monitoring, and a standards-driven reward system (5, 27-29, 38, 50,

258 65, 67, 68). While larger practice sizes do not inhibit meaningful work, certain common at-
259 scale organisational approaches (e.g. task delegation) can disintegrate and/or
260 compartmentalise work (e.g. repeat prescribing, filing results, and acute provision of clinical
261 care), minimising personal continuity and reducing opportunities for meaningful connections
262 (36).

263 Media and policy attention has recently oriented general practice systems towards
264 prioritising rapid access, superseding many key elements for sustainable, meaningful, and
265 equitable general practice (19, 69). A critical factor that our PPI co-applicants identified and
266 supported in our literature analysis was the importance of mutual and reciprocal care
267 (CMOC3): “What about patient care for their GP?”. Current policies tend to position ‘patient
268 demand’ as a fixed entity (and often expanding/overwhelming). Our analysis demonstrated
269 that demand can be viewed as dynamic: constructed and negotiated through social
270 interactions between patients and their GPs and practices. When systems become
271 depersonalised (e.g. prioritising the speed of triage/access), the individual relationships
272 between clinicians and patients can diminish (19, 50). Patients may be (re)positioned as
273 consumers and experience reduced personal connections with their GP or practice. This can
274 limit opportunities for GP ‘holding work’ (also identified in primary care link worker roles
275 (70)) and follow-up appointments to help patients manage anxieties, concerns, and healthcare
276 navigation. Without a sense of connection, patients may feel overwhelmed and perceive a
277 need to seek more frequent or urgent attention.

278 When familiarity with a practitioner exists, patients are more likely to establish trust and
279 feel cared for by the GP. This familiarity facilitates opportunities for collaborative
280 preparation or pre-emptive planning regarding ‘what to look out for’ or ‘when to worry’, as
281 well as a mutual understanding of temporal expectations (e.g. previous patterns for these
282 symptoms and/or this patient, plus likely duration self-limiting, short- or long-term). Patients

283 can reciprocate care and empathy for their practitioners and can (when safe) moderate their
284 help-seeking behaviours where they feel they have adequate information and trust their
285 practitioner, minimising a sense of crisis and perceived urgency of healthcare needs (19, 30,
286 60, 62).

287 Impersonal and consumerist systems benefit patients skilled in commanding attention,
288 navigating complex systems, and possessing high health literacy (71). Technological
289 advancements may disadvantage certain patient populations, increasing their distance from
290 general practice support and exacerbating inequality gaps (19). Contemporary policies that
291 shape healthcare access and services often assume that patients present with pre-formed and
292 predetermined problems (72). This overlooks ‘problem-setting’, an essential step in GP-
293 patient interactions for collaborative identification and prioritisation of issues. Active patient
294 participation in problem-setting promotes collaboration with GPs, fostering sustainable care
295 approaches, and reducing feelings of hopelessness, apprehension, and disempowerment (35).

296 Workload (demand, nature, and quantity) and resource imbalances (e.g. finance, peer,
297 and organisational support), can impede meaningful work (5, 19, 28, 35, 43, 46, 50, 53, 65,
298 73-77) (CMOC4). When GPs experience consistently high workloads with limited resources
299 and respite, they are at risk of burnout, as they feel out of control and overwhelmed (5, 16,
300 19, 30, 35, 50, 73-75) (CMOC5). Despite the assumption that remote work enhances
301 efficiency, the transformation from face-to-face to remote consulting can paradoxically
302 increase GP workload due to increased patient access, expectation/demands, and limited
303 opportunities for GPs to schedule breaks and/or time with colleagues (19, 34) (CMOC6).

304 Numerous studies identify administrative work as problematic (19, 28, 29, 38, 43,
305 45, 50, 75). It is frequently categorised as ‘hidden’ or ‘invisible’, reflecting a lack of allocated,
306 explicit, or scheduled time (in contrast to a hospital consultant who might have a combination
307 of clinical and administrative sessions) (65). Administrative work was more acceptable when

308 it could be attributed meaning, such as when it was requested by the GP, or involved
309 reviewing the results and considering management options for a known patient. When work
310 organisation resulted in GPs seeing fewer patients (e.g. delegated to HCPs) to perform more
311 administrative tasks and/or these tasks became disconnected from known patients,
312 administrative work was perceived as more challenging, risky, and burdensome (36).
313 However, in contexts where direct human connections and face-to-face interactions with
314 patients and colleagues are present, paperwork/administrative work can be perceived as a
315 means to a larger end and become an accepted part of GP's work (43, 62).

316 ***Relationships across individuals, organisations, and communities***

317 *Knowledge accumulation: long-term patient-GP relationships*

318 While some assume that learning is acontextual, irrespective of educational, social, and
319 cultural circumstances, this review demonstrates the centrality of situated learning and
320 expertise (78). By nurturing situated learning in general practice (emphasising the importance
321 of social interactions with patients and peers, and conceptualising learning and knowledge
322 accumulation as a dynamic process), GPs describe more meaningful work (11, 30, 49, 50, 57-
323 59). For instance, when GP work and services are designed to accumulate knowledge about
324 individuals (people) and communities (place), it facilitates more appropriate patient care, as
325 GPs can draw upon and adapt their expanded and deeper understanding in GP-patient and
326 GP-peer encounters (11, 16, 27, 30, 35, 43, 49, 57, 79) (CMOC7). GPs demonstrated a deep
327 contextual understanding of patients' personal circumstances informing and shaping medical
328 care (35). Familiarity with the local area and wide knowledge of community needs could
329 enhance how and when GPs implement knowledge to inform patient care and enable
330 community advocacy (11, 35, 49, 60).

331 The growth and implementation of cumulative knowledge can flourish through
332 interactions with patients and peers (both within and beyond the institution), cultivating
333 knowledge of local systems and community preferences (27, 28, 49, 57, 69, 79, 80). This
334 facilitates opportunities for patient partnership and advocacy ('gate-opening'), as well as the
335 development and use of adaptive expertise to address the needs of specific circumstances (30,
336 35, 69, 81). In contexts where GPs, patients, and peers have opportunities to shape and co-
337 create management plans and potential solutions, this may promote patient and practitioner
338 enablement and satisfaction, resulting in higher levels of peer and patient trust, and improved
339 self-management capacity (CMOC8) (27, 30, 35, 57). From a patient's perspective, mutual
340 trust and respect was deemed essential (30).

341 *Connection-rich contexts*

342 Direct interactions and connections (e.g. a phone call with a colleague/patient or filing
343 and actioning the results of a known patient) facilitate opportunities for meaningful practice,
344 development and utilisation of cumulative knowledge, and agile/adaptable approaches to
345 personalise care (35, 57). This enables GPs to flourish and experience psychological safety in
346 their negotiations with risk, uncertainty, and ambiguity in practice (CMOC9). Excessive
347 shifts towards indirect interactions (e.g. managing substantial risk indirectly through
348 supervision of allied HCP patient interactions, or reviewing results for unknown patients and
349 making disembodied decisions without patient interaction or knowledge of why a test was
350 conducted), increase work-related risk, leading to diminished GP experiences of connection
351 and engagement (19, 36). GPs support many patients with undifferentiated illnesses, complex
352 needs, and multiple conditions. Protocol-driven or standardised care is, in these
353 circumstances, often less safe or desirable for patients, and generates inappropriate and
354 additional (expensive) healthcare service demands (14). Managing these compromises and
355 adaptations with patients, involves complex and dynamic negotiation of risk. GPs mitigate

356 this risk not by standardising, but by rapid exchange, adaptation, and development of
357 management plans with patients. Indirect (rather than direct) interactions can make the
358 associated risks and navigation of uncertainty overwhelming and unmanageable, impacting
359 patient care and GP wellbeing (19). In contexts where GPs experience reduced human
360 connections with colleagues and patients, this can contribute to isolation, reduced sensitivity,
361 and motivation because work becomes depersonalised (28, 37, 38, 46, 50, 53, 54, 57, 68)
362 (CMOC10).

363 *Relationships with allied HCPs*

364 Effective collaborative relationships with allied HCPs may contribute to meaningful
365 work (67, 82, 83). However, the reviewed literature identifies a potential paradox in
366 delegating work to allied HCPs. Managing risk and uncertainty can be *more* complex when
367 interactions between patients and colleagues are indirect (39, 84, 85). This has significant
368 implications for the support, time, and nature of supervision that GPs need to provide for
369 allied HCPs working with GPs to ensure effective and equitable patient care (86). When tasks
370 typically undertaken by the GP are delegated to allied HCPs, this can allow GPs to focus on
371 more complex patients but can increase ‘indirect’ care (e.g. supervising or holding
372 responsibility for another’s work and management), and may erode continuity of care (39, 74,
373 86) (CMOC11.1). Triaging ‘simpler’ or ‘appropriate’ patients for staff can be challenging in
374 the context of undifferentiated illnesses. However, when patients with potentially less
375 complex problems are seen by practice members other than the GP, this can produce high
376 levels of uninterrupted clinical complexity and challenges, leading to relentless emotional and
377 cognitive load (CMOC11.2) (40). In contexts where there is a discrepancy between service-
378 learning expectations and needs for HCP roles in general practice, successful integration can
379 be challenging unless sufficient time and resources are allocated for GPs to provide generalist
380 training to colleagues (CMOC12).

381 *Learning and development*

382 *Enabling cultures and organisations*

383 Regular interactions with colleagues and established systems and routines for knowledge
384 exchange can facilitate GPs' sense of connection, adaptability, and coping mechanisms,
385 thereby informing clinical expertise and patient care (CMOC13) (31, 41, 43, 46, 49, 52, 58,
386 74, 80). Such interactions include opportunities for informal engagement and peer support
387 (e.g. group practice meetings, quality circles, team 'huddles', mentoring systems, coffee
388 breaks, and dinners) that may enable GPs to experience a sense of community, which, in turn,
389 allows them to learn and flourish (grow, develop, and thrive) (CMOC14) (46, 53, 77, 87).
390 Additional examples include personal, direct, and/or frequent exchanges between GPs and
391 secondary/community care colleagues; increasing patient safety; and reducing fragmentation
392 of care, as there are higher levels of personal and local/community knowledge,
393 understanding, and coordination between the two (CMOC15) (30, 35, 44, 49, 53, 88, 89).

394 A climate of psychological safety is essential to facilitate learning and regular
395 interactions with colleagues (28, 43, 45, 55, 73). In contexts where psychological safety
396 exists (e.g. supportive organisational practices and patient trust), GPs can use their expertise
397 to support patient care in the presence of uncertainty (CMOC16). Trust is a crucial element in
398 psychological safety. This is particularly important when GP work involves frequent
399 negotiation of risk, ambiguity, and diagnostic uncertainty (11, 39, 84). While guidelines are
400 beneficial in certain circumstances, rigid expectations that all clinical work should be
401 possible to protocolise causes many GPs to feel disempowered due to a lack of autonomy and
402 authenticity to adapt to patient needs and, consequently, to disengage from their work (11, 28,
403 43, 52). One unintended consequence of protocol over-reliance was an increasing
404 discrepancy between 'imagined work' as a series of single disease management pathways,
405 and patient interactions requiring navigation of complex and interrelated problems that were

406 either at the boundaries of biomedical pathways, multiple in nature, or interconnected with
407 additional complex issues such as social or ecological factors (e.g. housing, fleeing domestic
408 violence).

409 **Discussion**

410 **Summary**

411 Numerous synergies exist between achieving effective and equitable patient care, and
412 ensuring a sustainable future GP workforce. Social interactions in general practice, such as
413 those between patients and GPs, significantly influence healthcare delivery, shape the
414 proportionate support necessary for universal care, and affect GP's job satisfaction and
415 workforce sustainability (37, 55, 90). GP work and patient engagement are dynamic and
416 socially negotiated. Chronic underinvestment in UK general practice has resulted in
417 overwhelming workloads and understaffing, negatively affecting workforce morale (54, 66,
418 67). Consequently, increased investment in the GP workforce is crucial. Contrary to
419 prevailing narratives, it is not inevitable for modern general practice to entail impersonal GP-
420 patient interactions, overwhelming workloads, and excessive documentation at the expense of
421 patient contact. Our findings elucidate the nature of 'GP workforce problems' requiring
422 urgent attention, instead of the current emphasis on access to any practitioner, additional
423 triage, indirect supervision, and risk-escalating workload. These short-term measures neglect
424 sustaining GP-patient connections, which help manage ambiguity and risk effectively and
425 equitably (34, 37, 54). Although there is no universal approach, this review outlines the key
426 *principles* that maximise opportunities for joy in GP work and the provision of effective and
427 equitable patient care.

428 Organisational and financial models are critical for GP workforce sustainability.

429 Financial incentives influence the nature of work and GP engagement in general practice (27,

430 29, 66, 91). While meaning-making is not solely related to financial factors, it significantly
431 impacts team composition, patient needs addressed, appointment systems, and shapes the
432 opportunities and challenges experienced within and outside work (28). Previous research
433 (92-94) has emphasised the importance of prioritising collective outcome goals over
434 individual financial incentives to promote collaboration and service integration. This review
435 demonstrates how commodification affects GP-patient interactions, often prioritising short-
436 term financial objectives over meaningful discussions or spontaneous patient-clinician
437 engagement (27, 29, 30, 68).

438 Based on the findings of our review and extensive stakeholder and patient engagement,
439 we propose the following priorities for the organisation and delivery of general practice:

- 440 ● Support GPs in tolerating and negotiating risk through patient and peer interactions
- 441 ● Enable flexibility and agility to implement personalised care
- 442 ● Empower GPs to work with patients to align person-centred values with work
443 requirements and activities

444 These objectives can be achieved by addressing three key areas:

- 445 1. Meaningful work and engagement
- 446 2. Relationships across individuals, organisations, and communities
- 447 3. Learning and development

448 Our refined programme theory summarises our findings, as shown in Table 2.

449 **Table 2: Refined programme theory.**

450
451

Facilitators	
Meaningful work and engagement	a. Congruence between GPs' core values and the nature of their work b. Opportunities for reciprocal care and mutual acts of compassion

	<ul style="list-style-type: none"> c. Balance work demands and available resources (e.g. appropriate consultation time) d. Support GP roles as advocates and enable GP/patient agency e. Recognise and enable intellectual stimulation in GP work (e.g. agile and flexible expertise to personalise/contextualise care)
Relationships across individuals, organisations, and communities	<ul style="list-style-type: none"> a. Connection-rich contexts (direct interactions and connections within work activities) b. Cultivate and use cumulative knowledge (regarding local people and place) to inform the organisation and delivery of care c. Facilitate direct connections and cross-disciplinary learning opportunities between peers and organisations d. Enable informal learning, engagement, and peer support
Learning and development	<ul style="list-style-type: none"> a. Climate of psychological safety that enables opportunities for care and on-going practice-based learning with patients and peers b. Embed spaces for learning and exchanging cumulative knowledge into learning structures and systems c. Promote enabling cultures and dynamic learning systems to facilitate the negotiation of risk, ambiguity, and uncertainty
Barriers	
<ul style="list-style-type: none"> a. De-personalisation and commodification of GP work b. Lack of recognition/planning to support potential disconnection and additional work inherent in remote consulting c. Paradox of delegation to supervise and support allied healthcare professionals 	

452

453 Strengths and limitations

454 This realist review represents the first exploration of GP workforce sustainability,
 455 enhancing our understanding of the factors that maintain and sustain GPs, addressing
 456 challenges, and offering recommendations for future primary care. Our research extends
 457 previous individual-orientated perspectives to a systemic view of organisational
 458 characteristics and the role of the social environment. Included documents encompass a
 459 diverse range of materials, including grey literature, conference materials, and policy reports,
 460 maximising the breadth and depth of the review. To enhance transferability, we examined

461 documents on GP workforce sustainability across various geographic settings. Through
462 collaborative discussions and reflective dialogue with PPI and stakeholder groups, we
463 verified our approach, expanded analytical possibilities, and ensured recommendations were
464 relevant and applicable to policy, practice, and patient care. However, our review is limited
465 by the current evidence base. Given the ongoing uncertainty and rapidly changing healthcare
466 environment, new information on GP workforce sustainability may have emerged after the
467 completion of our review in response to the NHS Long-Term Plan and Lord Darzi's report.

468 Comparison with existing literature

469 Prior UK GP workforce studies have predominantly focused on individual-level factors,
470 such as wellbeing, GP self-efficacy, training readiness, resilience, and professional identity
471 (5, 19). This review presents a broader organisational- and system- level analysis of the
472 factors that facilitate or impede GP workforce sustainability. We formulated
473 recommendations (see Table 2) to inform future GP workforce sustainability and effective
474 and equitable patient care.

475 Implications for research and/or practice

476 The development of a sustainable GP workforce to deliver effective and equitable
477 patient care requires examination of the interrelationship between systemic and individual
478 factors, and how these shape the nature of GP work and patient care. Despite current
479 pressures to privatise elements of NHS general practice, there is widespread recognition of
480 the clinical and economic value of general practice as a crucial component of UK primary
481 care. This recognition underscores the need for sustainable financial investment with an
482 emphasis on long-term outcomes to facilitate well-planned and collaborative approaches to
483 support the general practice workforce. Alignment with meaning-making requires
484 organisational and financial support to maximise sustained and direct connections with

485 patients, peers, and communities, thereby fostering ongoing learning systems and cumulative
486 knowledge development. This long-term approach enables GPs and patients to shape and
487 maximise the forward planning of contacts, rather than treating each encounter and practice
488 interaction as a discrete entity.

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494 **Ethical approval**

495 Not applicable.

496 **Conflict of Interests**

497 Elizabeth I Lamb sits on the Royal College of GPs Council as North East England
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