

Supplementary data

Glossary

CMOCs- Context-mechanism-outcome-configurations

HCP- Healthcare professional

EVS- Early visiting service

Part 1- Search strategies

Example Exploratory search

Date searched: April- June 2018

Key words used in academic databases, Google and Google Scholar included: primary care visiting services/ home visiting services/ early visiting services/ acute visiting services/ general practice visiting services.

Example of Primary, formal search

Database: MEDLINE

Host: Ovid

Data Parameters: 1946 to September June 2018

Date Searched: 07/06/2018

Searcher: NR

Hits: 360

Strategy:

-
- 1 House Calls/
 - 2 ((home? or house?) adj2 (visit* or call*)).ti,ab.
 - 3 ((early or earlier or soon*) adj2 (visit* or call*)).ti,ab.
 - 4 1 or 2 or 3
 - 5 Personnel Delegation/
 - 6 emergency medical technicians/ or home health aides/ or nurses' aides/ or physician assistants/
 - 7 Nurse Practitioners/ or Nurse's Role/
 - 8 Attitude of Health Personnel/
 - 9 delegat*.ti.
 - 10 ((delegat* or shift*) adj5 (visit* or call* or task*)).ti,ab.
 - 11 ((delegat* or substitut*) adj5 (physician? or doctor? or gp or gps or general practi* or family practi*)).ti,ab.
 - 12 ((physician? or doctor? or practice or gp or gps) adj2 (assistant? or associate? or aide?)).ti,ab.
 - 13 (paramedic* or (emergency adj3 (technician? or practitioner? or staff* or personnel))))).ti,ab.
 - 14 ((nurse? adj3 (practitioner? or specialist? or advanced or role?)) or practice nurse?).ti,ab.
 - 15 ((delegat* or substitut*) adj5 nurse?).ti,ab.
 - 16 (healthcare assistant? or health care assistant?).ti,ab.
 - 17 (community adj2 (worker? or assistant? or associate? or aide? or practitioner? or staff or personnel)).ti,ab.
 - 18 exp General Practice/ma or Primary Health Care/ma
 - 19 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
 - 20 general practice/ or family practice/
 - 21 general practitioners/ or physicians, family/ or physicians, primary care/
 - 22 Primary Health Care/
 - 23 Office Visits/
 - 24 ((general or family) adj2 (practi* or physician? or doctor?)).ti,ab.
 - 25 (primary care or primary health care or primary healthcare).ti,ab.
 - 26 ((health* or medical) adj2 (center? or centre?)).ti,ab.
 - 27 20 or 21 or 22 or 23 or 24 or 25 or 26
 - 28 4 and 19 and 27
 - 29 Developing Countries/
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- 30 (Africa or Caribbean or West Indies or South America or Latin America or Central America).hw,ti,ab,cp.
- 31 (Afghanistan or Albania or Algeria or Angola or American Samoa or Armenia or Armenian or Azerbaijan or Bangladesh or Benin or Byelarus or Byelorussian or Belarus or Belorussian or Belorussia or Belize or Bhutan or Bolivia or Bosnia or Herzegovina or Hercegovina or Botswana or Brazil or Brasil or Bulgaria or Burkina Faso or Burkina Fasso or Upper Volta or Burundi or Urundi or Cambodia or Khmer Republic or Kampuchea or Cameroon or Cameroons or Cameron or Camerons or Cape Verde or Central African Republic or Chad or China or Colombia or Comoros or Comoro Islands or Comores or Mayotte or Congo or Zaire or Costa Rica or Cote d'Ivoire or Ivory Coast or Cuba or Djibouti or French Somaliland or Dominica or Dominican Republic or East Timor or East Timur or Timor Leste or Ecuador or Egypt or United Arab Republic or El Salvador or Eritrea or Ethiopia or Fiji or Gabon or Gabonese Republic or Gambia or Gaza or Georgia Republic or Georgian Republic or Ghana or Gold Coast or Grenada or Guatemala or Guinea or Guinea-Bisau or Guam or Guiana or Guyana or Haiti or Honduras or India or Maldives or Indonesia or Iran or Iraq or Jamaica or Jordan or Kazakhstan or Kazakh or Kenya or Kiribati or Korea or Kosovo or Kyrgyzstan or Kirghizia or Kyrgyz Republic or Kirghiz or Kirgizstan or Lao PDR or Laos or Lebanon or Lesotho or Basutoland or Liberia or Libya or Macedonia or Madagascar or Malagasy Republic or Malaysia or Malaya or Malay or Sabah or Sarawak or Malawi or Nyasaland or Mali or Marshall Islands or Mauritania or Mauritius or Agalega Islands or Mexico or Micronesia or Middle East or Moldova or Moldovia or Moldovian or Mongolia or Montenegro or Morocco or Ifni or Mozambique or Myanmar or Myanma or Burma or Namibia or Nepal or Netherlands Antilles or Nicaragua or Niger or Nigeria or Pakistan or Palau or Palestine or Panama or Papua New Guinea or Paraguay or Peru or Philippines or Philipines or Phillipines or Phillippines or Romania or Rumania or Roumania or Rwanda or Ruanda or Saint Lucia or St Lucia or Saint Vincent or St Vincent or Grenadines or Samoa or Samoan Islands or Navigator Island or Navigator Islands or Sao Tome or Senegal or Serbia or Sierra Leone or Sri Lanka or Ceylon or Solomon Islands or Somalia or Sudan or Suriname or Surinam or Swaziland or Syria or Principe or South Sudan or Tajikistan or Tadzshikistan or Tadjikistan or Tadzhih or Tanzania or Thailand or Timor-Leste or Togo or Togolese Republic or Tonga or Tunisia or Turkey or Turkmenistan or Turkmen or Tuvalu or Uganda or Ukraine or Uzbekistan or Uzbek or Vanuatu or New Hebrides or Vietnam or Viet Nam or West Bank or Yemen or Zambia or Zimbabwe or Rhodesia).hw,ti,ab,cp.
- 32 ((developing or less* developed or under developed or underdeveloped or middle income or low* income or underserved or under served or deprived or poor*) adj (countr* or nation? or state? or population? or world)).ti,ab.
- 33 ((developing or less* developed or under developed or underdeveloped or middle income or low* income) adj (economy or economies)).ti,ab.
- 34 (low* adj (gdp or gnp or gross domestic or gross national)).ti,ab.
- 35 (low adj3 middle adj3 countr*).ti,ab.
- 36 (lmic or lmics or third world or lami countr*).ti,ab.
- 37 transitional countr*.ti,ab.
- 38 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37
- 39 28 not 38
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Example of Secondary, purposive search

Database: MEDLINE

Host: Ovid

Data Parameters: 1946 to October 2018

Date Searched: 11/10/2018

Searcher: NR

Hits: 566

Strategy:

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- 1 Personnel Delegation/
 - 2 Professional Role/ or Nurse's Role/
 - 3 (((delegat* or shift* or substitut* or shar*) adj5 (visit* or call* or task* or work*))).ti,ab.
 - 4 (((chang* or mov* or shift*) adj3 (role? or skillmix or skill-mix))).ti,ab.
 - 5 (delegation or substitution or shifting).ti,ab.
 - 6 delegat*.ti.
 - 7 1 or 2 or 3 or 4 or 5 or 6
 - 8 emergency medical technicians/ or home health aides/ or nurses' aides/ or physician assistants/
 - 9 Nurse Practitioners/
 - 10 ((physician? or doctor? or practice or gp or gps or medical) adj2 (assistant? or associate? or aide?)).ti,ab.
 - 11 (paramedic* or (emergency adj3 (technician? or practitioner? or staff* or personnel))).ti,ab.
 - 12 ((nurse? adj3 (practitioner? or specialist? or advanced or role?)) or practice nurse?).ti,ab.
 - 13 (healthcare assistant? or health care assistant?).ti,ab.
 - 14 (community adj2 (worker? or assistant? or associate? or aide? or practitioner? or staff or personnel)).ti,ab.
 - 15 (social prescrib* or care navigat* or patient navigat*).ti,ab.
 - 16 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15
 - 17 7 and 16
 - 18 (((delegat* or substitut*) adj5 (physician? or doctor? or gp or gps or general practi* or family practi*))).ti,ab.
 - 19 (((delegat* or substitut*) adj5 nurse?).ti,ab.
 - 20 17 or 18 or 19
 - 21 general practice/ or family practice/
 - 22 general practitioners/ or physicians, family/ or physicians, primary care/
 - 23 Primary Health Care/
 - 24 Office Visits/
 - 25 ((general or family) adj2 (practi* or physician? or doctor?)).ti,ab.
 - 26 (primary care or primary health care or primary healthcare).ti,ab.
 - 27 ((health* or medical) adj2 (center? or centre?)).ti,ab.
 - 28 21 or 22 or 23 or 24 or 25 or 26 or 27
-

29	20 and 28
30	limit 29 to "reviews (maximizes specificity)"
31	exp United Kingdom/
32	(united kingdom or uk or britain or gb or england or wales or scotland or northern ireland or nhs*).ti,ab,in.
33	(british or bmj).jw.
34	31 or 32 or 33
35	29 and 34
36	30 or 35

Part 2- Characteristics of the 70 studies included in the review

Table 1: Study characteristics main search (n=39): June 2018

Table 2: Study characteristics of papers identified separately 1st round (n=12): June 2018

Table 3: Study characteristics additional search (n=14): October 2018

Table 4: Study characteristics of papers identified separately (n=5): October 2018

Table 1: Study characteristics main search

Authors	Year	Document	Country	Methodology & sample	Objectives
AACE	2017	Online news piece	UK	NA	NA
Andalo	2002	Amalgamation of abstracts	England	Unspecified literature review	An initial scoping exercise in finding literature relating to: Triaging to improve access and reduce workload in primary care. Staggering home visits to reduce emergency admissions.
Armstrong, K. Akroyd and L. Burke	2012	Academic/ short report	UK	Semi-structured interviews 11 inner city ECPs with 4+ years of experience Analysis process not stated	To explore barriers and facilitators to the preventative aspects of the role of the ECP.

Atkin, M. Hirst, N. Lunt and G. Parker	1994	Academic/ Empirical	UK	Questionnaire Practice nurses Response rate of 81% Analysis process not stated	To undertake a study of the roles, responsibilities and training needs of practice nurses using data from the national census of practice nurses in England and Wales.
Baird	2016	Policy Report	UK	Quantitative analysis - A study of 30 million individual contacts with patients from 177 practices over five years provided by ResearchOne. - A survey of 43 practices for a sample week in October 2015 examining activity and workload. - A survey of 318 GP trainees, examining workload and future career intentions. Qualitative analysis - In-depth semi- structured interviews with 60 staff at four practices of varying sizes in Plymouth, Shrewsbury, Sheffield and London. - Literature	To report on how and why the GP crisis has occurred.

				<p>search and analysis.</p> <ul style="list-style-type: none"> - Scoping conversations with a range of stakeholders, including national bodies and leaders of clinical commissioning groups (CCGs). - Qualitative analysis of free text answers from a survey of 318 GP trainees. 	
Baird	2018	Policy Report	UK	<p>Analysis of available literature</p> <p>Conversations with stakeholders including telephone and face-to-face interviews</p>	To explore the need for new models of care delivery
Community news rewrite		Online community newsletter	UK	NA	To outline the new visiting service
L, Dini, L, Sarganas, G, Heintze, C and Braun, V	2012	Academic/ Empirical	Germany	<p>Questionnaire</p> <p>Primary care physicians</p> <p>47% response rate</p> <p>Statistical analysis</p>	To assess primary care physicians' overall attitude toward the delegation of home visit tasks
L, Dini, G. Sarganas, E. Boostrom, S. Ogawa, C. Heintze and V. Braun	2012	Academic/ Empirical	Germany	<p>Questionnaire</p> <p>Primary care physicians</p> <p>47% response rate</p> <p>Statistical analysis</p>	To elicit perceptions of barriers to and benefits of delegation and the current practice of informal delegation amongst primary care physicians

Edwards, C. Bobb and S. I. Robinson	2009	Academic/ Empirical	England	Clinical management outcome data (patient records and from data-collection forms completed by a nurse practitioner and GPs). Questionnaire- Patient and staff satisfaction	To explore the feasibility and clinical management outcomes of nurse practitioner management of same day care requests, including those requiring home visits, to inform a proposed randomised controlled trial.
Ford	2017	Online news piece	UK	NA	To showcase a new pilot visiting service in Hampshire.
Joshi, R	2017	Powerpoint	UK	NA	To summarise paramedic use in Wokingham
Mahtani, K.	2018	Commentary	UK	NA	To set the scene for paramedic use in Primary Care.
Martin, P. O'Meara and J. Farmer	2016	Academic/ Empirical	Ontario, Canada	An observational ethnographic approach Qualitative data (e.g. informal discussions, semi-structured interviews and direct observation of interactions between consumers and community paramedics). Fourteen adult consumers (e.g. patients) participated,	To evaluate a community paramedicine program in rural Ontario, Canada, exploring the perceptions and experiences of consumers (patients).

Mergenthal, M. Beyer, F. M. Gerlach and C. Guethlin	2016	Academic/ Empirical	Germany	Questionnaire 245 practices took part (83% response rate) General Practitioners	To find out which tasks GPs delegate to their specially qualified personnel, which they permit and which tasks they do not delegate at all.
NHS England	2015	Patient safety alert	UK	NA	Stage One warning to alert to risk of death from failure to prioritise home visits in general practice
NHS England	2015	Impact Assessment	UK	NA	Proposal to introduce independent prescribing by paramedics during new models of care
NHS England	2018	Online news piece	UK	NA	To showcase Better treatment for patients as advanced paramedics prescribe medicines during new models of care.
NHS England	2017	Online case study	UK	Case study 1 Practice in S.E England	To showcase effective practice.
NHS England	n.d.	Online Bulletin	UK	NA	To outline the development of ECPs.
NHS England	2017	Online Fact sheet	UK	NA	To outline team development as part of the NHS Ten High Impact Actions.

NHS England	2015	Annex	UK	NA	To outline next steps towards primary care co-commissioning and delegation by NHS England
Nuffield trust	2017	Blog post	UK	NA	To outline the need to invest in a sustainable primary care workforce
Nuffield trust	2017	Blog post	UK	NA	Chart to show the shift in who's carried out home visits in 2017.
Oxford Health	2017	Online news piece	England	Case study	To show impact of paramedics doing home visits
PCC	2018	Blog post	England	NA	To show the potential for rotating paramedics.
Better Local Care website	2016	Blog post	England	NA	To showcase pilot project in Waterloo using paramedics to free up GPs time.
Portsmouth CCG	2016	Evaluation	England	Stakeholder interviews Analysis of both quantitative and qualitative data including both patient and practice data	To review the Acute Visiting Service (AVS) pilot period by the Portsmouth Primary Care Alliance (PPCA),

RSM	2017	Evaluation	England	Interviews with clinical staff and practice staff as well as commissioners on the project. Analysis of triage data from the IT/operations team. Assessment of clinical outcome data from paramedic team records. Online survey of GPs conducted in January 2017 with 19 GP responses. Patient surveys handed out by home visiting clinicians and completed by patients or carers.	To review the Paramedic Home Visiting Service (PHVS) a pilot site for Southern Health's 'Better Local Care' vanguard.
Sibbard and Ollerton	n.d	Powerpoint	England	Localised data No methodology noted	To present findings of 'Innovative approaches to service improvement in a primary care setting'
South East Coast Ambulance Service	2015	Online community newsletter	England	NA	To show impact of paramedic use in S.E England.
Spence	2017	Commentary	England	NA	To debate the hybrid role of GPs and Paramedics.

Van den Berg, C. Meinke, M. Matzke, R. Heymann, S. Flessa and W. Hoffmann	2010	Academic/ Empirical	Germany	Analysis of the following data: Reimbursement data of all patients of the ambulatory healthcare centre Data of the statutory health insurance AOK (Allgemeine Ortskrankenkasse, engl.: General Regional Health Insurance) Brandenburg. The number of home visits conducted, derived from the project documentation	To explore the economic effects of the AGnES-concept (AGnES = GP-supporting, community-based, e-health-assisted, systemic intervention) that supports the delegation of regular GP-home visits to qualified practice assistants.
Van den Berg, C. Meinke, R. Heymann, T. Fiss, E. Suckert, C. Poller, A. Dreier, W. Hoffmann, H. Rogalski, R. Oppermann and T. Karopka	2009	Academic/ Empirical	Germany	Use of standardized computer-based instruments to document and evaluate patient data (age, sex, diagnoses, level of care, mobility, etc.) Standardized interviews amongst GPs, AGnES employees and patients.	To evaluate the AGnES projects to date.
Van den Berg, R. Heymann, C. Meinke, S. E. Baumeister, S. Flessa and W. Hoffmann	2012	Academic/ Empirical	Germany	Standardized project documentation Published literature and data from the Associations of Statutory Health Insurance Physicians from Saxony and Mecklenburg-Western	To explore the effect of delegating GP-home visits on the total number of patients treated.

				Pomerania. Data of an ambulatory healthcare centre in the rural county Oberspreewald-Lausitz in the Federal State of Brandenburg (Eastern Germany).	
Van den Berg, T. Fiss, C. Meinke, R. Heymann, S. Scriba and W. Hoffmann	2009	Academic/ Empirical	Germany	Standardized questionnaires 105 patients, two GPs and three AGnES-practice assistants (all registered nurses) participated in the project.	To establish proof of concept
Van den Berg, Meinke-Franze, C, Fiss, T and Hoffmann, W	2013	Academic/ Empirical	Germany	Clinical data Participants selected for inclusion by GP Statistical analysis	To assess the proportion of patients with controlled hypertension, the number of patients that changed between different categories of blood pressure during the project, and to identify possible determinants for these changes.
Wickware, C	2017	Online news piece	UK	NA	To showcase new implementation of paramedics doing home visits in Manchester.

Wustmann, C. Haase-Strey, T. Kubiak and C. A. Ritter	2013	Academic/ Empirical	Germany	Survey 749 general practitioners and practitioners specialized in diabetes care as well as 344 community pharmacists Response rates were 19.4 % (n = 145) for practitioners and 24.4 % (n = 84) for pharmacists. Statistical analysis	To determine and compare the attitudes of community pharmacists and practitioners towards each other regarding collaboration.
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Table 2: Study characteristics of papers identified separately 1st round

Authors	Year	Document	Country	Methodology & sample	Objectives
Bromley CCG	2017	Service Proposal	England	NA	To provide a rationale for the service, how it will operate, risks and issues.
Camden CCG	2016	Evaluation	England	Interviews with patients and GPs Referral data Analysis of discharge notes	To evaluate the pilot of the Over 75s Home Visiting Service (HV Service) over its first 6 months.
Duffin, C.	2013	Online news piece	England	NA	To showcase us of full time GPs in home visiting day service in Lancashire.
Fusion 48		Case study	England	Quantitative data, Clinical data Feedback from those involved in the service	To evaluate an Acute Visiting Service that had been operational for around 14 months to

					inform future commissioning decisions.
NHS England	2016	Policy	UK	NA	To set out the future GP services.
Leicester CCG	n.d.	Online news piece	England	NA	To showcase new visiting service in Leicester.
Pitalia, S	2013	Online news piece	England	NA	To showcase use of new visiting service in Merseyside.
Wokingham CCG	2018	Online news piece	England	Case study	To summarise a case study of new care model in Wokingham.
Citation tracking					
Angelique T.M. Dierick-van Daele, Job F.M. Metsemakers, Emmy W.C.C. Derckx, Cor Spreeuwenberg & Hubertus J.M. Vrijhoef	2009	Academic/ Empirical	Netherlands	Questionnaires, extracting medical records from practice computer systems and recording the length of consultations. 1501 patients	To evaluate process and outcomes of care provided to patients with common complaints by general practitioners or specially trained nurse practitioners as first point of contact.
Paul Kinnersley, Elizabeth Anderson, Kate Parry, John Clement, Luke Archard, Pat Turton, Andrew Stainthorpe, Aileen Fraser, Chris C Butler, Chris Rogers	2000	Academic/ Empirical	UK	Randomised controlled trial 10 general practices in south Wales and south west England. 1368 patients requesting same day consultations.	To ascertain any differences between care from nurse practitioners and that from general practitioners for patients seeking “same day” consultations in primary care.

Maureen T. Taylor CCPA D. Wayne Taylor PhD FCIM Kristen Burrows CCPA MSc John Cunningham MD FRCPC Andrea Lombardi CCPA MBA Michelle Liou MSc	2013	Academic/ Empirical	Ontario, Canada	A qualitative design using semi structured interviews. Seven family physicians and 7 other specialists.	To explore the experiences and perceptions of Ontario physician assistant (PA) employers about the barriers to and benefits of hiring PAs.
P Venning, A Durie, M Roland, C Roberts, B Leese	2000	Academic/ Empirical	UK	Multicentre randomised controlled trial 20 general practices in England and Wales. 1303 patients (651 general practitioner consultations and 641 nurse practitioner consultations).	To compare the cost effectiveness of general practitioners and nurse practitioners as first point of contact in primary care.

Table 3: Study characteristics additional search

Authors	Date	Document type	Country	Methodology & sample	Objectives
Annis, Ann M, Marcelline Harris, PhD, RN; Claire H. Robinson, MPH; Sarah L. Krein, PhD, RN	2016	Academic/ Literature review	Multiple	Narrative systematic literature review	To undertake a systematic literature review to examine the extent to which access and care coordination measures in PCMH reflect the involvement of associate care providers (ACPs)

Bonsall, K and Cheater, F.M	2007	Academic/ Literature review	Multiple	Narrative literature review	To review existing research evidence to assess the impact of advanced primary care nursing roles, particularly first contact nursing roles, for patients, nurses themselves and their colleagues
Chapman, Jenifer L, Annegret Zechel, Yvonne H Carter and Stephen Abbott	2004	Academic/ Literature review	UK	Narrative systematic literature review	To review the evidence of seven recent innovations in service provision to improve access or equity in access to primary care, by performing a systematic review of the literature.
Dawson, A.J. A. M. Nkowane and A. Whelan	2015	Academic/ Literature review	Multiple	Narrative systematic literature review	To identify nursing and midwifery policy, staffing, education and training interventions, collaborative efforts and strategies that have improved the quantity, quality and relevance of the nursing and midwifery workforce leading to health improvements

					for vulnerable populations.
Dennis, S, May, J, Perkins, D, Zwar, N, Sibbald, B and Hasan, I.	2009	Academic/ Literature review	Multiple	Literature review	To explore the evidence for the effectiveness of task substitution between GPs and pharmacists and GPs and nurses for the care of older people with chronic disease.
Hollinghurst, S, Sue Horrocks, Elizabeth Anderson and Chris Salisbury	2006	Academic/ Literature review	Multiple	Synthesis, modelling, and analysis of published data from the perspective of general practices and the NHS.	To compare the cost of primary care provided by nurse practitioners with that of salaried GPs.
Hossain LN, Fernandez-Llimos F, Luckett T, et al.	2017	Academic/ Literature review	Australia	Qualitative meta-synthesis	To synthesise the literature on patients', general practitioners' (GPs) and nurses' perspectives of CPSs to identify barriers and facilitators to their implementation in Australia.
Laurant M, Reeves D, Hermens R, Braspenning J, Grol R, Sibbald B.	2005	Academic/ Literature review	Multiple	Systematic literature review and Meta-Analysis	To evaluate the impact of doctor-nurse substitution in primary care on patient outcomes,

					process of care, and resource utilisation including cost.
Laurant,M, Mirjam Harmsen, Marjan Faber, Hub Wollersheim, Bonnie Sibbald and Richard Grol	2010	Academic/ Literature review	Multiple	Narrative structured literature review of primarily systematic literature reviews	To undertake a structured literature review to address the following question: what is the impact of professional role revision on quality of care and outcomes?
Laurant M, van der Biezen M, Wijers N, Watananirun K, Kontopantelis E, van Vught AJAH.	2018	Academic/ Literature review	Multiple	Narrative systematic literature review of RCTs	To investigate the impact of nurses working as substitutes for primary care doctors on: patient outcomes; processes of care; and utilisation, including volume and cost.
Martínez-González,Nahara Anani , Thomas Rosemann, Ryan Tandjung, Sima Djalali	2015	Academic/ Literature review	Multiple	Narrative systematic literature review of RCTs	To undertake a systematic literature review to assess the effect of physician-nurse substitution on process care outcomes.
Martínez-González,N,A, Rosemann, T, Djalali, S, Huber-Geismann, F, and Tandjung, R.	2015	Academic/ Literature review	Multiple	Systematic literature review and Meta-Analysis of RCTs	To undertake a systematic review to compare resource utilization with task-shifting from physicians to nurses in primary care.

Poghosyan, L, Nannini, A, Stone, P.W., and Smaldone, A.	2013	Academic/ Empirical	USA	A qualitative design using interviews 16 NPs practicing in primary care settings Content analysis was applied.	To investigate organizational climate and its domains affecting NP professional practice in primary care settings.
Sangster, Martin-Misener, R, Downe-Wamboldt, B and DiCenso, A	2011	Academic/ Literature review	Canada	An integrative review using Whittemore and Knaff's method.	To review the literature about the Canadian experience with nurse practitioner role implementation and identify influencing factors.

Table 4: Study characteristics of papers identified separately

Authors	Date	Document type	Country	Methodology & sample	Objectives
Bosley , S and Dale, J.	2008	Academic/ Discussion paper		NA	To discuss the research in general practice on the challenges and benefits of developing the HCA role in general practice.
Fleischmann, N, Tetzlaff, B, Werle, J, Geister, C, Scherer, M, Weyerer, S, Hummers-Pradier, E and Mueller, C,A.	2016	Academic/ Empirical	Germany	Grounded theory approach 30 GPs	To explore GP perspectives on interprofessional collaboration with a focus on their visits to nursing homes in order to understand their experiences and expectations.

Maskrey, M, Johnson, C.F, Cormack, J, Ryan, M and Macdonald, H.	2018	Academic/ Empirical	UK	A prospective observational cohort study 16 urban general practices that comprise Inverclyde Health and Social Care Partnership in Scotland.	To explore the release GP time by providing additional prescribing resources to support general practices
Mueller, C,A, Fleischmann, N, Cavazzini, C, Heim, S, Svenja, S, Geister, C, Tetzlaff, B, Hoell, A, Werle, J, Weyerer, S, Scherer, M and Hummers, E.	2018	Academic/ Empirical	Germany	Part 1: Interviews with GPs, nurses, nursing home residents and relatives focusing on interprofessional interactions and medical care. Part 2: Nine focus groups with GPs and nurses. Part 3: Expert panel and testing	To develop and test measures to improve collaboration and communication between nurses and general practitioners (GPs) in a residential home care setting
Riisgarrrd, H, Sondergaard, J, Munch, M, Le V, J, Ledderer, L, Pedersen, L.B and Nexoe, J.	2017	Academic/ Empirical	Denmark	Questionnaire 621 members of the practice staff responded.	To investigate associations between degrees of task delegation and motivation in the management of chronic disease in general practice and to investigate associations between the work motivation of the staff and their job satisfaction.

Part 3- Analysis and synthesis processes

Coding Framework- Search One

Code Bucket	Description
Patient condition	References to care needs regarding an acute versus chronic and service provision/ implementation
Policy level framing	Documents that appear to show origins of <i>where</i> intervention was initially conceptualised e.g. discussions around why delegation might be necessary or a viable alternative
Primary care co-commissioning	Documents that appear to show <i>how</i> the intervention was initially conceptualised
Scale Vs sustainability of care	Documents that appear to show <i>why</i> the intervention was initially conceptualised
Patient access and demand	Specific connections to the service and patient need
Logistics of EVS	Details on how the service works i.e. timings, recruitment, patient criteria
Feedback processes	Details of how the service professionals communicate re patient
Triage and referral processes	Who does the triage, at what point in the patient's care and why
Who delegates	Individual characteristics on who delegates home visits
Reasons for delegation (or not)	Professional decision making
Who visits	Individual characteristics on who receives the delegated task i.e. which profession
Professional competence of visiting healthcare professional	Details of specific competencies to be able to conduct task
Professional identities	Details the implications for the way in which the healthcare professional sees themselves in the context of delegation
Interprofessional interactions	Reference to team based interaction, collaboration, co-operation, efforts to work together beyond just feeding back patient information
Trustworthiness	Reference to the degree in which professionals (i.e. GP and alternative HCP) value/ mention/foster trust
Risk and responsibility	Reference to where responsibility is perceived to lie and the risks associated with this
Impact on capacity formation	Reference to increased capacity of GPs e.g. being able to see more patients in surgery as a result of service implementation
Job satisfaction	Reference to a change in job satisfaction (as a result of service implementation) amongst healthcare professionals including GPs
Quality outcome measures	Any metrics associated with service implementation e.g. cost saving, patients referred to hospital
Care quality	Mention of any change to delivery of care as a result of service implementation
Patient interaction	Mention of any change in regards to nature of interaction with patients
Reducing burden	Mention of any change to other services (e.g. A&E) and/or GP workload
Time bound care	Reference to the timing of the service i.e. being seen earlier in the day

Coding Framework- Search Two

Code Bucket	Description
GP role deprivation	Change in nature of role as a result of service implementation
Threat (to GP)	Delegation seen as a threat to GP professional identity
Cost effectiveness	Reference to the cost effectiveness of delegating workloads
Clinical outcomes	Specific clinical outcomes related to delegated workloads
Deferred workloads	Mention of any workloads not dealt with during the process of delegation
Information sharing	Additional references to the process to sharing information, feedback processes
Organisational level	Reference to HR or organisational processes re delegation
Invisibility of alternative HCP	Reference to integration, isolation, lone working challenges
Job satisfaction for alternative HCP	Reference to job satisfaction including e.g. need for professional feedback
Patient interaction	The nature of interaction between alternative HCP and patients e.g. patient education, patient reassurance
Patient satisfaction	Reference to patient satisfaction re access, quality or care
Risk Vs clinical autonomy	Lines of accountability, professional judgement
Role conflict and confusion	Difficulties associated with implementation of alternative HCP e.g. communication, transparency of tasks, role clarity
Role recognition	How the alternative HCP feels valued and respected (or not)
Time saving	Reference to effectiveness of service in relation to time saved

Part 4- Full lists of CMOCs developed from the literature with illustrative data	
CMOCs	Illustrative examples of supporting data extracted from the literature
Theme 1	

<p>CMO 1: When the person triaging a home visit request has the necessary relevant information (C), they are able to judge how unwell a patient is (M) and so organise the ‘right’ clinician to do the visit (O).</p>	<p><i>The practices we spoke to had implemented a variety of methods to manage demand, particularly for managing same-day presentation of acute onset illness. These included telephone triage schemes and changing skill-mix by using other members of the primary care team (including nurses, pharmacists and paramedics). Evidence suggests that predicting demand for this type of care is relatively straightforward and that such schemes have the potential to effectively manage minor illness (Longman and Laitner 2013; Shum et al 2000). Data from Baird et al., 2016</i></p> <p><i>The service is intended for relatively acute patients who need a home visit within 48 hours. It is distinct from the Rapid Response Service as it does not offer an immediate response (within two hours) and it is not intended to replace routine home visits for patients with chronic conditions; The service is for minor illnesses that are deemed unlikely to need further follow-up; The service is for patients in their own homes. Care home residents are excluded as the Visiting Medical Officer Enhanced Service covers GP visits to care homes, and continuity of care for these patients is particularly important both in regards to the relationship between the patient and the GP and the processes in place for recording the outcomes of the visit. Data from Bromley CCG, 2017</i></p> <p><i>This is a reactive visiting service which receives referrals for patients who require an urgent home visit on the same day the referral was made. Data from Camden CCG, 2016</i></p> <p><i>For patients presenting as acute ‘same-day’ or emergency cases to a GP surgery, nurse practitioners appear acceptable to them as a first or only point of contact. Data from Edwards et al., 2009</i></p> <p><i>The demand for home visits requested both via Ambulance Service and from GP practices is driven by the needs of older people with frailty and complex needs. The majority of the presenting symptoms are typically characteristic ‘points of crisis’ for people with frailty, such as falls, dizziness and breathlessness. Data from Fusion 48 Acute Visiting Service case example</i></p>
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	<p><i>Use the patient/carer definition of 'urgent' rather than a clinical interpretation, remembering always that symptoms can be alarming for patients and the reason they are asking for a medical opinion is because they are worried.</i></p> <p>Data from Pitalia, 2013</p> <p><i>We have a mobile, community-based doctor available between 9:00 am and 6:30 pm. The doctors who make the visits are all local GPs employed on a sessional basis by the provider so they are familiar with local services and care pathways. Increasing numbers of doctors are retiring early or going part time in their own practices and this has helped us as they are available for this work. They find it very satisfying – there is no QOF work, no tick box exercises, no prompts to achieve targets, they are just seeing the patient and can spend twenty minutes with them to more fully explore the options for integrated and community care, helping the patient to make a safer choice to stay at home.</i></p> <p>Data from Pitalia, 2013</p>
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<p>CMO 2: When the person triaging a home visit request has the time (C), relevant skills (C), knowledge (C), attitude (C) and experience (C), they will feel able to carry out their role (M) and delegate home visits appropriately (O).</p>	<p><i>Requests for a home visit will be triaged by Jo Pemberton, who was a frontline Paramedic for 15 years before joining the Practice recently. During her time in the Ambulance Service, Jo received training in Enhanced Clinical Triage and worked out of the 999 ambulance centre in Essex, assisting in triaging emergency calls. For the last five years she was based in Saxmundham.</i> Data from Community newsletter</p> <p><i>Acute Visiting Services (AVS) are often expected to take referrals from GP Practices, Paramedic Pathfinders, Nursing Homes and Allied Health Professionals. The aim is usually to be by the patient's side within 2 hours or less.</i> Data from Fusion 48 case study</p> <p><i>Patients who call their practice requesting a home visit are triaged by a "care navigator", before a GP will become involved to determine if the case is appropriate for the new service.</i> Data from Ford, 2017</p> <p><i>We decided that it was vital that referral came via the patient's own practice. The GPs there know the patient and their circumstances and can make a safe decision about their needs and the appropriateness of their request. It also means that the patient has confidence in the decision about whether they should receive a visit as they have spoken to the practice with which they are registered and familiar.</i> Data from Pitalia, 2013</p> <p><i>It is sometimes difficult in more complex cases to get an accurate feel of the challenges involved. There is potential for delay in action if these complex cases are reviewed too often by the paramedic team. The main responsibility for this lies with the GP allocating appropriate visits and defining the specific goal of a visit if it is a complex patient needing review.</i> Data from RSM report, 2017</p>
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<p>CMO 3: For the person triaging a home visit request, when they know that the patient has a chronic condition (C), they are less likely delegate a home visit (O), because their judgment is that the patient would benefit from continuity (M).</p>	<p><i>The service is not intended to replace routine home visits for patients with chronic conditions, for whom relational continuity of care is particularly important and/or follow ups appointments are likely to be required.</i> Data from Bromley CCG, 2017</p> <p><i>There was also evidence that some GPs are applying fine clinical judgments in deciding when it is most appropriate to use the service and for which patients, in order to maintain continuity of care. For example, where a patient has one or more long-term conditions, some GPs will refer them to the visiting service only for a relatively straightforward intervention (such as antibiotic prescribing for a urine infection), but not for the long term condition, where contextual knowledge is likely to be more important.</i> Data from Camden CCG, 2016</p>
<p>CMO 4: For the person triaging a home visit request, when they know that the patient has an acute condition (C), they are more likely to delegate a home visit (O), because their judgment is that the patient may not benefit from continuity of care (M).</p>	<p><i>For patients with minor illnesses that are deemed unlikely to need further follow up.</i> Data from Bromley CCG, 2017</p> <p><i>Home Visit GPs will not be able to re-visit a patient as part of the same referral, but may be available for advice on the phone within their clinical session. If a follow-up visit is deemed necessary, the practice must book this in as a new referral.</i> Data from Bromley CCG, 2017</p>

<p>CMO 5: Patients can be seen throughout the day (O), because the person who is responsible for deciding on who needs a visit knows they have at their disposal (M), dedicated, multi-disciplinary clinicians for home visits (C).</p>	<p><i>This is a reactive visiting service which receives referrals for patients who require an urgent home visit on the same day the referral was made</i> Data from Camden CCG, 2016</p> <p><i>Until now, GPs traditionally made their home visits in the afternoon, after morning surgery at the GP practice but with patients or carers feeling they couldn't wait for an afternoon visit resulted in them going straight to A&E. But the new service funded by Leicester City Clinical Commissioning Group (CCG) is aiming to change this by creating a morning service which will see GPs provide a rapid response service to the most urgent home visit requests to care homes and housebound patients.</i> Data from Leicester CCG</p> <p><i>Following a routine request by a patient for a home visit, basic information is collected by practice staff before being triaged by practice GPs. Triage happens in different ways at different practices and could be completed immediately following the call (where GPs and reception staff physically located together and in direct contact) or later in the morning (where reception staff log all requests and these are reviewed by GPs at their convenience). Caseloads are triaged by GPs such that patients with less complex complaints are seen in the morning, allowing GPs to attend to complex cases more comprehensively and allowing GP sessions to finish on time. The PHVS team (specially trained paramedics and / or a specialist nurse practitioner in the case of the pilot) can view bookings via a bespoke on-line booking system, and are notified by text message of all new bookings. The PHVS team visits the practice to collect a paper record of the patient's basic EMIS data, and to discuss cases and care plans with GPs. The PHVS team input clinical findings and notes to the patient's care plan into the paper record before returning the record to the patient's GP after visits. Where necessary the PHVS team and GP discuss adjustments to the patient's care plan. In all cases the EMIS system is updated to log completed visits, and a discussion occurs between the visiting team member and a GP or duty doctor. Practice and Paramedic staff have worked together to create a publically available on-line booking portal, which is considered by staff as being a key achievement of the project. The booking system (see Figure 3.4) is visible to clinicians and local patients alike.</i> Data from RMS report, 2017</p>
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<p>CMO 6: In order to encourage patient receptiveness towards the visiting health care professional (O), explaining the role of the HCP and the purpose of the visit (C), may help patients to understand (M) and feel confident (M) in the HCP prior to their arrival.</p>	<p><i>The acceptance of the concept among patients was high: 94% of the patients reported that AGnES-practice assistants can conduct home visits and address special topics (for example falls prevention, geriatric assessment, and telemedicine [13,14]) and the GP conducts only home visits in cases of medical urgency [15].</i> Data from Van den Berg et al., 2010</p> <p><i>It also reported that some patients have requested to see a doctor but are usually reassured that the paramedic practitioner is suitably trained, not working in isolation and has access to all their information to make informed decisions.</i> Data from Baird et al., 2018</p> <p><i>Conversations with patients and feedback via the Haverstock phone survey suggests that on the whole people have few concerns that the person visiting is not a known GP. Even where the person is worried at first, the way that visiting GPs explain their role reassures patients. "At first I was a bit disappointed. I thought it might be the doctor I spoke to at the surgery. But in fact he was very competent and he put my fears to rest and did the tests I needed". (Patient)</i> Data from Camden CCG, 2016</p> <p><i>Visiting GPs are very conscious that the person may be expecting someone they know, or may be wary. Those we heard from described how they communicate, explain and listen to patients to alleviate any worries the person may have. The fact that the person has been referred via a conversation with their own GP also seems to generate a level of trust that a self-referral may not.</i> Data from Camden CCG, 2016</p> <p><i>We need a long overdue professional mash-up and to start to merge and blur the boundaries between us all. Here is an idea to consider: let's refer to our health professionals as 'GP doctor', 'GP nurse', and 'GP paramedic', with all primary care clinical staff wearing the same simple uniform like a scrub top.</i> Data from Spence, 2017</p>
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Theme 2	
GP Perspective	
<p>CMO 7: GPs are more likely to delegate to another health care professional (O) when they can trust them to manage the patient safely (M) and this occurs when they have had positive experiences of prior dealings with the health care professional (C).</p>	<p><i>The more a nurse fulfilled GP expectations, the better GPs experienced the collaboration and the “productive performance” during the visit.</i> Data from Fleischmann et al., 2016</p> <p><i>GPs had a positive experience working in cooperation with a friendly, familiar, reliable and dedicated nurse with professional competence [24, 25], and expected nurses to meet this ideal in order to achieve a “productive performance”</i> Data from Fleischmann et al., 2016</p> <p><i>Most of the NPs reported that physicians are supportive of NP role. One NP who worked in a primary care site affiliated with a large academic medical center said, “The physicians that I’ve had experience with have been respectful and value what I do.” Most of the NPs reported that the longer they worked with the physicians, the more they trusted NPs. For example, one NP said, “It took me a while to get him; he’s been supportive of my role but I think the first time, which was 16 years ago, he wanted to read all my notes.”</i> Data from Poghosyan, 2013</p> <p><i>The study found that most of the physicians are supportive of NP practice, and it seems that the support and physician trust in NP professional judgment and clinical decisions evolve over time. These findings are consistent with the literature that physicians' familiarity with the NP role leads to positive perceptions about NPs.</i> Data from Poghosyan, 2013</p>

<p>CMO 8: When GPs are overwhelmed by workload (C), they are more likely to delegate to another HCP and benefit from this (O) because they feel a professional obligation to meet this demand (M).</p>	<p><i>‘Prior to the pilot I was considering leaving general practice as I had been feeling so burnt out and felt like I could not do my job safely. The pharmacist support has improved things greatly — while I still work extremely hard, I feel safer. Please continue this support.’</i> Data from Maskrey, 2018</p> <p><i>Participants believed that having PAs improved the quality of care they could provide to patients. Having the PAs assess less complex cases, complete forms, and perform minor procedures allowed the physicians to use their time more efficiently: “I would spend a much shorter period of time seeing new patients because the information would be presented to me first [by the PA] and then I could deal with the emergent issues.”</i> Data from Taylor et al., 2013</p> <p><i>Shifting tasks to nurses through nurse-led clinics was found to have positively impacted upon doctors’ workload [69].</i> Data from Dawson et al., 2015</p> <p><i>The service acts as a steam valve in the system. (GP). (The best thing about the service is the relief on a doctor’s face when they realise there has been a good intervention they would have struggled to do themselves. (Practice manager) (The best thing about the service is) just the fact it takes so much pressure off us. (GP) There is no doubt that the GPs who have used the visiting service recognise and value the additional capacity it offers, and feedback from referring GPs is overwhelmingly positive.</i> Data from Camden CCG, 2016</p> <p><i>A total of 19 out of c.37 GPs (51%)⁵ at four participating practices responded to a survey administered by the evaluation team in February 2017. A majority of respondents (n=16) indicated that the PHVS had freed-up time and reduced their existing workload. Seventeen GPs were asked to estimate additional staff time required to deliver the service, and time savings as a result of the service. Survey responses indicate that on average, 1.5 hours per week of GP time were spent on the service, and 4.5 hours of GP time were saved. This would represent a theoretical net effect of 3 hours saved per week for each GP involved in the service.</i></p>
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	<p>Data from RSM report, 2017</p> <p><i>Participating GPs were interviewed. About 90% of the participating GPs reported a reduced workload due to the AGnES-practice assistants.</i></p> <p>Data from van den Berg et al., 2012</p> <p><i>Aside from specified time savings, approximately one fifth of GPs commented that there were additional job satisfaction benefits such as the stress reduction from knowing they wouldn't have to leave mid-surgery to attend to patients at home. Several GPs wrote in comment sections that they did still carry out home visits, but that these were fewer and typically involved more complex cases. Below are representative quotes from GP practice survey responses: GP feedback "The pressure on time during on-call days is now more manageable. It had previously been "retiring early soon" levels of manic!" "It has really made a significant impact on my day and relieves a burden on an already pretty frantic day."</i></p> <p>Data form RSM report, 2017</p>
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<p>CMO 9: In contexts where GPs are able to communicate with, and/or monitor the HCP they are working with (C), they feel more inclined to delegate a home visit (O), because they feel they have the means to ensure the visit happens safely (M).</p>	<p><i>Direct bidirectional communication led to a positive team environment that differed to the daily routine of the medical practice.</i> Data from Fleischmann et al., 2016</p> <p><i>"How are the blood glucose levels? (...) This often gives the opportunity to obtain a lot of information from the [nursing staff] (...) often very precise and exact statements about the mental status of the patient, especially from the experienced nurses. How well [the resident] is integrated, are there any changes or mental problems? This is also often very helpful"</i> (CA1/10) Data from Fleischmann et al., 2016</p> <p><i>During a home visit, the paramedic practitioner has full access to the patient's notes and can contact the on-call GP at the practice for advice by telephone or via video link, which allows the GP to see and interact directly with the patient and carer(s) to aid safe management.</i> Data from Baird et al., 2018</p> <p><i>The allocation process to visiting GPs had to be fine-tuned, helping GPs make the best use of their time and travel between patients. Communication between referring and visiting GPs was also tested out, with the service quickly learning the importance of the referring GP providing a mobile phone number so a conversation between GPs could be carried out promptly before, and sometimes after a visit.</i> Data from Camden CCG, 2016</p> <p><i>Every paramedic visit had a discussion with either the patient's own GP or the duty GP to review the clinical history and management pathway (respondent reporting 'No change').</i> Data from RMS report, 2017</p>
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<p>CMO 10: Providers (such as GPs) may be less willing to delegate clinical work (O) if their judgement is that the patient's need is beyond the competency of the HCP (C) and may present as a risky option to delegate (M).</p>	<p><i>While such unwillingness to delegate might reflect inappropriate caution arising from concerns about accountability, it could also be an appropriate response based on knowledge and experience of the HCAs concerned, or an attempt to protect professional identity and prevent loss or dilution of valued skills.</i> Data from Bosley and Dale, 2008</p> <p><i>Barriers to developing APCN roles include doctors' perceptions of threats to their status, and concerns about nurses' capabilities, including training and scope of responsibility, according to focus group discussions with family doctors in England (Wilson et al., 2002)</i> Data from Bonsall and Cheater, 2007</p> <p><i>Practice nurses are commonly responsible for delegating to HCAs, and accountable for the appropriateness of delegation. To make such decisions appropriately, they need to ensure that HCAs have the knowledge, skills, and competence to undertake the delegated tasks, taking into account the individual's own confidence and experience. The RCN advises that HCAs should work according to defined protocols and procedures, and that they should not be asked to make clinical judgements.</i> Bosley and Dale, 2008</p> <p><i>Accounts of responsibilities and tasks also varied across trials and were not described in sufficient detail. Due to the insufficient description of training content, we could not identify a common component across studies. In addition, it was generally assumed that nurses had the required competence to substitute physicians. However, the level of substitution (clinical autonomy) differed among trials and nurses seemed dependent of doctors' supervision in most studies.</i> Martinez-Gonzalez_2015</p> <p><i>It's a new profession so nobody knows what the heck it is or what you're supposed to do with them or how they work. And there are huge misconceptions out there ... how they fit into the medical system, who is liable for them ... that sort of thing.</i> Data from Taylor et al., 2013</p>
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	<p><i>I don't think [I can let my PA give joint injections], because if anything goes wrong I'm the one who has to stand up in court and say I'm responsible. So I drew the line there.</i> Data from Taylor et al., 2013</p> <p><i>A systematic review of GP nurse substitution in primary care found that, in activities such as providing ongoing or first contact care, nurses achieved the same outcomes as GPs [8]</i> Data from Dennis et al., 2009</p> <p><i>The GPs delegated medical tasks to the AGnES-practice assistants on a patient-individual level.</i> Data from van den Berg et al., 2013</p> <p><i>Most frequently perceived barriers to delegation of home visits to PAs were finding it too expensive to cover costs of PAs' training (36%), a lack of perceived added value (32%) and perceiving home visits to be a non-delegable duty of doctors (30%).</i> Data from Dini et al 2012</p> <p><i>Older GPs were more likely to be less willing to delegate, to consider home visits a non-delegable duty of doctors and to perceive that delegation could lead to patients' loss of trust and could be an obstacle between them and their patients, and they were less likely to perceive that delegation to PAs would save them time or improve their own job satisfaction.</i> Data from Dini et al., 2012</p> <p><i>The main reasons for the project physicians not delegating house calls to practice personnel in an average of one third of all house call patients included the presence of serious illnesses and the exhausted capacity of AGnES.</i> Data from van den Berg et al., 2009</p> <p><i>The GP can choose to delegate certain activities including home visits under certain restrictions to qualified practice employees (nurses or physician's assistants). Liability issues and insufficient reimbursement for home visits by practice employees have limited the use of this option.</i></p>
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	<p>Data from van den Berg et al., 2009</p> <p><i>Delegated home visits are not identical to GP-home visits. First of all, not all GP-home visits can be delegated. Home visits with an urgent medical reason usually have to be conducted by the GP himself.</i></p> <p>Data from van den Berg et al., 2012</p> <p><i>The management of more complex conditions generally entails more advanced skills and experience.</i></p> <p>Data from Martinez-Gonzalez_2015 (task shifting article)</p> <p><i>Some felt that visiting these patients should be a core part of their role as a GP, but that the many competing demands upon them made this difficult to deliver. "A lot of the time we are doing non clinical work. It feels sad we can't visit because of that, and have to give it to someone who doesn't know the patient". (GP) "Not many GPs would want to outsource this to other doctors, but we're just desperate". (GP). One or two GPs were concerned that there was a danger of some patients only being seen by the visiting service, potentially leading to fragmented care. A minority of GPs remain unconvinced of the need for the service, expressing concerns about a lack of continuity of care: "We don't have great interest in the model. We value continuity with those patients... We felt it was a service looking for a problem." (GP)</i></p> <p>Data from Camden CCG, 2016</p> <p><i>A number of logistic issues, including how to delegate an appropriate level of autonomy, liability, insurance, and the application of medical directives: Because when I was looking through what's required for appropriate delegation of tasks, it's not that crystal clear to me exactly what needs to be done for proper documentation.</i></p> <p>Data from Taylor et al., 2013</p>
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<p>CMO 11: GPs will feel less inclined to delegate a home visit (O) if the roles and responsibilities of the alternative HCP are unclear (C) and so does not appear (to the GP) to add value (M)</p>	<p><i>Lack of role clarity contributes to confusion and resistance to the role by others. Variable support, understanding and acceptance of the NP role by stakeholders such as managers, physicians and other professional staff influence implementation (Goss Gilroy Inc 2001, van Soeren & Micevski 2001, Cummings et al. 2003, Martin-Misener et al. 2009, van Soeren et al. 2009).</i> Data from Sangster-Gormley et al, 2011</p> <p><i>Successful expansion depended on clearly defining roles, providing additional training and supportive mechanisms for taking on these roles.</i> Data from Dawson et al., 2015</p> <p><i>It would also be necessary to address mistrust and the differing agendas of health professionals and professional organisations. This might be achieved by a greater understanding of the roles and attitudes to multidisciplinary team-work that could be achieved through interdisciplinary education [30], which would be reinforced in practice if incentives supporting multidisciplinary team-work were comprehensive.</i> Data from Dennis et al., 2009</p> <p><i>Clear definition of the functions, level of autonomy, lines of accountability, and levels of experience and qualifications of professionals working in revised roles; development of training programmes for professionals working in revised roles; systems for the accreditation and licensing of professionals working in revised roles; revision of regulations regarding the scope of practice of professionals working in revised roles, for example, extending prescribing rights.</i> Data from Laurent et al., 2010</p> <p><i>Unlike established nursing roles, the complexity of implementation of the NP role requires prior planning for role introduction, mentorship for the NP and understanding of the interface between the NP and other professional staff (van Soeren & Micevski 2001, Cummings et al. 2003, Stolee et al. 2006, Thrasher & Purc-Stephenson 2007, Martin-Misener et al. 2009).</i> Data from Sangster-Gormley et al., 2011</p>
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	<p><i>Involvement is defined as actively participating in the early stages of role implementation. Characteristics of this concept are stakeholder inclusion and a shared understanding and vision for the role that guides the implementation process. Involvement of stakeholders such as physicians and other professional staff in the implementation process allows a common understanding and shared vision for the role to emerge. A shared understanding of the role may then foster alignment of the NP role with patient needs (DiCenso et al. 2003, 2007). Data from Sangster-Gormley et al., 2011</i></p> <p><i>Consistent findings were that administrative personnel lack awareness about NP role and competences, that the communication between NPs and administration is fragmented, and that NPs are not involved in important committees at their organizations. Administration should define avenues for NPs to be involved in governance and become part of organizational decision making. Data from Poghosyan, 2013</i></p> <p><i>Evidence suggests that team-based care offers advantages in delivering the core attributes of general practice that we have identified, including improved access, more efficient co-ordination and improved continuity (Wagner 2000). Fundamental to this approach is the belief that when practices draw on the expertise of a variety of team members, patients are more likely to get the care they need (Schottenfeld et al 2016). Research shows that a number of elements are required for successful team working in primary care (Ghorob and Bodenheimer 2015; Hochman 2015), including: being located in the same place; a stable organisational structure; a culture shift from doctor-driven to team-based care defined roles and workflow; good communication through 'huddles' (very short daily meetings where teams discuss their work for the day), team meetings and informal 'handoffs' of patients. Building relationships and trust within the team is particularly important and reflects wider literature on effective team working (Wisdom and Wei 2017) Data from Baird et al., 2018</i></p>
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	<p><i>Attitudes of practice staff to the nurse practitioner's role were mixed and uncertainties largely focused on the initial few weeks while practitioners and staff adapted to new working arrangements. Careful integration of nurse practitioner personnel, together with an explanation of their role, will be an important prerequisite for a future study.</i></p> <p>Data from Edwards et al., 2009</p> <p><i>A systematic review summarizing the new responsibilities and advantages and disadvantages of employing allied health assistants shows that the main benefit appears to be an improvement in service quality as a result of an increase in patient orientation, while disadvantages concern mainly role confusion due to unclear responsibilities [5].</i></p> <p>Data from Mergenthal et al., 2016</p> <p><i>...disadvantages concern mainly role confusion due to unclear responsibilities.</i></p> <p>Data from Mergenthal, 2016</p>
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<p>CMO 12: When a GP receives a follow up list of patient related actions resulting from delegated visits (C), they are more likely to feel an increase in obligation (M) because the work has been deferred rather than dealt with (O).</p>	<p><i>If the strategies for a “productive performance” did not work, annoyance of the GP could be the first reaction. If they perceived nurses as unorganized or lacking structure, GPs felt their visit to be superfluous and a waste of time. They expected nurses to share their perception of the resident health status. From GPs view, nurses should create communication strategies within the nursing staff team to avoid unnecessary GPs’ visits.</i> Data from Fleischmann et al., 2016</p> <p><i>Unintended consequences, workload increase for GP when pharmacist[s] are away.</i> Data from Maskrey et al, 2018</p> <p><i>Nurses ordered more tests and investigations than general practitioners.</i> Data from Venning et al., 2000</p> <p><i>Adding nurses to doctors’ teams showed no reduction in physician workload (Laurant 2004). This may be because nurses addressed previously unmet need or because nurses generated demand where previously there was none. In either case, the findings suggest that the addition of nurses to physician teams may not reduce workload unless active steps are taken to ensure doctors discontinue providing the services that have been transferred to nurses.</i> Data from Laurent et al., 2005</p> <p><i>The use of nurse practitioners does not always reduce GP workload; to avoid duplication careful consideration must be given to system redesign.</i> Data from Dennis et al., 2009</p> <p><i>A systematic review (Laurant et al 2005) found that while nurses were sometimes able to substitute for general practitioners, they were not necessarily a cheaper alternative as they tended to have longer consultations and recall patients more frequently. Some GPs we spoke to emphasised the benefits that highly experienced practice nurses could bring but reiterated the view that less highly trained and experienced nurses tended to recall patients or refer on unnecessarily.</i> Data from Baird et al., 2016</p>
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	<p><i>Although GPs appreciated being able to call on the service when under pressure, they commented that the work sometimes returned to them, in the form of requests to carry out investigations or referrals. One referred to receiving ‘a list’ of follow-up actions relating to one patient from a visiting GP. In such cases, the work was deferred rather than dealt with by the visiting service. “So it helps a bit with capacity, but the work comes back anyway” (GP).</i></p> <p>Data from Camden CCG, 2016</p>
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<p><u>HCP Perspective</u> CMO 13: When alternative HCPs have appropriate training, resourcing and autonomy (C) they are more likely to feel prepared (M) to safely manage patients in the community by themselves (O).</p>	<p><i>The generalist skill mix of the modern day paramedic creates possibilities for them to work in a range of domains. Primary care is one domain in which additional capacity is desperately needed. Both specialist and advanced paramedics can work in primary care with differing degrees of autonomy, decision making, and treatment options within their scope of practice.</i> Data from Mahtani et al 2018</p> <p><i>The new laws, which come into force tomorrow (1 April), will allow the most qualified and experienced paramedics to also prescribe medication for patients who do not need hospital treatment. Paramedics are highly skilled advanced practitioners, and adding them to the existing range of independent prescribers will enhance patients' access to care.</i> Data from NHS England, 2018</p> <p><i>Paramedics have an excellent range of skills that make them ideal candidates to substitute for GPs in certain cases. Given that a paramedic can carry out a patient assessment and triage and apply treatment, provide intravenous medicines and advanced life support, they are well-equipped to provide care and support to people in their homes.</i> Data from AACE</p> <p><i>Employing a paramedic in primary care seems like a no-brainer, providing an experienced professional and cohesion, in a continuity-free NHS. There are issues around prescribing, but, just as nurses are now prescribing, paramedics will soon follow suit (Spence 2017)</i></p> <p><i>The paramedic practitioner is trained to independently provide care that does not require the intervention of a doctor. The paramedic has access to the full GP record. They report directly back to the GP with the outcome of the visit and any updates on any treatment and medication that was given.</i> Data from NHS England, Practice based paramedics. Kent</p> <p><i>Advanced paramedics already work in GP practices as part of multi-disciplinary clinical teams where they are most commonly used to manage urgent, same day patient requests, which may also include home visits.</i></p>
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	Data from NHS England 2018 News Paramedics prescribing
CMO 14: When the work delegated to HCPs does not make full use of their skills, they are likely to become frustrated and despondent with their work (O) because they feel undervalued (M).	<p><i>The results suggest that GPs should focus on variation when delegating highly complex tasks to their staff since this motivator factor was found to be significantly associated with both a high degree of task delegation and the staff's overall job satisfaction.</i></p> <p>Data from Riisgaard et al., 2017</p> <p><i>Nurses report experiencing 'role deprivation' at the loss of relationships with patients and hands-on care.</i></p> <p>Data from Bosley and Dale., 2008</p> <p><i>The employment of dual-role staff presents particular challenges such as intrapersonal role conflict/confusion for HCAs moving between roles, and frustration if the need to staff reception restricts the use of newly acquired skills.</i></p> <p>Data from Bosley and Dale, 2008</p> <p><i>A recent questionnaire survey identified occupational stress, lack of clarity of roles, little consensus on core competencies, need for further training and constraints on time and resources as the most common frustrations associated with undertaking APCN roles and some nurses have expressed uncertainty about the ability to progress in their career (Ball, 2005).</i></p> <p>Data from Bonsall and Cheater, 2007</p> <p><i>This suggests that the two motivator factors, 'influence on own work' and 'variation in tasks', may explain the relation between task delegation and job satisfaction.</i></p> <p>Data from Riisgaard et al 2017</p>

<p>CMO 15: During their interactions with GPs and other staff members (C) HCPs are likely to feel underappreciated (O) when they feel other professionals do not respect their professional competence (M).</p>	<p><i>One NP who was the first NP to be hired in her organization about 8 years ago said, “some doctors that do fight for us but the majority - they fight against us.” Another NP, who changed her job to work with supportive physicians, said: “the office I was in before did not respect Nurse Practitioners; they really wanted another physician there and they really resented the fact that I was there, but they also knew because there was no primary care physician to take the spot that they needed me....”</i> Data from Poghosyan, 2013</p> <p><i>Suggestions to improve cooperation were based on better interactions: Nurses themselves suggested more responsibility in the context of medication, better linkage of the documentation systems between nursing homes and GP practices and faster responsiveness of GPs in acute situations. To improve the relationship with GPs, nurses requested more mutual respect and knowledge/ appreciation of their profession by the GP.</i> Data from Muller et al., 2018</p> <p><i>Unstructured preparation and information as well as a lower qualification increased GP disrespect for the nurses. One manifestation of this was that GPs did not regard all of the nurses to be capable of understanding medical issues: “and in the time required for me to spell Hydrochlorothiazide for them [the nurses],it would have been faster if I had written it down myself” (AA1/129-133).</i> Data from Fleischmann et al., 2016</p> <p><i>Barriers identified in various practice settings include physician resistance, staff’s lack of understanding of the NP role and limited direct contact of the NP with other staff (Goss Gilroy Inc 2001, van Soeren & Micevski 2001, Cummings et al. 2003, DiCenso et al. 2003, 2007, Stolee et al. 2006).</i> Data from Sangster-Gormley et al., 2011</p> <p><i>One NP from a large practice said, “they’ll [physicians] have special meetings that don’t include us.” Organizational structures do not define avenues for NPs to have a voice in the governance.</i> Data from Poghosyan, 2013</p>
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	<p><i>The relationship between NPs and physicians should be clearly defined at the organizational level, and the practice sites should promote collegial NP–physician relations.</i></p> <p>Data from Poghosyan_2013</p>
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<p>CMO 16: When the role of the alternative professional who will be delegated tasks is clearly set out (C) and understood by all involved (C), the HCP being delegated to feels better able to undertake delegated tasks (O), because they know what they are meant to do (M).</p>	<p><i>One organization, a hospital-based primary care clinic, did not allow NPs to conduct physical assessments. An NP from that organization stated, “it’s frustrating to not be able to do things that I’ve always been able to do. I also have to tell patients who request to have their physicals by me that the hospital doesn’t allow me.”</i> Data from Poghosyan, 2013</p> <p><i>Another NP who took her first NP position 2 years ago said, “I’m not sure whether it’s just because my organization is just not that familiar with NP role.” A similar comment was made by an NP who joined her practice a year ago but has been an NP for about two decades: “They have no idea what to do with us.”</i> Data from Poghosyan, 2013</p> <p><i>Although most of the NPs characterize their role as independent with little day-to-day contact with their collaborating physician, one NP noted an inherent contradiction between how she practiced and how the organization and the policy environments view them. She has been in her clinic for more than 10 years and expressed this inconsistency by saying, “I can’t practice independently when I really am practicing independently?”</i> Data from Poghosyan, 2013</p> <p><i>Lack of clarity concerning the roles and tasks expected of nurses working in advanced roles may lead to increased work-related stress (Rosen and Mountford, 2002) resulting in poor performance (Williams and Sibbald, 1999). It can also cause family doctors (Marsden and Street, 2004) and nurses themselves to feel less certain about the extent of their responsibility, reduce the likelihood of doctors choosing to employ nurse practitioners (Carr et al. 2001), and as research from Canada suggests, limit integration (IBM Business Consulting Services, 2005) and inter-professional collaboration (Bailey et al., 2006)</i> Data from Bonsall and Cheater, 2007</p> <p><i>Accounts of responsibilities and tasks also varied across trials and were not described in sufficient detail. Due to the insufficient description of training content, we could not identify a common component across studies. In addition, it was generally assumed that nurses had the required competence to substitute physicians. However, the level of substitution (clinical</i></p>
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	<p><i>autonomy) differed among trials and nurses seemed dependent of doctors' supervision in most studies.</i></p> <p>Data from Martinez-Gonzalez et al., 2015</p>
<p>CMO 17: When time is taken to provide HCPs with feedback on their performance (C), they feel more valued and integrated into an organisation (O), because they feel that their work is recognised (M).</p>	<p><i>Another NP expressed her concerns in the following way: "I don't get any feedback on how I'm doing...what does it cost for you to give care versus another provider...When we get to this place of accountable care organizations, I'm not gonna be at the table."</i></p> <p>Data from Poghosyan, 2013</p> <p><i>Creating organizational and policy structures that demonstrate the contributions of NPs to patient care and promote continuous contact with patients will encourage NP visibility as care providers and promote their professional practice.</i></p> <p>Data from Poghosyan, 2013</p> <p><i>NPs spoke about the need for the administration to recognize NP contributions to the organization and have better communication with them. One NP with 25 years of experience said, "I think leadership doesn't always give the recognition and validation that this is, on a day-to-day basis, very challenging work." Another NP who was the only NP when she started working in her practice said, "I've been there 8 years and I think they need to acknowledge us that we are the practice...that practice would not be run without us."</i></p> <p>Data from Poghosyan, 2013</p> <p><i>'In the practice in which my role has expanded most I have gained more increased job satisfaction as I have taken on more clinical roles and responsibilities, and have received positive feedback from the GPs within the practice.'</i> (Pre-2016 pharmacist, 3).</p> <p>Data from Maskrey et al., 2018</p> <p><i>HCAAs, unlike their counterparts in hospitals, may feel isolated without interaction with, and support of, colleagues in the same role.</i></p> <p>Data from Bosley and Dale, 2008</p>

Theme 3

<p>CMO 18: When patients are seen by a caring and competent HCP (C), they are more likely to be satisfied (O), because the visit meets with their expectations (M).</p>	<p><i>PatientFeedback:</i> <i>"I was happy to be seen so quickly and the paramedic assured me there was no concern"</i> <i>"Helpful, given good advice"</i> <i>"Knowledgeable"</i> <i>"So pleased we had a quick response to put our minds at rest"</i> <i>"So pleased they came out so quickly"</i> <i>"She was very friendly and we felt comfortable"</i> <i>"She took a lot of interest in my problems, thank you"</i> <i>"Impressive"</i> Data from Joshi_Pilot Paramedics project_2017 <i>Ninety-five percent of PHVS patients (n=38) reported that their visit occurred at the expected time; 79% of patients were aware of the role of the professional visiting them; 100% of patients believed they were treated in a kind / caring manner; and 100% of patients stated that everything was clearly explained to them. One hundred percent of patients (n=38) reported that they were either 'satisfied' or 'very satisfied' that their issue had been resolved; and the same number reported that they were either 'happy' or 'very happy' with the service.</i> Data from RMS report <i>Overall, the proportion of patients seen before noon grew as the service matured. The majority of patients are seen within two hours of a slot being claimed, with 39% (n=389) of patients seen within an hour and 28% (n=273) seen between 1 and 2 hours. However, there was a notable lag early in the day between patients requesting a home visit when practices opened (at c.8am) and GPs allocating those cases much later in the morning, which suggests scope to further increase the proportion of patients seen before midday.</i> Data from Deep dive report/ RMS report? <i>Out of 65 respondents 95% rated the service as either 'Excellent' or 'Good' (75% and 20% respectively); the 5% who rated the service as 'Poor' mainly indicated that they wished to see their own GP as opposed to a visiting GP. 88% of respondents indicated that the AVS was an improvement to the usual arrangements of their own GP visiting later in the day (5% being unsure whether it was an improvement, and 7% indicating it was not an improvement).</i></p>
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	<p><i>Comments from patients largely highlight the speediness of the visit and the extra time and attention afforded by the GP when visiting.</i> Data from Portsmouth CCG evaluation, 2016</p> <p><i>One GP, for example, noted that in the past, they would have made any urgent home visits at the end of the day once the surgery was closed. By this point, however, it was often too late to refer to alternative services, making an A&E attendance more likely. A home visit during the afternoon means that other options are available. Patients, too, are confident that a home visit has meant that they have not had to call an ambulance, or attend A&E. The perceptions of both referring GPs and patients are clear and consistent.</i> Data from Camden CCG evaluation, 2016</p> <p><i>Lebrun-Harris et al found that both access and communication with clinicians and support staff had a significant positive association with patient perception of quality.</i> Data from Annis et al., 2016</p>
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<p>CMO 19: When patients want to see a familiar HCP (e.g. their 'usual GP') (C), they may decline a visit from an alternative HCP (O), because it does not meet with their expectations (M).</p>	<p><i>"It's not the same as having your own GP that knows you and your history. It was not explained why [Paramedic] was unable to give [medicine] - but immediately organised a prescription for [medicine via the GP]"</i> Data from RSM report, 2017</p> <p><i>High satisfaction with nurse care did not, however, mean that patients inevitably preferred nurses to doctors. Patient preferences in most studies were mixed with some patients preferring to see nurses while others preferred to see doctors. Preference might partly relate to the nature of the presenting problem. Nurses may be preferred when the patient believes their problem to be 'minor' or 'routine' but doctors are preferred when the problem is thought to 'serious' or 'difficult' (Drury 1988).</i> Data from Laurent et al., 2005</p> <p><i>Substituting nurses for GPs, or the telephone for face-to face consultations may be effective in improving access where GP recruitment and retention is problematic. However, maximising the use of skill mix does not necessarily improve access inconsequentially, involving as it does trade-offs between different sorts of access. For example, some patients would clearly prefer to wait longer to see their GP than see a nurse (Chapman et al., 2004) Patients may dislike pharmacist doing a role traditionally done by [a] GP — change of culture.'</i> Data from Maskrey et al., 2018</p> <p><i>Patient acceptance of practice nurses depended on the reason for the consultation.</i> Data from Bosley and Dale., 2008</p> <p><i>Patients who have longstanding, trusting relationships with their GP and practice nurse may be uncertain about the HCA role.</i> Data from Bosley and Dale., 2008</p> <p><i>Most people want rapid access and continuity of care rather than one or the other (Boyle et al 2010), which was reflected in the experiences of the staff we spoke to. There was a general feeling among staff that this is an unrealistic expectation, with one GP noting that:</i></p>
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	<p><i>Patients want immediacy, but immediacy with the doctor of their choice at the time of their choice. And that's a gold standard... We'd all like that, but there seems to be little understanding among patients that that isn't actually possible.</i></p> <p>Data from Baird et al., 2016</p>
<p>CMO 20: When the HCP perceives that a patient is receptive (C), they may provide more information to patients (about their condition) when they visit (O), because they feel this to be part of their job (M).</p>	<p><i>Participants felt strongly that advising patients on diagnosis and helping them understand their treatment plan would enable them to understand the alarm signs and make informed decisions about whether to call emergency services. ECPs are encouraged to make a diagnosis to allow treatment at home and many patients who call 999 do so because they know the local ECP and prefer to be treated at home.</i></p> <p>Data from Armstrong et al, 2012</p> <p><i>“Well it's helped me to understand more about my health (Consumer 6). I think it's a lifeline and actually has helped me to become familiar with the health programs that are out there. I keep hammering on about the educational piece but I see it as being the most important. It feels like they [paramedics] are more accessible” (Consumer 13).</i></p> <p>Data from Martin et al, 2016</p> <p><i>Other studies demonstrated that nurse(s) (practitioners) give more information (Shum et al. 2000) and more advice on self-care and management (Kinnersley et al. 2000, Shum et al. 2000).</i></p> <p>Data from Daele et al., 2009</p>

<p>CMO 21: Patients are satisfied with the home visit by the HCP (O), when they are listened to, examined thoroughly and have things explained to them (C), because it was more than they expected (M).</p>	<p><i>One of the benefits for patients of the HV service in its current format, is that it provides a good slot of time with people and often their families, to have a relatively unpressurised conversation with a doctor. Each appointment time is an hour, which means that even though travel between appointments is included in this, patients and doctors usually have a significantly longer time together than a standard GP appointment in a surgery, “She was able to do a thorough examination” (patient).</i> Data from Camden CCG, 2016</p> <p><i>In addition to patients feeling that they had time to be seen properly, there was also space for additional conversations and concerns to be raised. Visiting GPs are able to spend time with patients and their families, explaining their condition, and importantly, working with them to identify the triggers for approaching their GP, the 111 service, or the emergency services. This means that patients are more able to manage their own condition, they are confident in their use of the NHS, and they know which part of the system to approach in which circumstances.</i> Data from Camden CCG, 2016</p> <p><i>In addition, as shown earlier, visiting GPs are able to spend time with patients and their families, explaining their condition, and importantly, working with them to identify the triggers for approaching their GP, the 111 service, or the emergency services. This means that patients are more able to manage their own condition, they are confident in their use of the NHS, and they know which part of the system to approach in which circumstances.</i> Data from Camden CCG, 2016</p> <p><i>Patients felt reassured because anxiety about their illness was quickly allayed and the extended consultation allowed time to ask questions and discuss options other than hospital admission.</i> Data from Pitalia, 2013</p> <p><i>It was observed that community paramedics are leaving lasting impressions on program participants and families while amassing enriched relationships along the way. They are extending the professional boundaries of traditional paramedic practice. ‘They’ve always</i></p>
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	<p><i>dealt, treated us with respect. They've been efficient, they've been professional, they've been sympathetic. I've also used them as a sounding board. It feels like paramedics are my friends. That's what I think this program does. I feel really good about our paramedics' (Consumer 13).</i></p> <p>Data from Martin et al., 2016</p> <p><i>Patients felt reassured because anxiety about their illness was quickly allayed and the extended consultation allowed time to ask questions and discuss options other than hospital admission.</i></p> <p>Data from Pitalia, 2013</p>
<p>CMO 22: Patients feel confident OR satisfied with the care they get from the HCP (O), when the alternative HCP meets their expectations (C) because they can judge that the HCP is as good as their GP (M).</p>	<p><i>Most patients (96.5%) felt that the practice assistant was competent with health issues. 93.1% developed a degree of confidence to the AGnES-practice assistant that was comparable to their confidence in their GP.</i></p> <p>Data from van den Berg et al_2009</p> <p><i>The majority of studies evaluating APCN services have reported that patients are at least as satisfied with the outcome, in comparison with equivalent doctor-led care (Horrocks et al., 2002; Branson et al., 2003)</i></p> <p>Data from Bonsall and Cheater_2007</p> <p><i>Research evidence, albeit limited, shows that GPs and appropriately-trained nurses provided similar quality of care and achieved good health outcomes as did physician assistants and nurse practitioners working on similar problems.</i></p> <p>Data from Bosley and Dale, 2008</p>