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From Programme Theory to Logic Models for Multispecialty Community Providers: A Realist Evidence Synthesis

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Data sharing:

Most of the data used in this report came from published papers which are therefore already

available to all, subject to the usual copyright and in some cases paywall restrictions. Requests for access to other data (e.g. about the stakeholder meetings) should be addressed to the corresponding author (Rod Sheaff). These data will be made available in anonymised form provided that the applicant agrees to meet any reasonable transcription and redaction costs.

ABSTRACT

Background

The NHS policy of constructing Multispecialty Community Providers (MCP) rests on a complex set of assumptions about how health systems can replace hospital use with enhanced primary care for people with complex, chronic or multiple health problems, whilst contributing savings to healthcare budgets.

Objectives

To use policy-makers' assumptions to elicit an initial programme theory of how MCPs can achieve their outcomes, to compare this with published secondary evidence and revise the programme theory accordingly.

Design

Realist synthesis with a three stage method:

1. For policy documents, elicit the initial programme theory underlying the Multispecialty Community Provider (MCP) policy.
2. Review and synthesise secondary evidence relevant to those assumptions.
3. Compare the programme theory with the secondary evidence; where necessary re-formulate the programme theory in a more evidence-based way.

Data sources

Systematic searches and data extraction using:

1. HMIC database, for policy statements.
2. Topically appropriate databases, including MEDLINE, MEDLINE In-process, PsycINFO, CINAHL and ASSIA: 1319 titles and abstracts reviewed in two rounds, 116 selected for full-text data extraction.

We extracted data using a formal extraction tool and synthesised them using a framework reflecting the main policy assumptions.

Results

The initial programme theory of MCPs contained 28 interconnected context-mechanism-outcome (C-M-O) relationships. Few policy statements specified what contexts the policy mechanisms required.

We found strong evidence supporting the initial programme theory regarding concerning organisational culture, interorganisational network management, multidisciplinary teams, the uses and effects of health information technology in MCP-like settings, planned referral networks, care planning for individual patients, and the diversion of patients from in-patient to primary care all had evidential support. The evidence was weaker, or mixed (supporting some of the constituent assumptions but not others) concerning voluntary sector involvement, the effects of preventive care on hospital admissions and patient experience, planned referral networks, and demand management systems. The evidence about the effects of referral reductions on costs was equivocal. We found no studies confirming that the development of preventive care would reduce demands on inpatient services.

The initial programme theory had overlooked certain mechanisms relevant to MCPs, mostly concerning multidisciplinary teams and the uses of health information technologies.

Limitations

Studies reviewed were limited to OECD countries and, because of the large volume of published material, the period 2014-16, assuming that later studies, especially systematic reviews, already include important earlier findings No empirical studies of MCPs yet existed.

Conclusions

Multidisciplinary teams are a central mechanism by which MCPs (and equivalent networks and organisations) work, provided that the teams include the relevant professions (hence organisations) and, for care planning, individual patients.

Future work

Further primary research would be required to test elements of the revised logic model, in particular about:

1. How MDTs and enhanced general practice compare and interact, or can be combined, in managing referral networks.
2. Under what circumstances diverting patients from in patient to primary care reduces NHS costs and improves the quality of patient experience

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ALPHABETICAL LIST OF ABBREVIATIONS/GLOSSARY

A&E - Accident and Emergency Department

AA - Accessibility-Accommodation

ACO - Accountable Care Organisation

AHP - Allied Health Professional

AIM - ACO Investment Model

AMSTAR - Assessment of Multiple Systematic Reviews

AOK - Allgemeine Ortskrankenkasse [German social health insurer]

ASSIA - Applied Social Sciences Index and Abstracts

CCC - Comprehensive Care Coordinators

CCD - Continuity of Care Document standard

CCG - Clinical Commissioning Groups

CCM - Chronic Care Model

CHS - Community Health Service

CHW - Community Health Worker

CI - Confidence Interval

CINAHL - Cumulative Index to Nursing and Allied Health Literature

CLAHRC - Collaborations for Leadership in Applied Health Research and Care

CLIC - Centres Locaux d'Information et de Coordination = Local information and coordination centres

CMO - Context-Mechanism-Outcome

CMOC - Context-Mechanism-Outcome configuration

CMMS - Centers for Medicare and Medicaid Services (US)

COBIC - Commissioning through Outcomes-based Incentivised Contracts

DH - Department of Health

EBSCO - Elton Bryson Stephens Company

ED - Emergency Department

EHR - Electronic Health Record

EMBASE - Excerpta Medica database

EMG - Équipes Mobiles Gériatriques - Mobile Geriatric Care Teams

EMR - Electronic Medical Record

FCA - First Contact Accessibility

FMG - Family Medicine Groups

5YFV - Five Year Forward View

GMS - General Medical Services (contract)

GP - General Practitioner

HIT - Health Information Technology

HMIC - Health Management Information Consortium

HMO - Health Maintenance Organisation

HSDR - Health Services and Delivery Research

ICIT - Ideal Type Integrated Care (index)

IPA - Independent Physicians Associations

IPT - Initial Programme Theory

IRR - Incidence Rate Ratio

IT - Information Technology

IVGK - Integrierte Versorgung Gesundes Kinzigtal- Healthy Kinzigtal Integrated Care

LCSC - Local Community Services Centers

LGA - Local Government Association

LHIN - Local Health Integration Network

LKK - Landwirtschaftliche Krankenkasse (German social health insurer)

MAIA - Maisons pour l'Autonomie et l'Intégration des malades d'Alzheimer - Homes for the Autonomy and Integration of Patients with Alzheimers

MCP - Multispecialty Community Provider

MDT - Multi-Disciplinary Team

MEDLINE - Medical Literature Analysis and Retrieval System Online, or MEDLARS Online

MHI - Mental Health Integration

MMAT - Mixed methods Appraisal Tool

NCQA - National Committee for Quality Assurance

NHS - National Health Service

NIHR - National Institute of Health Research

OECD - Organisation for Economic Co-operation and Development

OOH - Out of Hours

PACS - Primary and Acute Care Systems

PC-CCM - Primary Care-integrated Complex Care Management

PCH - Primary Care Home

PCMH - Patient-Centred Medical Home (or Primary Care Medical Home)

PCP - Primary Care Practice

PCT - Primary Care Trust

PenPIG - Peninsula CLAHRC Patient Involvement Group

PHC - Primary Health Care

PHCC - Primary Health Care Clinic

PPI - Patients and public involvement

PRISMA - Preferred Reporting Items for Systematic Reviews and Meta-Analyses

PSH - Perioperative Surgical Home

QOF - Quality and Outcomes Framework (NHS)

RAMESES – Realist And Meta-narrative Evidence Syntheses: Evolving Standards

RCGP - Royal College of General Practitioners

RCT - Randomised Controlled Trial

SR - Systematic Review

STP - Sustainability and Transformation Plans

UK - United Kingdom

US - United States (of America)

USA - United States of America

USL - Unità Sanitarie Locali (Italy) - Local Health Unit

VHA – Veterans Health Administration (USA)

PLAIN ENGLISH SUMMARY

The number of people with long-term ('chronic') illnesses, often more than one at once, is rising. Health and social care budgets are tight. So the NHS has to find ways to give lower cost but still high quality care for people with those illnesses. The NHS plans to use new 'multispecialty community providers' (MCPs) to do this. MCPs will bring together health services and social care services to provide care closer to people's homes and, when they safely can, keep people out of hospitals. MCPs are a new idea so there is no research yet about how well they work.in practice. So instead we had to look at how MCPs *might be expected* to work, in light of similar schemes in other countries.

We:

1. Used policy documents and talked to NHS staff and patients to understand *how* MCPs can help health services and social care to work together to give better care for people with long-term illness.
2. Looked at how other countries try to do this.
3. Used that research to show how to change the plans for MCPs to make them more likely to work.
4. Fed what we found back to NHS and patient organisations.

An important way for MCPs to provide good, safe, better-organised care for people with long-term illnesses is by using 'multi-disciplinary teams'. These teams bring people from different services and professions together to coordinate their work better for each patient, and give patients and carers more of a voice. Information technology is also needed so that each team can see the most recent information about what care each patient needs.

[268 words]

SCIENTIFIC SUMMARY

Background

Multispecialty Community Providers (MCPs) are proposed as a means by which the English NHS can reduce demand pressures on hospitals and general practices whilst improving the quality, especially the continuity, of care for people with complex, chronic or multiple health problems; and all this whilst contributing substantial savings to the NHS budget. This policy rests on a complex of assumptions about what mechanisms will achieve these ambitious and complex policy outcomes, and in what contexts. The proposed mechanisms include new NHS organisational structures, working practices and inter-organisational collaboration. The purpose of this realist synthesis was to elicit an initial programme theory about MCPs from policy makers' assumptions and to use secondary evidence to evaluate which parts of the initial programme theory are supported by evidence, under which conditions and for which populations. We also identify which parts are not supported by evidence. From that, we propose revisions to the initial programme theory. The revisions yield a more fully evidence-based logic model for achieving the policy outcomes which MCPs are intended to achieve.

Objectives

We addressed the research questions:

1. How do policy makers and top NHS managers predict MCPs will generate the policy outcomes stated in the Five Year Forward View (5YFV)? What variants of MCP are they creating?
2. Internationally (including in the United Kingdom (UK)), what equivalents to MCPs, or components of MCPs, exist?
3. How do these equivalents and their mechanisms compare to those proposed for MCPs in the NHS?
4. What policy outcomes (comparable to those required of MCPs) are these equivalents reported to produce?
5. What is the evidence about the ways in which these mechanisms depend upon specific contexts (e.g. the presence of non-hospital beds for frail older people)? That is, how do the different components of the MCP models of care produce different outcomes in different contexts?

6. What do the answers to the above questions imply for the organisational design (logic models of governance structures, internal management and working practices) of MCPs in the NHS?

Methods

The overall research design was a realist synthesis. Our rationale for using this method was that we wished to test from secondary evidence (which was likely to be very varied in quality, types and sources) a set of assumptions about how a policy (creation of MCPs) would produce various outcomes (better care coordination etc.) in NHS context. The research design consisted of three stages:

1. Elaboration of NHS policy-makers' assumptions in to an initial programme theory regarding the mechanisms by which MCPs bring about their intended outcomes and in what contexts, elicited from policy documents and 'think-tanks' with stakeholders. The policy documents were found by searching the Health Management Information Consortium (HMIC) database (via Ovid), which indexes policy content from the Department of Health (DH) database (DH Data) and the King's Fund database. HMIC indexes all the relevant policy papers. The elaboration of the policy-makers' assumptions (the initial programme theory) about MCPs provided search terms for the second stage.

2. Systematic review, i.e. a search for published evidence relevant to the 'causal links' in the initial programme theory. Because MCPs are new, no studies about them had been published at the time of our searches and so we searched for studies of MCP equivalents i.e. organisations and networks serving the same functions as MCPs (horizontal coordination, that is . the coordination of primary, including community, health, mental health and social care; care 'integration'; and substituting primary for in-patient care). Relevant published evidence was found by searching topically appropriate databases, including MEDLINE, MEDLINE In-process, PsycINFO (all via Ovid), CINAHL (via EBSCO) and ASSIA (Applied Social Sciences Index and Abstracts; via ProQuest). 1319 titles and abstract were reviewed in two rounds, and 116 selected (from 2014 to the search date) for full-text data extraction. Inclusion criteria:
   (a) relevance to key terms and assumptions in the initial programme theory
   (b) contained data about an Organisation for Economic Co-operation and Development (OECD) country
   (c) published since 2013

Secondary data from included studies were extracted and synthesised by collating them into a formal framework whose categories reflected the causal links in the initial programme theory. As applicable, we used the Mixed Methods Appraisal (MMAT) and the Assessment of Multiple Systematic Reviews (AMSTAR) tools to assess the quality and validity of the included primary studies and systematic reviews respectively.

3. Logic analysis systematically comparing the initial programme theory with the evidence review findings. We removed from the initial programme theory those causal links for which the review found no evidential support. Using evidence from the review we elaborated and supplemented the remaining parts of the programme theory. That produced a revised, more strongly evidence-based revised logic model of MCPs.

Results

The initial programme theory of MCPs contained 13 key components linked through 28 interconnected context-mechanism-outcome (C-M-O) relationships ('causal links'), although few of the policy sources specified what contexts the policy mechanisms required. The main causal links and their evidential status in light of the review were as listed below. We categorised their evidential status as follows. 'Substantial support' means that systematic reviews and (other) primary studies support the causal link. 'Supporting evidence' means that multiple primary studies support the causal link. 'Minimal evidence' means that we found just a single primary study supporting the causal link. 'Partial support' means we found evidence supporting the causal link with qualifications. 'Equivocal' means that we found evidence both for and against the causal link. Other causal links were supported by 'No evidence' that we found.

1. IF National Health Service (NHS) managers establish MCPs, THEN:
   (a) Network management will develop PROVIDED that the specified contextual conditions apply. This assumption had partial support.
   (b) Planned referral networks will develop. This assumption had supporting evidence.

2. IF Network management develops THEN:
   (a) Multi-disciplinary teams (MDTs) will be established. This assumption had supporting evidence.

(b) Care coordination through Health Information Technology (HIT) use will develop. This assumption had supporting evidence.

3. IF Multi-disciplinary teams (MDTs) are established THEN:
   (a) Reciprocally, planned referral networks will develop. This assumption had supporting evidence.
   (b) Preventive health care will develop. This assumption had supporting evidence.

4. IF organisational culture changes in the participating organisations THEN:
   (a) MDTs will develop. There was substantial evidence for this assumption.
   (b) Demand management systems will develop. We found no evidence for this assumption.
   (c) Preventive care will develop. There was substantial evidence for this assumption.

5. IF the voluntary sector becomes involved in MCPs THEN:
   (a) Demand management systems will develop. We found no evidence for this assumption.
   (b) Preventive health care will develop. This assumption had supporting evidence.
   (c) Patient outcomes and experience of care will improve. There was minimal evidence for this assumption.

6. IF health information technologies are used to strengthen informational continuity of care, THEN:
   (a) Planned referral networks will develop. We found equivocal evidence about this assumption.
   (b) Care planning at the patient level will become more prevalent. We found equivocal evidence about this assumption.
   (c) Patients will be diverted from inpatient services to primary healthcare (PHC). We found equivocal evidence about this assumption.

7. IF Planned referral networks develop THEN:
   (a) Demand management systems will develop. We found no evidence for this assumption.
   (b) Care planning for individual patients will become more prevalent. We found equivocal evidence about this assumption.

(c) More patients will be diverted from inpatient to other services. There was substantial evidence for this assumption.

8. IF Demand management systems develop THEN:
   (a) Preventive care will develop; which will reciprocally develop demand management systems. We found equivocal evidence about this assumption.
   (b) Care planning for individual patients will become more prevalent. We found no evidence for this assumption.
   (c) More patients will be diverted from inpatient services to PHC. We found equivocal evidence about this assumption.

9. IF Preventive health care develops THEN:
   (a) More patients will be diverted from inpatient services to PHC. We found no evidence for this assumption.

10. IF Care planning for individual patients becomes more prevalent THEN:
   (a) Preventive care will develop. This assumption had supporting evidence.
   (b) More patients will be diverted from in-patient to primary care. There was substantial evidence for this assumption.
   (c) Patient experience of care will improve. This assumption had supporting evidence.

11. IF Patients are diverted from in-patient care THEN:
   (a) Patient experience of care will improve. There was minimal evidence for this assumption.
   (b) NHS costs will reduce. We found equivocal evidence about this assumption.

Most studies in the review specified mechanism-outcome relationships, but few of them also specified what contexts the mechanisms required. We also found evidence for further mechanisms (with their contexts and outcomes) also relevant to MCPs.

1. IF Multi-disciplinary teams (MDTs) are established THEN:
   (a) Organisational culture is likely to change
   (b) Voluntary involvement in care is likely to increase
   (c) Informational continuity of care is likely to develop
   (d) Demand management systems are likely to develop

(e) Care planning for individual patients is likely to become more prevalent
(f) More patients will be diverted from in-patient to primary care.
(g) Patient experience of care is likely to improve

2. IF organisational culture changes in the participating organisations THEN:
   (a) Planned referral networks are likely to develop
   (b) Patient experience of care is likely to improve

3. IF the voluntary sector becomes involved in MCPs THEN: Patient experience of care is likely to improve

4. IF health information technologies are used to strengthen informational continuity of care, THEN:
   (a) MDTs are likely to develop
   (b) Demand management systems are likely to develop
   (c) Preventive care is likely to develop
   (d) NHS costs are likely to be saved

5. IF planned referral networks develop THEN:staff wellbeing and satisfaction are likely to increase.

Adding these new context-mechanism-outcome relations produced an elaborated programme theory, with a stronger evidence-base than the initial programme theory for MCPs. It was possible to focus and simplify the revised logic model by removing redundant (effectively duplicate) sets of links.

Conclusions

The revised logic model itself has implications for healthcare management. Multidisciplinary teams are likely to be the central mechanism by which MCPs work, provided that the MDTs include the relevant professions (hence organisations) and, for care planning, individual patients. The evidence that we found suggests that doing so would involve:

1. Setting up new MDTs as a core component of a managed referral network, such as the locality teams which many MCP are setting up to manage admission avoidance, for long-term care management, and for well-being promotion including social prescribing.

2. Enhancing existing teams (e.g. in general practices which follow the primary care medical home model) that already coordinate care for individual patients
3. Supporting inter-professional links and collaborative working practices within existing MDTs at both the above levels.
4. Creating roles, above all of care coordinators, which span the boundaries between organisations and professions and use 'boundary objects' (e.g. agreed referral criteria, care compacts, shared documentation) to do so.

Important facilitating contexts appear to include a strong culture of mutual knowledge and respect between professions; the existence of alternative primary care and social services to divert suitable patients into as an alternative to hospital; and co-location and co-employment of MDT members.

Future work

At the time of this review no empirical studies of MCPs were yet available, so instead the review studied how MCPs might be predicted to work in light of the evidence about MCP-like networks and organisations elsewhere. Further primary research would be required to test elements of the revised programme theory, in the research that we reviewed a number of gaps were apparent. They indicate further research needs. We judge them to be in the following descending order of importance. They concerned:

1. How, and what circumstances, MDT-based locality teams and enhanced general practice (the primary care medical home; and general practice 'at scale') compare and interact, or can be combined, in managing referral networks so as to reduce workload for other healthcare providers.
2. Whether, and if so how and in what circumstances, diverting patients from hospital into enhanced primary care does indeed:
   (a) Reduce the overall cost of healthcare
   (b) Improve patients' experience of care.
3. How general practices are affected and have to adapt if larger numbers of patients are diverted from hospital to enhanced primary care
4. How the other new models of care (above all, PACS) being developed concurrently with MCPs interact with MCPs. The work would compare and synthesise the findings from this studies with those from the concurrent studies of the other new models of care.
5. How urgent care services will be affected and have to adapt if more patients are diverted from hospital to enhanced primary care.

6. How care coordination through HIT supports (or not):
   (a) the management of inter-organisational referral networks
   (b) diversion of suitable patients from hospital into enhanced primary care services
   (c) the production and use of care plans for individual patients
7. How the resources and mechanisms deployed in MCPs will contribute to changing care for different groups of people (defined by morbidity, e.g. single major condition (e.g. cancer), multiple low functional impact morbidities (e.g. diabetes, coronary heart disease), high functional impact multi morbidity (e.g. stroke, arthritis, dementia)).
8. How referral networks are established and managed in such a way as to establish referral management systems.
9. How and under what circumstances the management of referral networks promotes (or not) the use of care plans for individual patients.
10. How and under what circumstances the voluntary sector and MCP-like networks and organisations collaborate in pursuit of the ends for which MCPs were set up.

How organisational culture is produced and changes in MCP-like contexts (an area lacking research despite the abundance of studies in hospital and non-healthcare settings).

2280 words

1. BACKGROUND

1.1 ORIGINS AND NATURE OF MULTISPECIALTY COMMUNITY PROVIDERS

Multispecialty Community Providers (MCP) have been proposed as a means by which the English NHS can reduce demand pressures on hospitals and general practices whilst improving the quality, especially the continuity, of care for people with complex, chronic or multiple health problems; and all this whilst contributing substantial savings to the NHS budget. Like any other, this policy rests on a complex of assumptions about what mechanisms will achieve these ambitious and complex policy outcomes, and in what contexts. The explicitly proposed mechanisms include new NHS organisational structures, working practices and inter-organisational networks. The purpose of this realist synthesis project is to elicit an initial programme theory about MCPs from policy makers' assumptions and to use international research evidence to evaluate which of these assumptions are supported by evidence, under which conditions and for which populations. We also identify any assumptions not supported by evidence. From that, we propose possible revisions to the initial programme theory that will yield a more fully evidence-based revised logic model for achieving the policy outcomes which MCPs are intended to achieve.

1.2 TO WHAT PROBLEMS ARE MCPS A PROPOSED SOLUTION?

MCPs are a proposed solution for a confluence of epidemiological, managerial and financial problems. The epidemiological aspect is the well-known absolute and relative expansion of the older age-strata, people who are living longer (often because of past NHS activity) but also often with chronic, indeed multiple chronic, conditions. The financial aspect is the restrictive fiscal policies with which UK governments responded to the financial sector market failures of 2008, They included a policy of reducing the structural budget deficit to 2% of GDP by 2020-21.[1] Since the NHS accounts for 18.6% of public sector spending[2] and hospital spending some 44% of NHS costs,[1] fiscal 'austerity' policies were bound to regard the costs of NHS hospitals as a 'problem.' At the time of the study the main means of

implementing this policy were Sustainability and Transformation Plans (STP). In practice the term has come to refer both to the plans themselves and to the sub-regional network of organisations charged with implementing the plan for their area.

During the decade before the idea of MCPs, English health policy had increasingly explicitly assumed:

1. The apparent demand overload facing NHS hospitals arose largely from increasing volumes of Accident and Energency (A&E) attendances.
2. These attendances produced increasing volumes of unplanned admissions.
3. A substantial proportion of these unplanned admissions were by older people with multiple morbidity.
4. A substantial proportion of these unplanned admissions were clinically unnecessary, even iatrogenic (i.e. medical treatment harmful to the patient), hence preventable.[3]
5. Once admitted these patients often remained unnecessarily long in hospital, 'blocking' further admissions.
6. Main obstacles to discharging such patients promptly from hospital were lack of:
    (a) General practice and/or community health services (CHS) support necessary for the patient to return home,
    (b) 'integration' between these services, and other frequently-necessary services (e.g. therapies, mental health services).
    (c) Residential and/or social care.

Certain themes therefore recur in recent NHS policy and management. One has been that of preventing chronic illness from developing to the point where hospital admission becomes inevitable. Proposed, and sometimes tried, methods for tertiary secondary prevention have included risk stratification leading to regular general practitioner (GP) or CHS review and, optionally, case management, usually with nurse practitioner or 'community matron' as the case manager. Another has been to divert unnecessary referrals back into primary care by means of referral-screening mechanisms; and to divert unnecessary referrals and self-referrals to emergency services by 'front door' triage at A&E, diverting patients from A&E to on-site GP care, and by ambulance paramedics liaising with CHS staff, in certain cases treating the patient immediately rather than transporting her to A&E for treatment there. Ways of partly substituting primary for hospital care have included establishing 'virtual wards' (the latest manifestation of 'hospital at home'); strengthening community hospitals' capacity and role; out-posting diagnostic services and out-patients clinics; intensifying primary care (in the

broadest sense) and concomitantly raising the threshold for hospital admission and discharge; and establishing non-inpatient care pathways, for instance for some musculoskeletal conditions.

As new kinds of services and provider organisations have developed in NHS primary care, and the financial and demand pressures on hospitals and GPs continued to intensify, the requirement for closer coordination of care between these services has become more pressing. At national level, corresponding initiatives and experiments have included the Evercare Project, leading to the introduction of community matrons; the integrated care pilots[5]; and the 'Vanguard' projects including, most recently, MCP pilots.

Meantime, general practices have also independently been under increasing pressure for the same epidemiological reasons as have increased demand on A&E departments. These factors have increased the demand for GP consultations and other general practice-based clinical services (e.g. health checks, disease monitoring). There has also been a gradual but long-term increase of requirements for compliance with national clinical standards (implemented above all through the Quality and Outcomes Framework (QOF)). That has been one source of increased managerial and data collection demands on general practice, but another has been the creation of Clinical Commissioning Groups (CCGs), in which GPs were intended to be the controlling actors.[6] These conditions have made it hard to recruit to the GP workforce, whose age and sex profile, and size, is changing correspondingly.

The last twenty years have therefore seen the following trends in general practice organisation. Mean general practice size has slowly but continually increased, with a secular reduction in the proportion of single-handed general practice. There has been a diversification of general practice organisational models, including: GP partnerships employing salaried GPs; the (in effect) nationalisation of those practices which became PCT-administered; provision of general practice by corporations; proprietary (owner-managed and often GP-owned) firms; nurse-led practices; the persistence of some out-of-hours (OOH) cooperatives and the conversion of others into 'social enterprises' (often a rather nominal change since the ownership, control and working practices often did not alter much); functional corporatisation (outside firms hired to manage still GP-owned practices); and partnership mergers to make 'super-partnerships'. Networks of general practices have developed. Primary Care Groups, Primary Care Trusts (PCT), CCGs and GP Federations were successively more highly organised examples of such networks, attempting to develop joint decision-making, agreed

care pathways, introduction of more clinically specialised forms of general practice with economies of scale and scope in the provision of those services, and economies of administrative scale.

In response to these developments in general practice, and the fiscal and epidemiological pressures noted, NHS England's 5YFV and its successive elaborations adopted six general aims:

1. 'upgrade in prevention and public health' (p.3)
2. 'Patients will gain greater control of their own care' (p.3)
3. 'Support people with multiple health conditions, not just single diseases (p.3).
4. 'Comprehensive and high quality care' (p.5)
5. 'Close the £30 billion gap' in projected NHS funding 'one third, one half, or all the way' (p.5).
6. 'Enable new ways of delivering care [to] become the focal point for a far wider range of care' (p.20).

Five of the seven 'new ways of delivering care' were: Urgent and Emergency Care Networks; 'Viable smaller hospitals'; 'Specialised Care'; Modern Maternity Services; and Enhanced Health in Care Homes. Sixth were Primary and Acute Care Systems (PACS), whose essential function is vertical 'integration' of hospital and primary care services for a patient list. The seventh was Multispecialty Community Providers, whose essential function is the horizontal 'integration' of primary with community health services and social care.

1.1 WHAT AN MCP IS

Given the above setting, 'The underlying logic of an MCP is that by focusing on prevention and redesigning care, it is possible to improve health and wellbeing, achieve better quality, reduce avoidable hospital admissions and elective activity, and unlock more efficient ways of delivering care'. What are the components of this logic, in realist terms?

1.1.1 MCP OUTCOMES

Despite the different approaches to care 'integration', the policy outcomes which policy-makers intended MCPs to produce most resemble those of the 'Primary and Acute Care Systems' (PACS) and were: .

- Seven day access to services .
- The House of Commons Health Committee mentions the Improved Access to Psychological Therapy (IAPT) waiting time standards[8] in ways which hint that they should apply to mental health services generally.
- 'Measurable reduction in age standardised emergency admission rates and emergency inpatient bed-day rates; more significant reductions through the New Care Model programme covering at least 50% of population.'
- 'Significant measurable progress in health and social care integration, urgent and emergency care (including ensuring a single point of contact), and electronic health record sharing, in areas covered by the New Care Model programme.'[10]
- Better access to care nearer home (e.g. more convenient care).

1.1.2 MCP MECHANISMS

5YFV itself describes certain mechanisms that MCPs 'will' or 'would' use. 'Expert generalists' (i.e. GPs) will work more intensively with patients with complex needs (e.g. frail older people, chronic conditions). Nurses, therapists and other CHS professionals will be included in MCP 'leadership' (management). There will be a wider range of primary care services. MCPs will draw on the 'renewable energy' of carers, volunteers and patients.

MCPs 'may include a number of variants'. A longer list describes mechanisms that MCPs 'could' use, hinting that different variants may involve different combinations of the following:

1. Fuller use of digital technology
2. Fuller use of 'new skills and roles' i.e. new divisions of labour
3. Extended group general practices, 'either as federations, networks, or single organisations'.
4. General practices employing consultants or making them partners.
5. Such consultants (and by implication GPs) would 'work alongside' CHS staff, pharmacists psychologists, social workers and others.
6. Running local community hospitals, perhaps expanding the diagnostic services there.

7. GP admitting rights to acute hospitals.
8. ‘In time’, GPs managing the NHS budget for their patients.
9. Care hubs, perhaps also providing OOH services.

Within MCPs small independent general practices will continue whilst GPs wish it, which implies some form of networked rather than line-management relationship between these practices and the rest of the MCP.

A wide range of MCP sizes (the first wave served populations ranging from 63,000 to 330,000) and of possible governance structures is envisaged. Perhaps the most obvious are networks of independent general practices, possibly perhaps with a strong central coordinating body (a 'federation'). MCPs are described as 'extended group [GP] practices' which might be 'federations, networks or single organisations' (5YFV; p.20). The House of Commons Health Committee argued that federations allow specialised development of services and care teams whilst retaining the existing scale of general practices. However, MCPs might also commission specialist providers, implying a potential role for governance and coordination through quasi-markets. New hierarchical organisations (e.g. on the lines of NHS Foundation Trusts) are also foreseen. Potentially they might also organisationally integrate general practice and community health services, which the so-called 'integrated' care pilots never did. Another anticipated kind of single organisation is the enlarged professional partnership. 5YFV comes close to implying that an MCP might also have the structure of a social enterprise or cooperative.

1.1.3 MCP Context

MCPs’ external relationships to the rest of the NHS will above all be through monitoring and a contract. 5YFV anticipated that standardised data will enable real-time monitoring and evaluation of MCPs’ quality outcomes, costs and benefits. 'NHS England is establishing a new operational research and evaluation capability to support this activity’.

A 'new voluntary contract for GPs (Multispecialty Community Provider contract)’ will be MCPs’ main financial link to NHS commissioners. Its three varieties are:[1]

1. A 'partially integrated' contract, i.e. an additional contract supplementing the GMS contract.

2. An integrated single contract based on the General Medical Services (GMS) contract but excluding the QOF element – a whole population budget for all PHC and CHS services for perhaps 10-15 years.
3. 'A virtual, alliance contract'.

The contractor and by implication overall coordinating body of an MCP might be a Community Interest Company or Limited Liability Company (both wide categories), partnership (including GP federation), or a statutory NHS provider. MCPs will receive capitated payments not fees for service (which general practices now do, although it is not usually the main element of their income).[9] The new, longer-term contracts could follow the outcomes-based commissioning approach already being tried elsewhere in the NHS.[1]

As usual for NHS organisational innovations, MCPs will be introduced in waves. For the first wave, 'The purpose of becoming an initial site is not simply to address local needs, but to become a successful prototype that can be adapted elsewhere, designed from the outset to be replicated'.

1.1.4 DEFINITION BY EXAMPLE

Policy documents and recent plans for the first wave most often characterise MCPs in structural terms (which organisations will participate and collaborate), and to a lesser extent in terms of certain cross-organisational care processes. However these documents expressly leave many possible varieties and options open. Another way of defining an MCP is therefore ostensively by considering what common characteristics the first wave of MCPs have (see Appendix 1).

Across the 14 first wave MCPs the participating organisations (mostly healthcare providers), will in 11 cases be networks (e.g. federations) of, and individual, general practices (including a super-practice and a proprietary one). 11 MCPs will also include an NHS hospital trust, 9 will include a mental health trust, and 8 a CHS trust. 8 also include one or more CCGs. Local authorities or departments thereof are included in 9 MCPs, in particular social services (in four). Five MCPs include umbrella organisations for local voluntary organisations, and another two MCPs ‘groups’ of the same. Three MCPs involve urgent care services (OOH, ambulance). Other, more disparate participants include Health-watch, one Local Medical

Committee, a hospice, commercial pharmacy, NHS England and the Local Government Association (LGA).

As mechanisms, the first wave MCPs most frequently mention establishing, or strengthening existing multi-disciplinary teams (8 projects). The specific composition varies but across the projects the team participants include GPs, advanced nurse practitioners, social workers, mental health services, voluntary sector link workers and pharmacists. Next most frequent, five MCPs mention various forms of shared care planning (one of them a GP-led complex-care management service). Another partly overlapping set of five projects plan to create a physical location ('hub') in which to combine services and provide a single point of access to them. Three projects mention preventive care, and three IT-based mechanisms (shared health records, digital access to healthcare) and three preventive care (including for children, and self-care). Two mention care coordinators or navigators, and two propose to enhance local referral networks and pathways. Various other mechanisms are mentioned only by one prospective MCP (new forms of contract; extended access to GP services; mobile clinics; recruitment of hospital consultants and – contingent upon projects outside the NHS – a 'health and care garden city').

1.1.5 Working definition of 'MCP'

The foregoing suggests that the essence and function of a Multispecialty Community Provider is horizontal 'integration' among the various primary care providers (general practice, community health services, mental health, OOH, ambulance, urgent care etc.) and related non-health services (above all social services and residential care). Functional (as opposed to organisational) 'integration' will typically mean closer care coordination across still-separate provider organisations not organisational integration, although even the latter may occur in future. Meantime, however, MCPs will be inter-organisational networks.

We put the term 'integration' within quotation-marks because research and policy documents often conflate three distinct concepts:

- Coordination: the deliberate combination, connecting and sequencing of separate but interdependent resources, above all individuals' care activities, into a single care process.

- Continuity: a portmanteau term covering the cross-sectional, longitudinal, flexible, informational and relational continuities of care.[1,3,15] The common element is non-interruption of care coordination.
- Integration: use of a single organisational structure to coordinate care.

Research and policy documents are especially prone to say ‘integration’ when referring to (closer) coordination.

1.2 NAMESAKES AND EQUIVALENTS IN OTHER HEALTH SYSTEMS

Because MCPs are so new there were at the start of this project no published studies directly concerning them. The initial scoping search of Ovid MEDLINE(R) 1946 to August Week 1 2015 for variants of the term 'multi-specialty community providers' retrieved zero hits, and the same when searching EMBASE (Excerpta Medica database), PsycINFO, Social Policy and Practice and PubMed. Any search for evidence relevant to MCPs must therefore be a search for studies of organisations and/or networks with at least partially similar functions to MCPs. That is, organisations or networks in other health systems or the pre-2016 NHS which at least partly satisfy the above definition of the function of an MCP. These MCP-equivalent entities include, but are not limited to, the following.

1.2.1 GESUNDES KINZIGTAL (GERMANY)

Gesundes Kinzigtal GmbH, two-thirds owned by a network of local doctors and one-third by a health care management company, has a shared savings contract between with one large social health insurer (Allgemeine Ortskrankenkasse: AOK) and one small one (Landwirtschaftliche Krankenkasse: LKK; for farmers). This contract gives both sides incentives to make and share savings. Some 33,000 people (about half the area’s population) subscribe to the scheme. Its models of care are based on the collaboration (still unusual in Germany) of doctors, hospitals, social care, nursing staff, therapists, and pharmacies. The project offers ‘a set of community initiatives’[1], preventive, patient self-management and health promotion activities.[1] It has been described[1] as an Accountable Care Organisation (ACO). It provider individual treatment plans, post-discharge follow-up care, and case

management. It focuses on removing care pathway bottlenecks (e.g. waits for physiotherapy) and uses a single system-wide electronic health record (EHR).

1.2.2 BUURTZOORG (NETHERLANDS)

Buurtzorg originated as a proprietary CHS nursing and Applied Health Professional (AHP) service provider, but a very mission-led one. It now has 630 work teams whose work includes house-cleaning for disabled people (*Buurtdiensten*), services for young people (*Buurtzorg Jong*), home-based rehabilitation (*Buurtzorgpension*) and hospice care (*Buurtzorghuis*). Buurtzorg charges a flat hourly fee for its work, with self-managed local teams deciding the skill mix *ad hoc*. The managerial infrastructure is very small. Work coordination relies heavily on an Information Technology (IT) system based on spreadsheets devised by the teams themselves, and a shared EHR.[19] Reflecting Netherlands practice generally, the teams do not include doctors (separately organised in small general practices much as in the NHS).

1.2.3 SWEDISH VÅRDCENTRAL (SWEDEN)

Swedish primary health care clinics (PHCC: *vårdcentral,* 'polyclinic'*)* traditionally provided both primary medical care and home nursing care services (i.e. a similar function to NHS community nurses). Some offer OOH emergency services, but not out-of-hours home visits by doctors. For-profit providers have about a 15% market share as does Praktikertjänst, a medical cooperative. As in the UK, local authorities provide social services, with client co-payment.[2] In mental health services nurses are often the care coordinators, but in acute primary care often the GP. Some PHCCs host outreach specialist services (e.g. neurology, geriatrics), therapy services and diagnostics. Multi-professional teams often operate within each PHCC, but generally rely on informal coordination. There is no universal EHR, and usually only partial data sharing among healthcare providers (among which nursing homes or social services are not included).[2]

In Norrtälje the *vårdcentral* model has been extended. An integrated financial administration (TioHundra Forvaltningen) administers combined (pooled) budgets for all health and social care. They commission a single publicly-owned not-for profit company, TioHundra AB, to

provide integrated primary care, hospital and social care services for the whole population. Its PHCC provides medical, nursing and speech therapy services, including post-hospital nursing services for up to two weeks after discharge. A separate division within TioHundra AB provides all other community nursing and social care.[2]

1.2.4 Accountable Care Organisations (USA)

The United States (US) government's Centres for Medicare and Medicaid Services defines Accountable Care Organizations (ACO) as:
'groups of doctors, hospitals, and other health care providers, who come together voluntarily to give coordinated high quality care to their Medicare patients. The goal of coordinated care is to ensure that patients, especially the chronically ill, get the right care at the right time, while avoiding unnecessary duplication of services and preventing medical errors. … it will share in the savings it achieves for the Medicare program.'

Varieties of ACO programmes have included a Medicare Shared Savings Program (as an alternative to fee-for-service payment); an Advance Payment ACO Model (supplementary incentive program for selected participants in the Shared Savings Program), and a now discontinued Pioneer ACO Model for early adopters of coordinated care.

The NHS now uses the phrase 'ACO' to mean the commissioning of a single contract, and lead contractor, for most of the primary and secondary care health services in a CCG or other wide area. In the United States of America (USA) however:

1. Most providers who join an ACO also have non-Medicare (and in that respect non-ACO) patients;
2. Provider membership of an ACO is voluntary. Therefore;
3. Providers require an incentive to join, usually the financial incentive of sharing the savings.

Awareness of these differences is necessary when interpreting findings about American ACOs for NHS use.

1.2.5 PATIENT MEDICAL HOME (USA)

In US settings the term ‘Patient-Centred Medical Home’ (PCMH) or ‘Primary Care Medical Home’ means something very close to group general medical practices with a stable list of registered patients (as opposed to episodically caring for patients) and providing holistic, coordinated, accessible, comprehensive care and also some non-medical services. That is, something similar to the UK model of general practice, with its system of patient lists, since the 1940s. Recent NHS guidance, however, sees the Primary Care Home (PCH: a namesake of the US models) as serving a patient list of 30,000-50,000 people, having an integrated workforce, focusing on both population and personalised care, and with ‘alignment of clinical and financial drivers’.

1.3 RATIONALE FOR THIS STUDY

It is already known that strong continuity of care (often called 'integrated' services) assists the delivery of effective, safe and efficient person-centred care for people with multiple morbidities in the community.[26-29] Whilst there are numerous published studies of care 'integration', they tend to focus on what prevents care 'integration' or to describe practical models and experiments in working practices and network structures designed to improve 'integration' at disease-group level. They less often examine care ‘integration’ at the level of larger populations or of networks of whole organisations, as MCPs are envisaged to be (see above). Consequently that body of evidence is disparate and fragmented. Re-analysis of it is needed to draw out the implications for MCPs.

The rationale for establishing MCPs implicitly presupposes that repeated unplanned admissions of older people with multiple morbidity make proportionately heavy use of NHS hospital bed-days.[3] Reducing these admissions would substantially reduce cost and access pressures on NHS hospital service. ‘Integrated' (or at least, better-coordinated) care is expected to reduce these admissions by partly replacing hospital care with non-hospital care, hence raise the quality and reduce the cost of NHS care. Finally, MCPs will promote such 'integration' of care for these patients. To varying extents the first three of these assumptions have been verified through research (some references above). The evidential basis of the

fourth is more mixed.[15,33,34] The fifth, about which the present study would synthesise existing evidence, still requires evaluation.

1.4 STUDY AIMS

Overall, this study therefore aims to appraise and synthesise the diverse sources of knowledge (from the UK and internationally) to understand and test the 'programme theories' underpinning the idea of an MCP, elaborating and refining the programme theories to produce more strongly evidence-based logic models. Specifically we aim to:

1. Map the current variants of MCPs and their component proposed 'ways of working'.
2. Describe the equivalents of MCP, and of the main component mechanisms of MCPs, in use internationally.
3. Identify the ways in which these equivalents are reported to achieve beneficial effects in terms of care integration and the other policy outcomes mentioned in policy related to MCPs, including the Five Year Forward View, local MCP Vanguard 'logic models', and other 'grey' policy statements.
4. Describe the causal chains from structural and governance arrangements, through inter team and inter-professional relations and interactions, to practitioner and patient behaviour.
5. Hypothesise how differences in types of MCP (e.g. networks, confederations etc.) and other external contexts affect how this chain of causation operates
6. Re-formulate revised logic model for MCP design and implementation.

The rationale for MCPs suggests that in doing so we should focus on care for patients with complex needs, i.e. patients who recurrently need services from at least two different provider-organisations, for instance patients with a single long-term condition with complex needs; combined physical and mental health problems; or needing both health and social care.

2. Research Questions and Hypotheses

2.1 Research Questions

Given this background, we addressed the following research questions:

1. How do policy makers and top NHS managers predict MCPs will generate the policy outcomes stated in 5YFV? What variants of MCP are they creating?
2. Internationally (including in the UK), what equivalents to MCPs, or components of MCPs, exist?
3. How do these equivalents and their mechanisms compare to those proposed for MCPs in the NHS?
4. What policy outcomes (comparable to those required of MCPs, rather than clinical outcomes) are these equivalents reported to produce?
5. What is the evidence about the ways in which these mechanisms of action depend upon specific contexts (e.g. the presence of non-hospital beds for frail older people)? That is, how do the different components of the MCP models of care produce different outcomes in different contexts?
6. What do the answers to the above questions imply for the organisational design (logic models of governance structures, internal management and working practices) of MCPs in the NHS?

As the following chapter explains, our method for answering these research questions was a realist synthesis of secondary data.

3. METHODS

3.1 RESEARCH DESIGN

The overall research design was a realist synthesis. Our rationale for using this method was that we wished to test from secondary evidence, the body of which was likely to be very varied in quality, types and sources, a set of assumptions about how a policy (creation of MCPs) would produce various outcomes (better care coordination etc.) in NHS contexts. We therefore use the terms 'context', 'mechanism' and 'outcome' with their realist senses. By 'mechanism' we mean 'individuals' reasoning, action and use of resources'; and by 'outcomes' the empirical, indeed causal, effects of these mechanisms, intended or otherwise (e.g. emergent outcomes). By 'context' we mean 'a moderator, not causally dependent on the mechanism, which is either necessary for the mechanism to produce the outcome, or which intensifies the outcome that the mechanism produces. Thus contexts do not include intermediate outcomes (mediators). PPI representatives were consulted in the initial design of the research.

The realist synthesis combined three elements:

STEP 1: ELICITING AN INITIAL PROGRAMME THEORY – elaboration of NHS policy-makers' assumptions regarding how MCPs can bring about their intended outcomes, which elicited the 'initial programme theory' for MCPs. We elicited policy makers' assumptions from the sources (policy documents and stakeholders) reported below.

STEP 2: REVIEWING THE EVIDENCE - a systematic search for published evidence relevant to the initial programme theory, formal data extraction of secondary data from included studies, quality assessment of the studies, and collation of the extracted data in relation to the initial programme theory.

STEP 3: BUILDING A REVISED LOGIC MODEL - comparing the initial programme theory with the evidence review findings and reducing, revising, elaborating our programme theory. Where programme theory and evidence differed, we removed causal links between components in the initial programme theory for which we did not find evidential support. We then used the evidence review findings to qualify, elaborate and supplement the remaining

MCP programme theory for which there was supporting evidence. That 'logic analysis' produced a revised, more strongly evidence-based programme theory of MCPs. That is, an empirically informed revised logic model.

Accordingly the project involved *two* searches of published literature:

1. For policy documents and other materials from which to elicit the initial programme theory in Step 1.
2. For empirical research ('evidence') to provide secondary data for the evidence review in Step 2.

The whole study was conducted to Realist And Meta-narrative Evidence Syntheses: Evolving Standards (RAMESES) standards and is reported following those standards; and in conformity with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement.

3.2 Step 1: Eliciting an Initial Programme Theory for MCPs

We elicited policy-makers' assumptions about how MCPs can achieve their outcomes partly from policy documents, supplemented as explained below from a 'think-tank' of MCP 'stakeholders'.

3.2.1 Identifying core MCP policy sources

The original call for proposals for this research, and the research protocol itself, focused on the 5YFV as the main policy source about what policy outcomes MCP are intended to produce, and the means by which policy makers assume MCPs will do so. For this reason we used the 5YFV as one of our focal documents in Step 1.

We conducted a literature search to identify further English policy statements on care models for people with chronic conditions. The aim of this search was to find a core set of policy documents in order to identify policy makers' assumptions about MCPs. This search used the Health Management Information Consortium (HMIC) database (via Ovid), which indexes

policy content from the Department of Health database (DH Data) and the King's Fund database. HMIC was the only database we searched as it was found to index all the authoritative policy papers and web-pages . Search terms were selected by inspecting the titles and abstracts of known relevant policy documents mentioned above. The search used generic terms describing generic and specific interventions which that appeared functionally equivalent to MCPs (e.g. 'integrated primary and community care'), and particular international examples such as Buurtzorg and the Wiesbaden network for geriatric rehabilitation. These terms were combined using the Boolean operator AND with terms for older people and people with chronic and complex conditions. Both sets of search terms were represented by free-text terms and indexing terms. The search was conducted on 25th August 2016 and date limited to after January 1991 (foundation of the NHS quasi-market).

5YFV used partly different terminology to the other key policy documents identified by web searching. 5YFV focused on developing 'sustainable' ways of organising care to tackle health inequalities, rather than models of care to tackle chronic conditions. We therefore made a supplementary search of HMIC to using search terms for 'inequalities', 'health care' and 'sustainability', a more focussed search than the first. Search terms were limited to the notes field of HMIC records, which is used to summarise the contents of a report as a supplement to the abstract, which is often not included with policy literature. The search was conducted on 25th August 2016 and no date limit was used.

The results from both searches were exported to an Endnote (X7) database. The search strategy and the number of hits for each search are presented in Appendix 2.

Only a handful of policy documents were identified that explained MCPs in much detail (see Chapter 1). The most informative were the 'logic model descriptions' which of each of the first wave MCP Vanguard sites prepared, and which as first-hand accounts, endorsed by NHS England, of what the MCP Vanguards were attempting to do were especially relevant and important. The focal policy documents used from which to extract policy makers' assumptions about MCPs are cited in Chapter 4 and listed in Appendix 9.

3.2.2 Connecting and mapping mechanisms and outcomes

We first elicited as many of the policy makers' assumptions about MCPs as we could from the identified sources. In order to elicit the initial programme theory we framed or reformulated policy makers' assumptions in realist terms as context -mechanism-outcome complexes (CMOC), or parts thereof, with the terms 'mechanism', 'context' and 'outcome' defined as stated above.

We articulated these CMOCs in 'if-then' statements i.e. statements of the assumed context and mechanism ('if') and outcome ('then').(For example, '*If* multi-dsciplinary teams are established, *in the context* that patients want to maintain their own health, *then* preventive healthcare will develop'.) This was a practical necessity since it was rare for the policy statements to specify a context (in the realist sense i.e. under what conditions the proposed mechanism would or would not work) in addition to mechanism and outcome. Some if-then statements were describing essentially the same CMOC in different words (for example, about electronically sharing patient information between organisations). We treated these statements as multiple formulations of the same assumption, and in effect merged them. Many other statements referred (again sometimes using different words) to essentially the same mechanism (e.g. 'multi-disciplinary team', inter-professional team', 'cross-professional group'). In some cases, the mechanism of one statement was a subset, component or special case of the mechanism of another (e.g. 'primary care' and 'primary care close to home'). We therefore grouped these under the same over-arching mechanism. Similarly, many statements referred (again sometimes with different words) to essentially the same outcomes (e.g. 'Patient self-care and activation' and 'Patient engagement in care and self-care'). We also grouped them accordingly.

This grouping of the if-then statements by mechanism and outcome identified from the policy makers' assumptions what the core MCP 'components' (mechanism, outcome or context (as the case might be) were, and the 'causal links' between them. We identified 13 components of MCPs and 28 causal links between them, and numbered each linked mechanism and outcome so that the links between components could be traced back to the initial if-then statements.

The MCP components are inter-related in complex ways. Many MCP components were mechanisms for producing several outcomes. Many components were also assumed to be the product of several other components. Often, mechanisms were linked together in chains ('concatenated'): the outcome of one mechanism was to set up another mechanism producing a further outcome. Producing the second mechanism was thus an intermediate outcome.

Next we mapped what the policy documents assumed the causal links between the MCP components to be, which revealed the assumed chains of MCP components and their complex inter-relationships, in particular the ways in which some mechanisms were assumed to produce or trigger others. Throughout, and in the following chapters, we have maintained the same system of numbering for these causal links. For example, '***(3:10)***' means that component 3 is assumed to be a mechanism that produces component 10. One way of showing the relationships between the mechanisms is by graphics. In these graphics we have represented each MCP component by a box containing its constituents and numbered to indicate its source(s). Arrows between components showed the causal links which the policy makers assumed. Illustration A in the supplementary web material shows the first such graphic, based only on the policy documents mentioned above.

3.2.3 Patient and Public involvement

Patients and public involvement (PPI) in this study was through participation in stakeholder 'think tanks' (described below). This method of participation was co-designed with PPI during the submission of our research proposal to National Institute of Health Research (NIHR).

The stakeholder group included 4 members from the wider PenPIG (Peninsula Collaborations for Leadership in Applied Health Research and Care (PenCLAHRC) Patient Involvement Group) who expressed interest during their involvement in the preparation of the research proposal (see Appendix 3).

3.2.4 Stakeholder Think-Tanks

To check our understanding of the programme theory of MCPs for any missing or mis-interpreted elements, we consulted a think-tank of patient and NHS 'stakeholders'. The latter included people who would be implementing MCPs. We used these meetings to:

1. Check our interpretation of the initial MCP programme theory
2. Resolve ambiguities
3. Add any missing components
4. Advise as to which MCP components were most important and should therefore be prioritised in the evidence review (step 2).

Senior researchers identified stakeholders at the research group meetings. MP provided names of services users, HL gave a list of policy makers and academics, and RB supplied a pool of GPs and managers working in GP surgeries. The final list encompassed stakeholders across England including senior staff from NHS England. .

We held three think tank meetings in October 2016. Participants were general practice members (GP, practice manager), service users, policymakers (including NHS England) and a minority of academics. The researchers made field notes and (with the participants' consent) audio-recorded the meetings in order to return to key points if necessary. After each meeting the if-then statements and map were successively modified.

We held a further meeting with our stakeholders in March 2017 in order to check our understanding of the linkages between MCP components, and will meet the stakeholders again to discuss further how to disseminate our findings.

From the included policy sources and the think-tank interpretations we arrived at 242 if-then statements (Appendix 4).

3.2.5 DE-DUPLICATING AND CONSOLIDATING THE CONCEPTUAL MAP

Data reduction was therefore necessary. Where we had one link A-B-C and another A-C, the first was more informative (about mediating steps) and so we removed the second as duplicate. We also removed non-redundant but trivial links (e.g. 'If there is scope for local innovation in creating MCPs, Then MCPs will be created').

Even after consulting the stakeholder think-tank many of the if-then statements still explicitly stated only one or two of the context-mechanism-outcome trinity, which previous studies[40-44]

have already shown is often the case with policy sources. In developing the conceptual map, the researchers imputed the missing assumptions from our background knowledge of the English health system and clinical practice within it. In doing so we:

1. Clearly differentiated the imputed assumptions from those explicitly stated in the policy sources.
2. Selected, when alternative assumptions might be imputed, those which have the strongest evidence base and were most consistent with those explicitly stated in the policy sources, avoiding the construction of a 'straw man' or unfairly weak interpretation.

Adding these connections produced a second graphic, Illustration B in the supplementary web material. That graphic includes the numbered ifs and thens behind each component in order to illustrate some (but certainly not all) of the complexity of their inter-relationships, the direction of ‘flow’ from input to output (showing which were intermediate and which were final outcomes), but also removing redundant links as explained above. This method ensured the fully-articulated initial MCP programme theory remained as comprehensible as possible whilst remaining as close as possible to the original policy statements. Chapter 4, section 2.6 formulates the initial programme theory taken forward into Step 2. Chapter 4 describes (both verbally and with a graphic) in detail the mechanisms, intermediate outcomes, final policy outcomes and contexts which together comprise the fully-articulated initial programme theory for MCPs early in 2017.

3.3 Step 2: Reviewing the Evidence

3.3.1 Exploration and search strategy development

The aim of the realist evidence review was to discover an evidence base against which to ‘test’ the initial programme theory (in Step 3, see below) and reveal whether the initial programme theory omitted any important MCP components or causal links between them. Due to the size and complexity of the corpus of relevant studies, we were also aware of the necessity for a well-defined and focussed search strategy. We focused the search by:

- Searching for concepts and terminology from the main components of programme theory, starting with the formation of MCPs and its sub-components (see Chapter 4). This search

covered all 13 components of the initial programme theory. The search concentrated on the connections between the 13 components rather than on each component in isolation from its effects and contexts.

- 'ANDing' these with names of MCP-equivalent organisations, networks and projects. (Chapter 1 defined 'MCP-equivalent' as 'performing a similar function of horizontal coordination between primary medical care, domiciliary health care, other primary care health services, and social care). SLB and SB assembled a list of MCP-equivalents (including chronic care models), drawing on the whole research team's knowledge.

We developed a search in MEDLINE (via Ovid) using the above sets of terms. Search terms were represented by free-text terms and indexing terms. The final search was translated for use in a selection of topically appropriate databases, including MEDLINE, MEDLINE In-process, PsycINFO (all via Ovid), CINAHL (via EBSCO) and ASSIA (via ProQuest). The search was conducted on 5th December 2016 and no date limit was used. We exported the search results to Endnote (X7) and de-duplicated them using automatic and manual checking. The search strategies and number of hits are presented in Appendix 5.

Studies were also identified through opportunistic finds from email updates from relevant journals.

3.3.2 SELECTION

Five reviewers (RS, MP, SLB, MF, AW) between them screened 1319 titles and abstracts in the Endnote database. There were two rounds of screening. For each round we developed a screening tool (Appendices 6&7), each of which went through two rounds of piloting on ten studies (20 total) by all reviewers. Discrepancies in tool use and include/exclude decisions were discussed and resolved after each pilot to achieve consistency in its use.

Screening stage 1: Using Screening Tool 1 (see Appendix 6) we selected studies about any of the 13 MCP components in the initial programme theory (listed above). We included only studies with empirical contents i.e. comparative effectiveness studies (Randomised Controlled Trial (RCT) etc.), process evaluations, reviews of primary research (if the method was stated), qualitative research, surveys, histories, descriptions of models of care, uncontrolled before

and after comparisons, cohort studies and re-analyses of routine data. We excluded editorial letters, conference abstracts, opinion pieces, audit articles and the numerous *a priori* but data-free 'models' of integrated care. Next we assessed whether the selected empirical studies were about horizontal inter-organisational linkages in primary care; that is between any two or more of: primary medical care, CHS, ambulance, community health and mental health care, residential care, therapies, phc dentistry, phc pharmacy. If not, we excluded them. Hence we excluded studies purely about hospitals and single-organisation studies. The first stage of screening selected 463 studies.

A second reviewer (SLB or RS) screened 10% (n= 99) resulting in 8 discrepancies to be resolved by a third reviewer (MP).

Screening stage 2: Too many studies to review with the time and staff available remained after first screening (n = 463). We therefore also excluded pre-2014 studies in order to focus on the most recent data with the assumption that later studies, especially reviews and systematic reviews, will already refer to the findings from the most important earlier studies. We then carried out a second round of screening on the remaining included studies. Using Screening Tool 2 (see Appendix 7) we excluded studies that:

- Did not concern an OECD country. Realist methodology assumes that similarity of context is a pre-condition for the transferability of mechanisms from one setting to another, and OECD countries' health systems and wider social contexts were more likely to resemble those of the UK than those in non-OECD countries were.
- Were not *specific* to horizontal inter-organisational coordination of primary care. That is: generalities (e.g. training) which may apply to, but are not specific to, MCP-equivalent structures; 'vertical' (primary-secondary) not 'horizontal' service coordination; micro-management techniques, HIT technologies (e.g. medical record design, apps); and studies of purely clinical interventions (e.g. therapy methods or rules for managing polypharmacy).

Ten percent of round 2 screening was second screened by one reviewer (SLB). Before data extraction, both rounds of screening were checked by SLB for any coding mistakes. Twenty five coding errors and missing codes were identified and rectified. This identified two new includes, giving us 116 included studies. .

To automate later data sorting and extraction the included studies were coded in the Endnote database according to which programme theory component(s) they were relevant to.

3.3.3 DATA EXTRACTION AND QUALITY APPRAISAL

The aim of data extraction was to extract evidence about the 28 *causal links* in the initial programme theory (see Chapter 4). Four reviewers (RS, MP, SLB, AW) extracted data from the included studies. Each reviewer was allocated 1-4 of the 13 components. The data extraction tool (Appendix 8) was piloted on 2 studies by two reviewers (SLB and RS) followed by discussion to resolve any discrepancies or other problems. For each of the 28 causal links we sought to:

- Extract data tending to corroborate the causal link
- Extract data which were evidence against the causal link
- Extract evidence of new causal links or components not in the initial programme theory
- Specify context(s) i.e. evidence specifying under which circumstances one component would produce another, or fail to
- Note the quantity and strength of evidence about the causal link
- Note any qualifications or limitations to the findings reported in the study data were being extracted from.
- Note which kind(s) of MCP-equivalent(s) the study described, in which country and serving which care group(s).

For studies allocated to more than one reviewer (i.e. relevant to more than one component, which was most studies) the first reviewer extracted data and saved the data extraction form, the next reviewer to extract data from that study then checked the first reviewer's data extraction and added their own data extraction (if any) to the first reviewer's form, and so on. In this way, 26 of the 116 included studies were data extracted by two reviewers (24%).

Each included study was assessed for methodological quality using the Mixed Methods Appraisal Tool (MMAT). We used MMAT because, reflecting their complex objects of study, we expected most of the studies to use mixed or qualitative methods, with some quantitative studies. Two reviewers (SLB and RS) piloted MMAT scoring on 2 studies, then discussed the

discrepancies with the wider team to ensure consistency. Any issues arising in quality appraisal assessment were raised and discussed in team meetings during the quality appraisal stage. The data extractor(s) for each study also assessed its MMAT quality score. MMAT provides a standardised appraisal checklist of four items (hence scores of 0,1,2,3 or 4) for qualitative studies, and the same for RCTs, non-randomised trials, and descriptive quantitative research. For mixed methods, it provides a three-item checklist. Criteria for all the checklists are detailed and well-specified. To assess the quality of the included systematic reviews we used the AMSTAR quality appraisal tool for systematic reviews. AMSTAR also provides well-specified, consistently structured checklists for 11 characteristics indicative (in this case) of the quality of a systematic review, giving a total score between 0 and 11 for each systematic review (SR). MMAT and AMSTAR ratings were conducted by one reviewer. Ten percent of these were then rated by a second reviewer (SLB n = 9; RS n = 3) and one discrepancy resolved by a third reviewer (HL). The MMAT or AMSTAR rating and a narrative summary of any methodological quality issues with a study were also recorded on its data extraction form.

3.3.4 Collating and coding data

The data extraction tool (Appendix 8) was structured according to the 28 causal links between MCP components in the initial programme theory, in 11 groups according to which component was the mechanism, as opposed to the outcome, in that causal link. This structure was also the overall coding framework for the data. To automate data sorting and retrieval, we created an NVivo 11 database with a node for each causal link and therefore the corresponding section of the data extraction tool. Within each node, sub-nodes corresponded to the lower-level links between the sub-components of each MCP component . Data from all the data extraction forms were imported into the corresponding NVivo node(s). Where no suitable node existed we created new nodes as necessary during data extraction. These were where additions and elaborations to the initial programme theory began to emerge.

3.4 Step 3: Building a revised logic model

3.4.1 *Comparing the initial programme theory with the evidence review findings*

The 28 causal links between the 13 MCP components were the analytic framework for this comparison. We collated the relevant contents of the completed data thematically into that framework. For the 28 causal links in the initial programme theory we:

- Assessed the overall evidence for the causal link
- Inducted patterns and sub-themes
- Noted strengths of evidence and gaps in the evidence, including any absence of contextual information about each causal link
- Noted new causal links not in the initial programme theory
- Noted any contradictions or ambiguities in the evidence about particular causal links.

3.4.2 *Synthesis*

For each causal link we summarised the number and quality of studies supporting, refuting or qualifying it (see Chapter 7). We categorised the strength of each causal links' evidential support as (in descending order) one of:

- 'Substantial' i.e. a combination of primary studies and systematic review(s)
- 'Supporting' i.e. multiple primary studies
- 'Minimal' i.e. a single primary study.
- 'Partial support' i.e. some supporting evidence for parts of the underlying programme theory about that causal link (i.e. that it only operates in certain conditions, or with certain populations).
- 'Equivocal': i.e. evidence both for and against (but we also noted whether in such cases the evidence was predominantly on one side).
- 'None', whether evidence to the contrary or just the simple absence of any supporting evidence in the studies available to us.

A single working instance of a causal link between two components ('minimal' evidential support) does at least give, however, evidence of the feasibility ('proof-of-concept') for that component operating as a mechanism to produce that outcome in another setting *provided that* the destination context has similar moderating characteristics to the original 'proof-of-concept' context. Equivocal evidence is, to the realist mind, a clue to the possible presence of contextual factors which determine whether that mechanism will produce that outcome in

different contexts for different populations and what kind or size its impact will be (e.g. the mechanism 'works' for one care-group or in one kind of health system but not another).

3.4.3 REVISING THE INITIAL PROGRAMME THEORY

To convert the initial programme theory into a revised, more strongly evidence-based logic model we removed the causal links with no supporting evidence, or where evidence existed but was against them. For causal links which had only partial support, we removed the un-evidenced elements. These subtractions produced a truncated but more strongly evidence-based programme theory.

To that truncated version we next added:

- Relevant causal links found in the body of evidence but omitted from the initial programme theory
- Contextual statements of the circumstances which qualify the causal link between two MCP components, because certain specific conditions strengthen or weaken the outcome produced.

In places the initial programme theory was formulated ambiguously (see Chapter 4). To test it as it stood, we left these formulations untouched when comparing it with the secondary evidence. To produce a more coherent, less ambiguous, more evidence-based MCP programme theory we separated out those concepts (e.g. 'coordination' and 'integration'; and see Chapters 4 & 6) which the policy sources had conflated.

Adding further contexts and mechanisms made an already complex programme theory more complex. It would be an exaggeration, but one with a grain of truth, to say that the initial MCP programme theory had come close to assuming that in MCPs every component helped produce every other component (see Chapter 4). To differentiate the critical from the non-critical causal links we used two methods. First, using the categories described above we also categorised the strength of evidence for each subsequently added causal link, from 'minimal' to 'substantial' (Chapter 7). As a graphical representation, we re-drew the map of the revised logic model so that the width of each link reflected the 'strength' of evidence for it (Chapter 6, Figure 5). Second, to simplify the graphical representations we eliminated redundant links

in the revised logic model applying the same principle as previously. But in reviewing the evidence, we included all the links, both direct and indirect.

The product of these subtractions, additions, qualifications and definitions was a revised, more strongly evidence-based programme theory for MCPs, articulated in correspondingly revised verbal, tabular and graphical presentations (Chapter 6).

The supplementary web material contains a Table A which itemises in detail how our methods complied with the RAMESES quality standards.

4. FINDINGS: ELICITING THE INITIAL PROGRAMME THEORY FROM POLICY SOURCES

4.1 OUTLINE OF ASSUMPTIONS IN POLICY SOURCES

From the sources and stakeholders mentioned in Chapter 3 (Appendices 3,9) we obtained and collated 242 statements about what intermediate outcomes and final (policy) outcomes MCPs were designed to attain, by what means, and in what contexts (see Appendix 4). Appendix 10 lists in descending order of frequency the 20 most frequently mentioned in the policy documents that we analysed.

4.2 INTERPRETING THE POLICY SOURCES IN REALIST TERMS

The policy sources seldom explicitly formulated their assumptions about MCPs as the CMOCs, or parts thereof, which realist synthesis requires.

4.2.1 UNDERSPECIFIED POLICY MAKERS' ASSUMPTIONS

The 5YFV and related policy documents stated in general terms that MCPs will promote the 'integration' of care for older people with multiple morbidity by partly replacing hospital care with non-hospital care. For the most part MCP policy was however unclear about which components might act as mechanisms to produce which specific outcomes. At times policy statements asserted what should be done without expressly stating how and/or what effects doing this would have. For example, at one Vanguard site there would be 'more ways for people to digitally access healthcare (including online directories of local services, and a library of helpful health apps on its website)' but this idea was not *explicitly* connected to any policy outcomes it would produce or contextual requirements for it to work. Other statements were so broad as to be difficult to interpret concretely, e.g. that 'artificial boundaries between hospitals and primary care, health and social care, between generalists and specialists are

broken out of' and 'long term conditions are better cared for'.

Policy-makers may have left these points under-specified so as not to foreclose MCP design options or for other reasons (as with other policies[1]). Policy documents said that different types of MCP might emerge but not what these variants were or what might differentiate them. They suggested possible MCP contractor, but a wide range including Community Interest Companies, Limited Liability Companies, partnerships (including GP federations) and statutory NHS providers. MCPs were also described as 'extended group [GP] practices' which might be 'federations, networks or single organisations' (5YFV, p.20) Concomitantly, 'general practice at scale' might according to 5YFV be networks of independent general practices, perhaps with a strong central coordinating body (a 'federation'). The Commons Health Committee argued that federations allow specialisation of service and care team development but retain the existing scale of general practices. Whilst policy documents stated that MCPs will also have an element of vertical integration, or rather coordination, of care, short of structurally integrating primary and secondary care, they also usually discussed MCPs separately from Primary and Acute Care Systems (PACS, the topic of a separate NIHR-funded research project).

Relationships between mechanism and outcome in the policy documents were often under-specified, being ambiguous as to whether the terms referred to mechanism and its context, or (without differentiating) both a mechanism and its outcome:

1. 'MCP set-up': ambiguous between a mechanism (i.e. actions by NHS managers) and a context (favourable or unfavourable background conditions).
2. 'Demand management': ambiguous between a mechanism for managing demand (e.g. referral screening, risk stratification) and the outcome of doing so managing demand (fewer referrals and admissions to hospitals).
3. 'Patient diversion': ambiguous between mechanisms for diverting patients away from hospital (e.g. providing alternative care outside hospital) and the outcome of doing so (e.g. fewer hospital admissions).

4.2.2 MULTIPLEXITY

If-then relationships between MCP components in the policy documents were successively linked ('concatenated') and multiplex. They rarely assumed that one mechanism produced

just one final outcome, but more often that different mechanisms were concatenated so that the output of one was to create, or to trigger, the next. For example policy statements expected the creation of MCPs to strengthen the management of provider networks; the latter would then strengthen referral networks; the referral network would next lead to patients being diverted from hospital; and so on. The if-then relationships were multiplex in that a single mechanism was sometimes assumed to trigger several others. IT-based care coordination would, the policy statements jointly assumed, divert patients away from hospital, strengthen care planning at patient level and make urgent care more responsive. In reverse, the policy statements also assumed that one policy outcome would result from many mechanisms. For example improved care planning at patient level would be the joint effect of IT-based care coordination plus referral networks plus demand management systems (themselves also resulting from care planning at organisational level) plus preventive care.

4.2.3 Translations and Nomenclature

The policy documents made little explicit reference to evidence bases beyond some local evaluations. However they often referred to two main international prototypes for MCPs, the American Accountable Care Organisations (ACO) and Primary Care Medical Home (PCMH). In NHS policy documents the term 'Accountable Core Organisation' meant an 'overarching organisation that sits above a joined up health and social care system made up of a number of different providers, from health services to the local council.' Such an ACO would be certainly the predominant, perhaps sole, contractor for NHS-funded services with its local commissioner. The American government's Centres for Medicare and Medicaid Services defines ACOs as 'groups of doctors, hospitals, and other health care providers, who come together voluntarily to give coordinated high quality care to their Medicare patients, i.e. not for all patients, and provider membership is optional: differences to bear in mind when interpreting the ACO model and research for NHS use. NHS policy statements also borrow the term 'Patient Centred Medical Home' which in America formulates an ambition to construct something like NHS general practice (usually) already is i.e. primary medical care based on the

> '*underlying principle of a single physician who coordinates the patient's care and engages a team of health care providers and their patient in an individualized treatment and management plan.*'

As the Royal College of General Practitioners (RCGP) points out, general practice is (already)

'the natural medical home for patients'. In the USA a 'medical neighbourhood' is understood as a group of 'medical homes'. Finally, 'integration' in NHS policy documents almost never means 'organisationally integrated' (as it would in some countries) but rather the closer coordination of services provided by separate organisations. Many health systems pursue that aim by creating referral networks[5] of providers, each network having a 'network administrative organisation' doing much of the actual coordinating work. Policy documents also implicitly used the term 'prevention' in a hitherto non-standard way, to mean long-term self-care, 'activation' and 'empowerment', and patient education, rather than clinical prevention or intersectoral activity for health promotion.

4.2.4 Apparent Omissions

Many policy statements were implicitly in mechanism-outcome configuration, rather than a context-mechanism-outcome configuration. From a realist perspective it was noticeable that policy sources seldom made assumptions (even implicitly) about what contextual factors would moderate the many assumed causal links between MCP components and outcomes. Nevertheless a few contextual assumptions were stated and are outlined below.

Compared with the policy issues covered in background section, the policy statements said little about:

- Organisational integration, in the sense of GPs, CHS and other staff being members of the same organisation
- Lack of residential and social care
- Risk stratification and case management
- MCPs' relationship to the other six new models of care.

4.2.5 Imputing the missing causal links and contexts in the policy makers' assumptions

To make the policy makers' assumptions empirically testable one has at times to impute the necessary missing definitions and terms, and operationalise them. As Chapter 3 explained, we did so by:

- Asking our NHS think-tank to interpret what, in practical terms, the policy statements appeared to mean to them as NHS clinicians and managers;
- Cross-referring between policy statements (at the cost of assuming that the same word means the same thing in different statements);
- Exploiting the textual setting. For example a statement about information-sharing in the context of hospital referrals and discharges was taken to refer to information sharing between hospitals and GPs, and between hospitals and CHS;
- Referring to the international prototypes which policy documents cite (see above), though with due attention to differences between the original and the NHS settings.
- Referring to particular named examples of, plans for, or evaluations of existing proto-MCPs. From these descriptions the researchers abstracted the more general assumptions about how this MCP would work from its local particularities;
- Calling upon the researchers' (who included clinicians) background knowledge of primary care in the NHS and of relevant research to infer what such statements were most likely to allude to and to interpret such euphemisms as 'leadership' for 'managers' or 'expert generalist' for 'GP'.

By these means we so far as possible formulated and elaborated the policy statements as 'if-then' statements ('if' = M-; 'then' = -O, provided that C-) which realist synthesis (indeed any empirical test) requires as raw material.

4.2.6 The initial programme theory: MCP components and the causal links between them

We grouped by mechanism and by outcome the 242 if-then statements obtained from the policy sources (described in Chapter 3). These 13 groups were named as MCP 'components' and were linked by 28 'causal links'. Together these make up the top-level of the initial MCP programme theory. Underlying, or rather composing, each causal link are single or multiple if-then statements, making the more detailed content of the initial programme theory. Appendix 11 summarises the 13 MCP components in our interpretation of the policy makers' assumptions about MCPs.

Table 1 and Figure 1 llustrate the initial programme theory that we took forward to the evidence review. The initial programme theory is our interpretation of the policy makers'

assumptions (developed as described in Chapter 3, and glossed at points to explain our reasoning). This initial programme theory is made up of 13 components and 28 causal links between them. As this review is focused on exploring the evidence for *how MCPs work* and not *what MCPs are*, it is the causal links between the 13 components, and not the 13 components themselves, that guide our evidence review (Step 2, see Chapter 5 for results of the Evidence Review). Figure 1 illustrates the 28 causal links. Note that the 13 components (Appendix 11) include the two main outcomes of MCPs (component 12: patient experience and care will improve, and component 13: NHS costs will reduce). Because these two 'components' are the intended end result of MCPs in NHS policy, in the initial programme theory they are not the mechanism for producing any of the other eleven components, and hence appear only in the right hand (then) column in Table 1 below.

Table 1: Main causal links between the 13 MCP components in the initial programme theory (IPT)

MCP component (1-13) **IF**	**MCP component (1-13)** **THEN**	**IPT Causal Link**
1: NHS managers establish MCPs	2: Network management will develop	1:2
	7: Planned referral networks will develop	1:7
2: Network management develops	3: MDTs will develop	2:3
	6: Care coordination through IT use will develop	2:6
3: MDTs are established	7: Planned referral networks will develop	3:7
	9: Preventive health care will develop	3:9
4: Culture changes occur in the participating organisations	3: MDTs will develop	4:3
	8: Demand management systems will develop	4:8
	9: Preventive health care will develop	4:9
5: Voluntary sector becomes involved in MCPs	8: Demand management systems will develop	5:8
	9: Preventive health care will develop	5:9
6: Health information technologies (HIT) are used to strengthen informational continuity of care	7: Planned referral networks will develop	6:7
	10: Care planning for individual patients will become more prevalent and systematic	6:10
	11: More patients will be diverted from in-patient to primary care services	6:11
7:planned referral networks develop	8: Demand management systems will develop	7:8
	10: Care planning for individual patients will become more prevalent and systematic	7:10
	11: More patients will be diverted from in-	7:11

	patient to primary care services	
8: Demand management systems develop	9: Preventive health care will develop	8:9
	10: Care planning for individual patients will become more prevalent and systematic	8:10
	11: More patients will be diverted from in-patient to primary care services	8:11
9: Preventive health care develops	11: More patients will be diverted from in-patient to primary care services	9:11
10: Care planning for individual patients becomes more prevalent and systematic	9: Preventive health care will develop	10:9
	11: More patients will be diverted from in-patient to primary care services	10: 11
	12: Patient experience and care will improve	10:12
11: More patients are diverted from in-patient to primary care services	12: Patient experience and care will improve	11:12
	13: NHS costs will reduce	11:13
	Other: General practice will benefit	11: Other
Other: Care coordination and Demand management systems develop	Other: Urgent care become more responsive	Other

Figure 1 shows graphically the relationships between these overall groups of causal links. Each arrow represents a generalisation from ‘if-then’ relationships stated or assumed in the policy documents. In realist terms each arrow with its left-hand box represents a mechanism and the box at the right-hand (destination) end of the arrow its outcome. (Table B in the supplementary website material shows the same relationships in tabular form.)

:

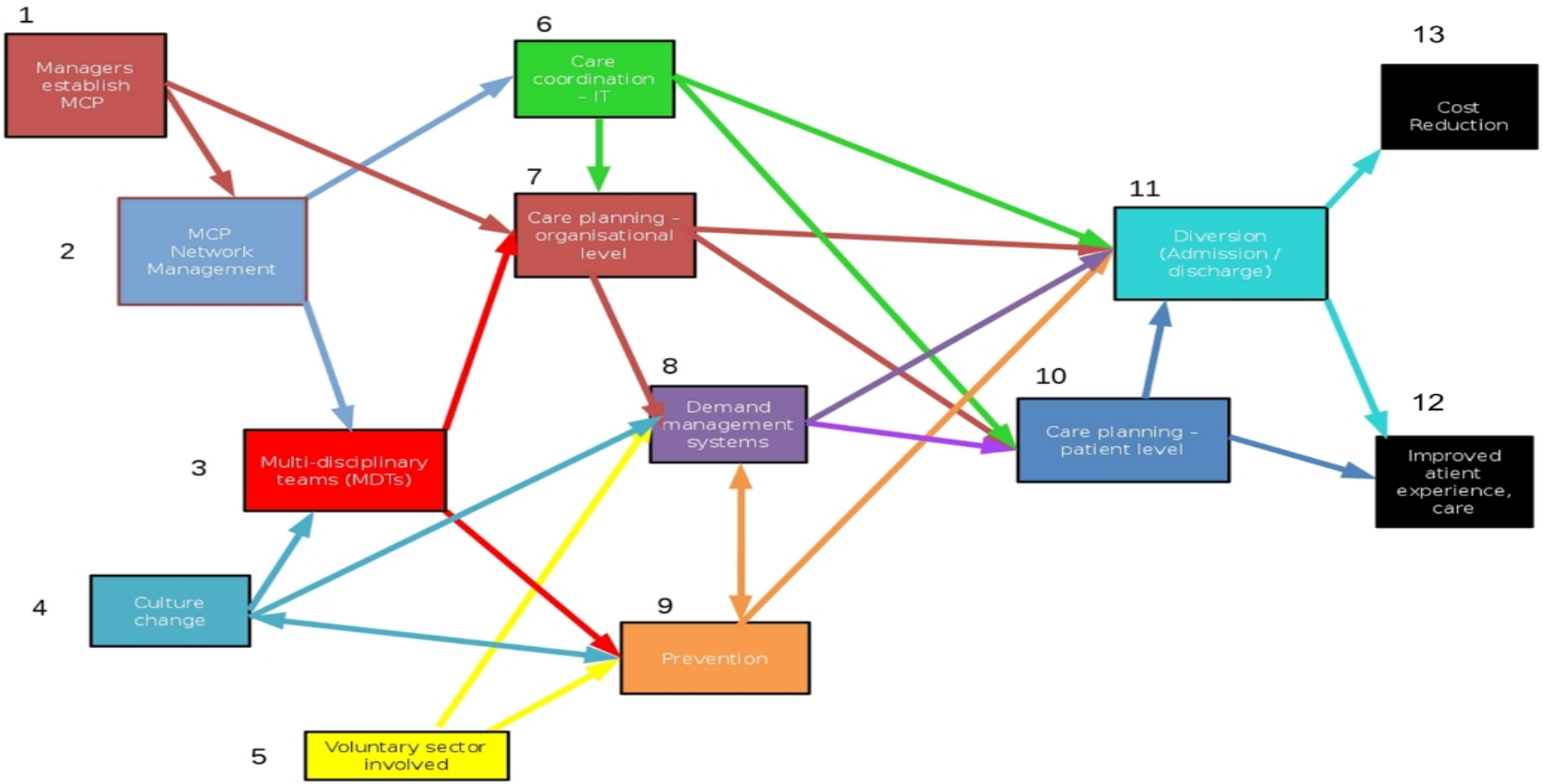

Figure 1: Causal relationships between the 13 MCP components in the policy-makers' initial programme theory

Figure 1 shows the 'flow' or sequenced linkage ('concatenation') of the assumed causal links between the components 1-11 and through to the outcomes 12 and 13 (improved care and reduced cost). Each component is assumed to be the mechanism to bring about change in later components, and those components are then assumed to be the mechanism to bring about change in yet later components, and eventually jointly lead to the MCP outcomes (far right).

4.2.7 CONTEXTS

As noted, policy sources contained fuller accounts of assumed mechanisms and outcomes, and some mediating linkages, than of what contexts might moderate the achievement of those outcomes. They did however include some detailed assumptions, outlined below, about what initial conditions favour the establishment of MCPs, in particular the first wave (i.e. which concerned only links 1:2 and 1:7). In addition to some managerial mechanisms (a vision of a model of care; effective managerial and clinical leadership; standardised data to enable real-time monitoring and evaluation of quality outcomes, costs and benefits; planning how to provide care for people with long term conditions in primary care settings and in their own homes, with a focus on prevention), the contextual conditions likely to be critical to enable the first wave of MCPs to bring about their intended outcomes were assumed to be:

1. Existing progress towards new ways of working
2. A financial situation which allows start-up money to be found for MCPs: local commissioners support already-agreed funding for the MCP Existing 'partners' such as voluntary and community sector organisations, and 'communities' are supportively engaged with the MCP. Organisations relate to each other in a collaborative, mutually helpful way. Local relationships are good.
3. Local NHS leadership focus upon MCPs and care integration generally
4. The populations served are of a size and type likely to benefit; which we interpret as being large enough to allow economies of scale and scope in collaborative working; and with a health profile and socio-economic mix that the MCP services can accommodate.
5. A population who desire autonomy and control over their health and healthcare, and are likely to participate ('engage') in activities to maintain their own health and

help care informally for those experiencing chronic ill-health.

6. Health professionals and organisations view those whom they care for as people not patients.
7. Sufficient staff inputs (time, skill-mix).
8. The responsible CCGs show engagement and flexibility, and are not excessively risk averse towards the risks of procuring new organisations and/or networks to operate an MCP.
9. A well-functioning GP network (group or federation).
10. The corresponding social services are capable of providing the services needed to sustain and MCP.

Policy statements and informants did foresee certain general contextual problems in establishing inter-organisational level care coordination, but did not clearly link them to any s*pecific* relationships between any of the 13 main components of the policy-makers' initial programme theory.

1 Tension between clinical and financial imperatives.
2 The necessity of moving the pressure of demand to new points in the local health system, and of removing some roles.
3 Difficulty in moving beyond information-distribution to ensuring that organisations within the MCP use that information effectively.
4 Increased pressure on carers and voluntary sector. If not a context, this might be understood as a side-effect, or perhaps feedback effect, of links 5:8 and 5:9.
5 An initial dip in patients' experience because some patients would be resistant to the changes in care provision.

The fundamental contextual assumption however was that a substantial proportion of unplanned admissions of older people with multiple morbidity are clinically unnecessary, even iatrogenic, hence preventable.[3] This implicitly applies to all the links involving patient diversion (6:11. 7:11, 8:11, 9:11, 10:11, 11:12 and 11:13).

5. FINDINGS: THE EVIDENCE BASE

5.1 STUDIES IDENTIFIED, EXCLUDED AND INCLUDED IN THE EVIDENCE REVIEW

Figure 2 describes the flow of studies through the evidence review. 1319 records were identified (after duplicates removed). Screening and data extraction resulted in 97 included studies from which data were extracted to provide evidence for Step 3 (Chapter 6).

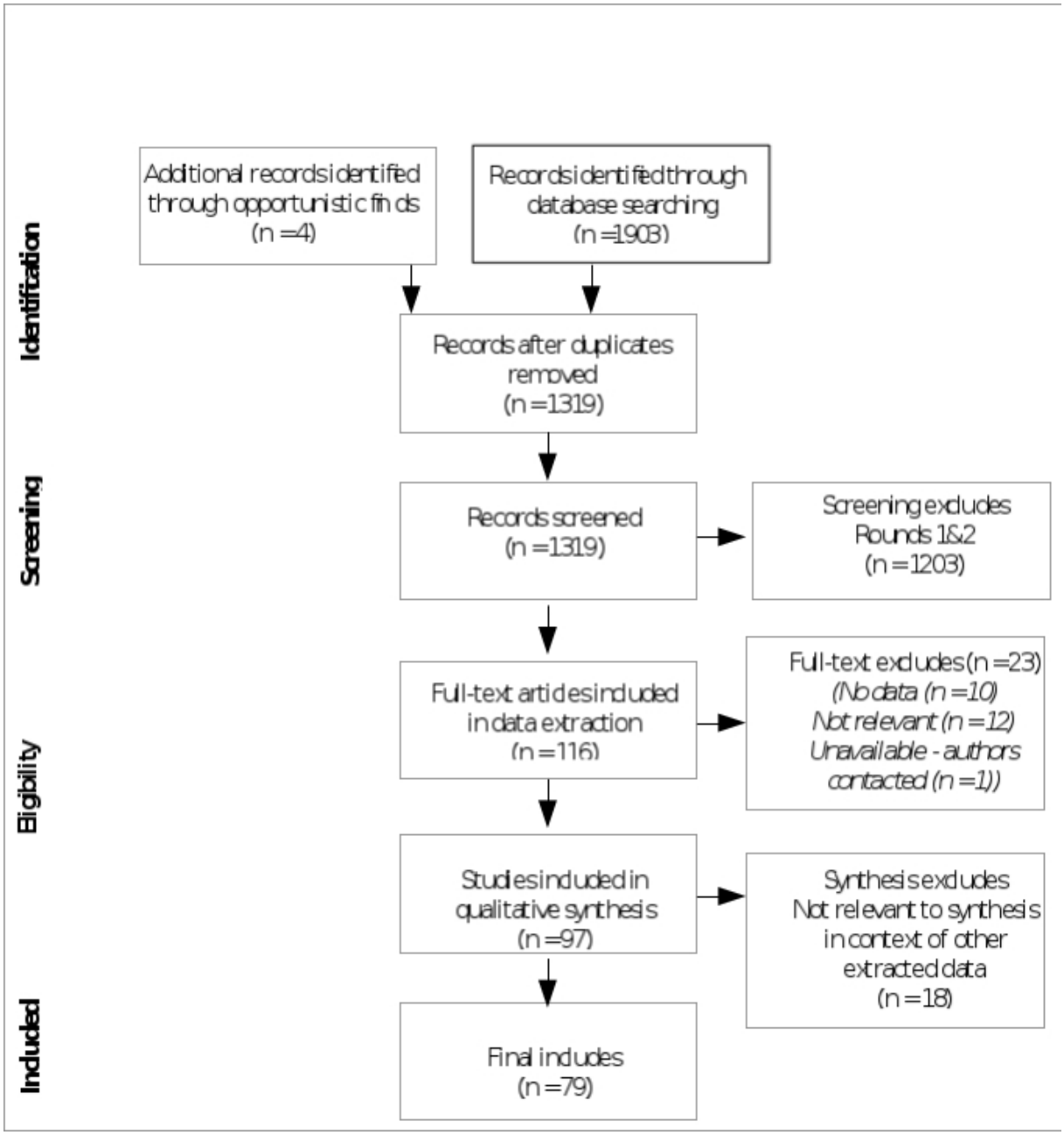

Figure 2: Flow of included and excluded studies in the realist evidence review

5.2 EVIDENCE REVIEW - DATA SYNTHESIS

The data we extracted from 18 of the 97 studies included in data extraction were not included in the synthesis because, once considered in the context of the data from the other included studies, they were not relevant to the synthesis. Appendix 12 shows the details of the studies excluded at the data synthesis stage of the evidence review.

Figure 3 illustrates the number of studies which provided evidence for each of the 28 causal links in the initial programme theory, and the number of studies from which evidence was found for 16 additional causal links not in the initial programme theory. No data was found to extract for causal links 4:8 and 6:8 in the initial programme theory (shown as 0), and some data were found to extract for causal links not appearing in the policy maker assumptions *(shown **like this**)*. These new causal links most often had components 7 (preventive health care), 12 (improved patient care) and 13 (reduced NHS costs) as the outcome, and components 3 (MDTs), component 5 (culture change), and component 7 (planned referral networks) as the mechanism.

IF \ THEN	**1** Context is favourable	**2** Network management will develop	**3** MDTs are established	**4** Culture change in and across organisations occurs	**5** Voluntary sector become involved in MCPs	**6** Care coordination occurs through IT use	**7** Care planning at organisational level will occur	**8** Demand management improves	**9** Preventive health care will develop/be more prevalent and systematic	**10** Care planning at the patient level will become more prevalent and systematic	**11** Patient diversion away from hospital services will occur	**12 Improved Patient Care and Experience of Care**	**13 Reduced Costs / More Efficient Care**
Context is favourable **1**		21					16						
Network management develops **2**			16				25	*(1)*					
MDTs are established **3**				*(1)*			25	*(1)*	29	*(6)*	*(2)*		
Culture changes occur in participating organisations **4**			16		6		*(3)*	0	8	*(2)*		*(1)*	
Voluntary sector becomes involved in MCPs **5**								3	5				
Information technologies (IT) are used to strengthen informational continuity of care **6**			*(1)*				23	0	*(1)*	27	7		
Care planning occurs at the inter-organisational level **7**								4	*(1)*	9	10	*(2)*	*(1)*
Demand management is established **8**									3	4	5		
Preventive health care becomes more prevalent and systematic **9**											2	*(1)*	*(1)*
Care planning at individual level becomes more prevalent and systematic **10**									*(2)*		12	21	
Diversion of patients from in-patient care **11**												10	16

Figure 3: Numbers of studies providing data for each causal link in the initial programme theory. (The y axis is the mechanism ('if'), the x axis the outcome ('then'))

5.3 FINAL INCLUDED STUDIES

Appendix 13 presents details of the 79 studies included in the synthesis.

The most evaluated model of integrated care was Patient-Centred Medical Homes (31 studies), then Accountable Care Organisations (18 studies). The populations under study included physicians, care navigators, and patients. The over-whelming majority of studies used qualitative data collection methods and provided evidence for between 1-17 causal links between 13 MCP components.

The number of studies providing evidence for each causal link ranged from one to twenty nine. The causal links with the most studies from which evidence was extracted were 3:9 (If MDTs are established then preventive care will develop; twenty nine studies), 6:10 (if HITs are used then care planning at the individual level will develop; twenty seven studies), 3:7 (If MDTs are established then planned referral networks will develop; twenty five studies), 2:7 (if network management develops then planned referral networks will develop; twenty five studies), and 10:12 (if network management develops then patient care will improve; twenty one studies).

We found few studies in which components 12 (improved care) and 13 (reduced NHS costs) were the direct outcome of another component. Two thirds of the causal links which did have components 12 and 13 as outcomes were not in the initial programme theory, but were additional causal links found in the studies reviewed. Evidence for causal links in which 12 and 13 were outcomes usually came from only one or two studies. However, evidence for causal links to 12 and 13 from components 10 (care planning at the patient level) and 11 (diversion from in-patient care) came from a comparatively large number of studies: Twenty one studies provided evidence for causal link 10:12 (if care planning at the individual level becomes more prevalent then there will be improved patient care); sixteen for causal link 11:13 (if patients are diverted from in-patient care then NHS costs will reduce); and ten for causal link 11:12 (if patients are diverted from in-patient care then there will be improved patient care.

~~Appendix 13 tabulates the characteristics of the documents included in the review.~~

5.4 SUMMARY

The evidence review included 79 studies that provided evidence for 44 causal links between 13 MCP components. We found evidence for a new MCP outcome 'staff health and wellbeing' from components 3 (MDT working), 7 (planned referral networks), and 10 (care planning at the patient level), although this outcome was beyond the scope of this review and so we do not report these findings.

Evidence from these 79 studies about the 13 components and 44 (28 initial programme theory and 16 new) causal links provided the analytical framework (see Chapter 3) for reviewing the evidence relevant to the initial programme theory.

6 STEP 2 FINDINGS: COMPARING IDENTIFIED EVIDENCE TO THE INITIAL PROGRAMME THEORY

6.1 SETTING UP MCP-LIKE ORGANISATIONS AND NETWORKS

First we evaluate causal links 1:2 and 1:7 (Table 2) in which component 1, the setting up of MCP-like organisations and networks, is the realist mechanism to bring about component 2, network management, and component 7, planned referral networks.

Table 2: Causal links for which NHS managers establishing MCPs is the mechanism

MCP Component (1-13) IF	**MCP Component (1-13) THEN**	**IPT Causal Link**
1 NHS managers establish MCPs	2 Network management will develop	1:2
	7 Planned referral networks will develop	1:7

Evidence about creation of networks of primary care providers mostly – but not entirely - concerned Accountable Care Organisations and Primary Care Medical Homes in the USA. (Chapter 1 notes how these terms map onto NHS contexts.) Much more evidence was available about the contexts favouring the formation of MCP-like organisations or networks than about the mechanisms of setting such entities up. Within those limitations the evidence we found supported the initial programme theory causal links related to establishing MCPs.

6.1.1 *Causal link 1:2 – IF NHS managers establish MCPs THEN MCP-wide management structures will develop*

Unless they fail even to get MCPs started, it is a near-tautology to say that if NHS managers establish MCPs, then MCP-wide structures for planning, developing and operating the included services will develop. Nevertheless, the studies we found included some indicating how this mechanism worked, and options for the structures to set up. Three main mechanisms contributed to the creation of an MCP-like structure, two of them being motives of the providers joining it.

First, provider organisations wished, but were unable, to provide all needed health services. The prospect of providing such services (e.g. dental and vision care and specialty medical care) on-site motivated clinics in Boston (USA) to form ‘strategic partnerships’ to meet the needs of a complex patient population.[53] Providers with a large share of patients with mental health needs were more motivated than other providers to use an ACO to improve mental health services, both to meet patients’ needs and to reduce the burden on providers themselves. ACOs in regions with a low supply of mental health specialists were also looking for ways to integrate mental health care into other settings—typically primary care—to meet patient demand.[54] That is, the MCP-like structure (for instance, ACO) appeared to the provider organisations joining it to be relevant to be relevant their care group(s) and clinical work. In the USA the criteria of ‘relevance’ included whether the patients would have insurance coverage.

Motivation to pursue to the member-organisations’ interest as organisations was a second mechanism. In another study majority of respondents (15 of 25) gave joining like-minded organizations and minimizing future risk (18 of 25) as 'important' or 'very important' reasons for forming their ACO. For some, an important consideration was that joining an ACO offered participating organisations the prospect of clinical ’integration’ without corporate ‘consolidation’ (take-over). Hence Physician practices which participate in ACOs are likely to be large and/or be members of an Independent Practice Association or Physician Hospital Organisation, and unlikely to be hospital-owned. Health centres and other ACO members retained their independence but worked together under an ACO contract in new partnerships Endorsing or improving the member organisations’ internal organisation was also a motive for joining. Some US doctors perceived organizing as a Patient-Centred Medical Home (PCMH) as key to providing high-quality care and as 'the right thing to do.' Others described

recognition as acknowledgment for how they organized their practice. Physicians described participation in PCMH demonstration projects, QI initiatives, and external support for seeking recognition as key motivating factors. The extent to which substance abuse treatment services' staff were clinicians with professional degrees predicted these organisations' likelihood of participating in an ACO.Some also said that participation gave them access to external data sources (such as insurance companies) and to health information exchange, which enhanced their QI strategies and ability to function as PCMHs. Physician groups played a more prominent role than other provider types (including solo-practice physicians) in forming and managing rural ACOs. Organisations' financial motives for joining ACOs were to increase activity (hence income), in contrast to an NHS context. Preparing for value-based purchasing (14 of 25) and getting paid for quality (10 of 25) were the most frequently cited 'very important' reasons for the ACO formation. Among substance abuse treatment centres specifically, those who reported a greater local competition were more likely to have signed a contract with an ACO

Both these mechanisms imply that member-organisations in a voluntary network are self-selecting which, a Canadian study suggests, will of itself stimulate evolution towards a more integrated network. Patients may also be self-selecting. Quebec clinics' improvement in eal Type Integrated Care (ICIT) scores was partly due to a 'natural selection' effect of clinics that closed, and the effect was mitigated by clinics that opened after the 2005 survey. Change in ICIT score was associated with both this evolutionary trend and central reform policies.

Decisions from higher authority were the third mechanism for the formation of MCP-like entities. Decreed 'top-down' reform was instrumental and an obvious prerequisite for initiating change in the Quebec healthcare system. Coercive and mimetic factors influenced primary care provider organisations' ideal type integrated care (ICIT) score to shift towards greater 'integration'. These primary care organisations did not regard health and social care centres' support in creating PCMH-like organisations as very substantial. The Ontario Health Ministry's use of 'simple rules' encouraged change in the desired direction without stifling creativity and innovation. In Australia (a similar primary care system to the UK in many respects) HealthOne Mount Druitt needed sustained support at higher governmental levels (New South Wales Health and the regional Local Health District management), but in a form enabling policy change without attempting to micromanage local developments, which would have ended all chance of general practitioner participation. In general, efforts to improve outcomes by exerting top-down control were often intrusive and futile, slowing down the inherent capacity of the system to adapt and evolve.

The studies that we reviewed described different structures that emerged, in different contexts, as the outcome of managers' attempts to set up MCP-like organisations and networks. In ascending order of common managerial control, the simplest was information-managing across the member-organisations. Thus ACOs must report on 33 quality metrics across: patient/caregiver experience; care coordination/patient safety; preventive care; at-risk population. Electronic health records (EHR) are an important means of managing and coordinating patient care for effective ACO performance; substance abuse treatment services' use of electronic health records (EHRs) predicted how likely they were to participate in an ACO. Other studies corroborate this pattern (See also Chapters 5&6.)

Contracts have also been used to establish MCP-like networks on a quasi-market basis. One example, although linking only mental health services, are the *Integrierte Versorgung* networks of primary, secondary and social care services in cities such as Hamburg. In the Netherlands bundled payments result in a principal contracting entity (provider) being lead contractor for numerous other sub-contractors.[63] Billings and~~&~~ Weger describe and distinguish three other contract-based structures: outcomes-based commissioning (an existing NHS approach); the ACO model; and an alliance model of a network of providers making a joint contract with a payer (in that respect closer to the NHS idea of an ACO). Some ACOs, however, themselves use joint payment contracts. Such ACOs are more likely than others to include community health centres (CHC; 'safety-net' primary care providers), hospitals,

medical groups, nursing facilities and specialty groups, but not to have more primary care and specialty clinicians. In passing, Billings and Weger mention four more models: a 'Partnering Model', 'Value-based Health Care' (which is not specific to MCP-like organisations), 'Incomplete Contracting'; and (less relevant here because it focuses on vertical integration) the Alzira Model.

Managers have often established a central coordinating body ('network administrative organisation' to coordinate MCP-like networks and quasi-markets. Thus Intermountain Healthcare in Utah had a central medical and administrative team whose research groups gave economic and organisational support for running clinical programmes. The latter elaborated good practice recommendations and the corresponding indicators, which providers followed and measured. In establishing primary care medical homes, one problem for managers as for researchers, and for other interventions too, was that different organisations varied considerably in their definitions of a PCMH, so in practice were not all trying to implement the same intervention.

Some health systems have pursued the functions for which MCPs were designed through organisational integration i.e. amalgamating the separate components of primary care (i.e. primary medical care, community nursing, therapies and perhaps mental health services and/or social care) into one organisation, as do the Swedish and Finnish polyclinic model, and Italian USLs.

We found no evidence either for or against the policy assumptions that population attitudes and beliefs about actively maintaining their own health and helping care informally for people in chronic ill-health, or about autonomy and control over their health and healthcare, were mechanisms that contributed to establishing MCPs. The same applies to whether health professionals and organisations view those whom they care for as people not patients. We also found no direct evidence about the requisite state of social services.

6.1.2 Causal link 1:2 - Contexts favouring the creation of MCP-like networks or organisations

Evidence from several countries suggests that good pre-existing inter-organisational relationships facilitate establishing inter-organisational coordination mechanisms, which then reinforce the good relationships in a virtuous circle[67] (as has also been reported in studies of

hospitals). This pattern recurred in several studies of ACO formation. Although the joint payment system was new to the ACOs which used it, the organizations which participated had existing informal partnerships. A study of the formation of four rural ACOs also found that prior experience with risk sharing and provider integration facilitated ACO formation.[56] An Australian study corroborated these patterns. Planning for HealthOne Mount Druitt was led by a steering committee with links into the local community through strong representation from local GPs (71% of them were single-handed), community nursing services and the Western Sydney Medicare Local. In Ontario, organizations with a history of collaboration, pre-existing relationships among partners and a pre-existing focus on integrated care saw the Ontario Health Links model as a natural step forward and found the transition into it easier than for organizations without existing collaborative relationships, knowledge and resources to draw upon.

Implementing ‘top-down’ decisions to create PCMH-like organisations in Quebec also required their internal 'receptivity' to joining a network, including a 'mimetic' context of other exemplar PHC organizations also participating (but the admired prototypes were family medicine groups (FMG) and/or network clinics rather than the new health and social Services Centres), and the presence of ’local champions’ advocating the new models and demonstrating their feasibility and desirability.

A realistic timescale was also required. PCMH programs typically took a few years to reach maturity and produce measurable effects.[69] In the USA, time was required for obtaining ‘bureaucratic’ approvals and checking conformity with anti-trust regulations . Similarly in Australia; the planning stage of HealthOne Mount Druitt took two years, the greatest challenge was building relationships between the key partners, especially overcoming strong established barriers to trust between general practitioners and Community Health.

Several studies (e.g. Billings and~~&~~ Weger) report substantial ACO start-up costs. Just one ACO in New Jersey (covering two million people) required US$2.8m start-up funding, after which it was to become self-sustaining from the savings generated.[70] Patient Care Medical Homes also required start-up funding. For example, participation in a state-funded inter-practice collaborative to improve quality helped 20 medical practices implement a PCMH approach internally.[71] ‘Technical support’ (character unstated) was also required.[71] Conversely, another study[69] noted as unusual that the ‘CareFirst’ PCMH project did not require ‘up-front investment’. When that investment has to come from the participating

provider organisations themselves, smaller organisations are at a disadvantage.[69] To address that obstacle, ACO Investment Model (AIM) programme provided initial investment capital and variable monthly payments to ACO participants in rural and underserved areas who might not otherwise have access to the capital needed for successful ACO formation and operation. Centers for Medicare and Medicaid Services (CMMS) also contracted 32 organizations under a special 'Pioneer ACOs' demonstration project.

Where (as in the US, and in theory the UK) statute guarantees patients a choice of provider, it will be difficult to steer patients to particular providers, weakening the evolutionary pressures towards MCP-like 'integration'.

We found no direct evidence about maximum or minimum viable size of an MCP, economies of scale or scope, or the demographic or social character of places where it might be easier or harder to establish MCPs. However MCP-like networks appear harder to establish in rural areas, where general practices are small and isolated [67] and where providers cannot contribute to MCP start-up costs.

6.1.3 Causal Link 1:7 - If NHS managers establish MCPs then planned referral networks develop

As for referral networks specifically, our evidence suggested that some MCP-like networks do indeed develop referral network planning at organisational and/or inter-organisation level. Physician practices which participate in ACOs are more likely to use more care management processes than non-participating practices. One study describes a PCMH which negotiated 50 'compacts' (agreed procedures for referring patients between providers) with specialist providers whilst other nearby PCMHs negotiated few or none, but does not report any contexts explaining why these differences arose.[67] Furthermore the PCMH is designed to coordinate patient care mainly within a primary care team (*within* a general practice, in NHS terms) rather than across care teams..[67] A limitation to establishing referral networks is that many ACOs do not formally cover postacute care (the function of CHS in England). 87% of the ACOs that did cover post-acute care included a hospital (compared to 41 percent of ACOs without postacute care). Community health centres were also more likely to be integrated into ACOs that included postacute care (58% vs. 49%).[72] Small, isolated rural practices were less likely to establish care compacts.[67]

All this, however, does not resolve whether prior collaboration favours the initial formation of an MCP-like organisation or network; or whether stronger referral networks result from forming such an organisation or network; or, in a virtuous circle, both. Whilst it gives proof-of-concept that it is feasible, the evidence of ACOs also suggests that 'horizontal' PHC networks do not automatically develop inter-organisational referral networks, in particular between GPs and CHS (or the local equivalents). This suggests that further specific contexts are required, as yet unidentified in the published research.

6.2 Inter-organisational Network Management

The next two causal links in the initial programme theory that we evaluated were those in which component 2 (network management) was the mechanism; if-then statements 2:3 and 2:6 (Table 3).

Table 3: Causal links for which network management is the mechanism

MCP Component (1-13) IF	**MCP Component (1-13) THEN**	**IPT Causal Link**
2: Network management develops	3: MDTs will develop	2:3
	6: Care coordination through IT use will develop	2:6

6.2.1 Causal Link 2:3 - If network management develops then MDTs will develop

The studies also reported many instances of MCP-like networks setting up multi-disciplinary teams (MDT). One aim of the Utah Mental Health Integration (MHI) programme was to orient patients towards support by a multidisciplinary team (general physician, care manager, psychiatrist, psychologist) in ambulatory care, or hospital for the most severe cases. The Versailles geriatrics network brought multidisiciplinary expertise together at the local information and coordination centres (CLIC), homes for the autonomy and integration of Alzheimers' patients (Maisons pour l'Autonomie et l'Intégration des malades d'Alzheimer: MAIA), and the mobile geriatrics teams (EMG), which worked with local hospitals and doctors to avoid hospitalisation. In general, MDTs require clear boundaries, to be collectively accountable for patient care, to be highly inter-dependent, and a stable membership.

MDT varied in their occupational membership and therefore what services they could provide without external referral. The studies reported MDTs which included:

1. CHS but not doctors. Buurtzoorg nurses worked with community volunteers, social workers, physiotherapists, occupational therapists and community psychiatric nurses.[19] but although Buurtzorg 'promote combining functions between our neighborhood care teams and physicians. … [so] the physician has more influence on the way in which care is delivered at home' their MDTs do not usually include doctors.
2. Doctors but not CHS, as in a large minority of American ACOs (see above).
3. Both doctors and CHS. Swedish and Finnish polyclinics, some primary care providers in Spain, and Italian Unità Sanitarie Locali (USL) employ doctors, nurses and therapists together within a single organisation. Some NHS Integrated Care pilots relied heavily on MDTs, although the 'virtual ward' involved hospital doctors rather than GPs. A survey of ACO-employed social workers found that 65% worked with primary care physicians, 55% with specialty physicians, 74% with nurses or nurse practitioners, and 31% with psychologists. 48% had a nurse or nurse practitioner as their immediate supervisor, 25% having a social worker and 4% a manager (4%). One US variant was a 'physician-led' team such as the 'perioperative surgical home' (PSH) whose activities included patient 'rehabilitation' before surgery, and transitions to home or post-acute care designed to reduce complications and readmissions.
4. Mental health services. Lewis and colleagues[54] describe the addition of mental health-workers (e.g. social worker, psychiatrist) to existing primary care teams, so that care management remains with just one provider.
5. The patient and/or informal carer(s).

Some MDTs were 'virtual' i.e. coordinated by teleconference, videoconferences or other HIT systems. Between them, the studies we found reported MDTs based (moving from 'virtual' to 'real') on :

1. The consulting model, in which one clinician consulted another without actually referring (i.e. temporarily transferring) the patient. In some ACOs the role of consulting mental health specialists included coaching primary care providers in the use of psychiatric medications, assisting with diagnoses, and [then] making appropriate referrals to specialized mental health care services.[54] In the Mount Druitt project (Australia) consultations also included 'more informal exchanges of information'[3].
2. A dispersed, partly remote team linked by IT. Thus a paediatrics MDTs in five English CCGs involved members (including GPs) by teleconference.

3. Co-location, e.g. of mental with physical care clinicians.[54;]
4. 'Embedding' of (e.g.) mental healthcare clinicians within primary care teams.[54] in effect seconding staff from one organisation another.
5. 'Huddles' i.e. informal, ad-hoc but frequent (e.g. daily) staff meetings, reported in 73% of practices in a survey of 40 small primary care practices in Texas [78]
6. Formally structured cross-organisational teams.
7. Staff all employed by the same organisation.

Care coordination and communication sometimes required MDTs to adapt health professionals' traditional roles.

6.2.2 Causal Link 2:3 - Contexts

Barriers to including pharmacists in MDTs in PHC medical practices in Vermont were the pharmacists being employed by a separate organization, with pharmacists and physicians being unfamiliar with each other's scope of practice and roles. Different patients might also have different but often overlapping provider networks, and these overlaps offered the greatest scope for strengthening care coordination.

Most papers described what care coordination activities MCP-like inter-organisational networks undertook rather than how these coordination arrangements were created or (in the realist sense) their contexts. Many of these arrangements were reported in just one study, but where there were several reports they were mutually consistent.

6.2.3 Causal Link 2:6 - If network management develops then care coordination supported by HIT will develop

We found substantial evidence of inter-organisational care networks establishing structures and work processes to coordinate care across multiple provider organisations, so that clinicians and organisations adapted their work routines and practices to network standards, shared information, created 'boundary objects' such as care plans, and standardised organisations' and clinicians' roles, and care pathways, across organisations.

Six of the 13 sites in Alidina's study reported that implementing coordination mechanisms

increased communication and trust. Such routines included primary care doctors 'feeding back' to specialists.[67] 'Care compacts' assisted communication, decision and negotiation between organisations and improved care access and quality.[67] A survey of rural pioneer ACOs found that managing care across the continuum and meeting quality standards were what the respondents most frequently reported as 'very important' to the ACO's success.[67] Initially, maintaining good relationships between the member-organisations was important for ACO success, pending the development of more standardised and contractual relationships.[67] Some Ontario Local Health Integration Networks (LHIN) pooled resources across partners and standardised structures and processes related to governance, accountability and administrative functions in an attempt to avoid duplication and waste. Several respondents in those networks suggested that the type of lead organization mattered less than that organization's reputation, existing relationships and partnerships and leadership style, e.g. having a positive image in the community and among providers; a track record of innovating and following through on commitments; and for tolerating change, risk and ambiguity. The Kinzigtal network (Germany) jointly developed care pathways across providers and synchronized hospitals' and ambulatory care providers' formularies across all care sectors. In the Netherlands, care standards with a modular structure (general and disease-specific elements) were jointly negotiated among providers, an arrangement which routinised collaboration among doctors·63 The HealthOne Mount Druitt project (Australia) used case conferences to coordinate services at patient level, in particular with non-healthcare services such as social care.[6]

Assuming that standardised care pathways and quality standards do indeed define the character of patient needs more clearly, the above studies tend to support the policy assumption that MCP-like networks will lead to clearer definitions of patient needs, and promote evidence-based targets for managing long-term conditions.

6.2.4 Causal Link 2:6 - Care Coordinators

The studies we found neither used the term 'care navigator' nor described similar advocates or helpers for individual patients. Instead many of them reported how MCP-like networks had used care coordinators. One way was by creating dedicated care coordinator positions.[67] Nurses working as care coordinators were reported in Texas and Colorado Community

healthworkers recruited from the local population were used (in Texas) to help bridge gaps between patients and organisations, and between organisations, to enable PHC teams to connect patients with resources that patients need. In New York social workers were 'embedded' in primary care practices (PCP) and included in all practice based meetings and other aspects of patient care. ACO quality metrics meetings were critical to developing working relationships with PCPs and other members of the care team, and with care coordination staff in other programmes. The HealthOne Mount Druitt project (Australia) also recruited general practitioner liaison nurses for coordinating services in ways that the GPs could not through lack of time or knowledge of the services available (e.g. home care, counselling, other allied health services). These nurses managed communications, case conferencing, case management, and overall care coordination, and allocated the case management of individual patients to the most appropriate person in the multidisciplinary team.

The foregoing evidence corroborates the policy assumption that primary care provider networks are capable of coordinating inputs across multiple services. Contrary to UK policy assumptions, Alidina et al concluded that the above changes did *not* require culture changes or payment reform,[67] but Wholey argued (corroborating UK policy assumptions) that they do require large numbers of clients so as to allow economies of scale.

6.2.5 *CAUSAL LINK 2:6 - CONTRACTS*

Nevertheless, several health systems have attempted to use contractual mechanisms to strength care coordination between separate providers. The Kinzigtal network (Germany) coordinating body made contracts with the two main social health insurers involved (AOK, Landwirtschaftliche Krankenkasse (LKK)), and with over 100 local providers to implement various programmes for individual treatment plans, patient self-management, follow-up care, and case management. Two complications are the 'hangover' of existing contracts and technical difficulties of contract monitoring. In the American ACOs, providers' decisions whether to pursue integrated models depended powerfully on the design of the ACO payment model (implying, at one remove, patients' insurance status), details of contracts, and the quality measures used in contracts. Contract design appeared to influence the extent to which ACOs integrated mental care.[54] In practice, the English NHS has so far had little success in Commissioning through Outcomes-based Incentivised Contracts (COBIC) for these purposes

because of the difficulty in specifying and measuring the relevant outcomes, and then in knowing whether to attribute any changes to the providers, care coordination or extraneous confounding factors.

Inter-organisational coordination mechanisms are especially required when patients have highly complex health problems and providers have low knowledge about the patient's condition.[67] as often applies to patients with long-term conditions. In combination with other (unspecified) enabling 'changes' within the Local Health District and the wider New South Wales health sector, the HealthOne Mount Druitt network began delivering services through two main streams: chronic aged and complex care; and child and family.

6.2.6 Causal Link 2:6 - Network Membership

A limiting factor is what organisations, hence services, a network contains. In the studies we found, MCP-like primary care networks varied in whether they included:

1. Mental health services. In 2014, 42% of ACOs included mental healthcare providers. ACOs with 'a comprehensive, chronic care management program' were more likely others also to have integrated mental and physical care.[54] In Utah, MHI's coordinating approach allowed it replace the traditional model of partitioned-off, sectorised psychiatry with a coordinated combination of ambulatory care, specialist secondary, and first-recourse care; which in turn allowed territory-wide, whole-population planning of its services (reducing 'medical deserts'), organising support networks to promote preventive care, and developing ambulatory services which linked hospital, medico-social work and social care. Lewis.[54] describes two main approaches to overcoming the traditional separation of primary and mental health care:
   a) expanding primary care to cover mental health conditions (9/16 PCMHs in that study)
   b) integrating primary care providers into existing mental health programs (2/16 PCMHs).

2. Childrens' services: For the NHS, Woodman and colleagues report four ways of bringing paediatric expertise into primary care and/or improving joint working:
   a) telephone-based multidisciplinary teams;

b) hospital at home;

c) outreach clinics;

d) paediatrician advice and guidance to GPs.

These initiatives work by promoting shared responsibility; upskilling GPs; establishing relationships between paediatricians and primary healthcare professionals; and by taking specialist care to the patient.

3. Community health services (or the equivalent). 48% of ACOs in Colla and colleagues'[72] study did not include postacute care. Those were more likely to be physician-led. ACOs that did include post-acute care were more likely to have programmes to reduce preventable hospital admissions and for end-of-life care.[72]

4. 'Safety-net' services. A substantial number of ACOs included community health centres. A greater proportion of those ACOs with a centre reported experience with public reporting, of having patient-centered medical homes, and holding other risk-bearing contracts. ACOs that included at least one federally qualified health centre among their participating provider groups were more likely to report complete integration of services and to offer less common services such as health coaches and case managers.[54]

5. Primary medical care. The studies mentioning general practice engagement in MCP-like networks reported that GPs (or the equivalent) valued the access to additional resources which such networks gave. Versailles doctors (including GPs) participating in a geriatrics network reported being satisfied with the way it provided expert advice and access to hospital-like support for patients at home. Similarly physicians within integrated health systems in Texas and Colorado frequently discussed the value for care coordination purposes of resources shared across sites, such as nurse care coordinators, nurses providing advice during and after office hours, enhanced access through expanded office hours, electronic communication, 'virtual visits' (to patients), access to hospital records, referral tracking, physical workspaces organized to facilitate team-based care, and access to nonphysician providers (e.g. dieticians, psychologists).[54] Yet it was not always easy for GPs to participate in network activities. In the Versailles study, a third of doctors did not wish to participate in network meetings at patients' homes, judging them too time-consuming. These studies

did not directly report whether MCP-like networks reduced general practice overload. Indeed the Versailles study implies the opposite. They tend to corroborate the assumption that smaller general practices find it difficult to contribute to networked care coordination activities. We found no studies reporting whether the creation of MCP-like networks leads to improved infrastructure management in primary/community care.

A network's membership constrains that of the MDTs within it.

6.2.7 Causal Link 2:6 - HIT adoption

A shared patient record promotes informational connectivity,[67] and by implication informational continuity of care.[82-85] We found recurrent accounts of primary care networks attempting to increase staff access information needed for making referral decisions. The Kinzigtal network introduced common electronic health records across all care sectors. Initially, however, many American ACOs did not uniformly have developed, inter-operable IT systems.[67] Assuming that shared information will help networks and providers define the character and scale of patient needs more clearly, these studies tend to support the policy assumption that MCP-like networks will lead to clearer definitions of patient needs. Although we found no counter-examples, these studies also indicated that such information-sharing is not easily achieved.

6.2.8 Causal Link 2:6 - Contexts

Just as prior collaboration assisted the formation of MCP-like networks, so it facilitated network management. In the 13 ACOs that Alidina and colleagues.[67] studied, more complex coordination (i.e. communication, decision and negotiation) mechanisms complemented, not replaced, existing ones.[67] Conversely lack of trust was an initial challenge in setting up the Mount Druitt network[61] (Australia). Irrespective of their profession, uniform training for care coordination staff in New York (covering ('Basics', Practice, Psychosocial Domains, Disease Conditions, and Medical Services) helped ensure a consistent approach to care coordination.[76] A study of primary care practices in Colorado and Texas found that the use of practice facilitators to visit primary care physicians was significantly correlated with the use of sustained chronic care management strategies. Despite external facilitation, it remained

difficult for the smaller primary care practices to implement the Chronic Care Model (CCM).[58] In using contracts to coordinate care, pre-existing carve-outs where a commercial payer had already contracted mental health care to a separate provider practically excluded those services from an ACO in the short term.[54]

Case-mix was another important context. High patient complexity and low knowledge about the patient's condition is the situation which, Alidina and colleagues' study suggests, most requires 'boundary spanners' for enabling reciprocal coordination between providers.[67]

In New York, preparation for sharing medical records across providers involved extensive training, work-group activity, and software development (for reconciling the different primary care practices' discrepant EHR systems). In Virginia, the obstacles appeared to include lack of internet access and computer literacy among the target populations. Even in the Netherlands where internet usage is extremely high, patients showed lack of awareness and motivation to hold their own health records, and there were usability problems in the systems for accessing them. There have been similar experiments in Sweden, with mixed success.

6.3 Multi-Disciplinary Teams (MDTs)

The next causal links in the initial programme theory are that MDTs are a mechanism for bringing about components 7 (planned referral networks) and 9 (preventive health care). In this section we first discuss the evidence found in our review in relation to these two causal links (Table 4), and then describe evidence found in this review for additional causal links in which MDTs are the mechanism that were *not* in initial programme theory (Table 5).

Table 4: Causal links for which MDTs are the mechanism

MCP Component (1-13) **IF**	**MCP Component (1-13)** **THEN**	**IPT Causal Link**
3: MDTs are established	7: Planned referral networks will develop	3:7
	9: Preventive health care will develop	3:9

The research studies we found provide evidence about the causal links 3:7 (MDTs produce planned referral networks and 3:9 (MDTs improve preventive health care). As additional mechanisms to those in the initial programme theory, we also found secondary evidence that MDTs also promote stronger demand management systems, care planning at the patient level, diversion of patients from hospital to primary care and improved patient experience and outcomes. There is also limited evidence suggesting that MDTs support culture change and voluntary sector involvement; and enhance informational continuity of care. A mechanism for many of the above is the development of new or expanded boundary-spanning roles, which expose people working in more traditional roles to new ways of working and encourage engagement, trust, and respect for what these new roles (and the corresponding professions) can achieve.

6.3.1 Causal Link 3:7 - Multi-disciplinary team working produces planned referral networks

MDT working produces care network planning at whole-organisational and at inter-organisational levels by facilitating co-support and decision-making across disciplinary boundaries. These are enabled by:

1. The development of new or expanded boundary-spanning roles that enable fuller formal and informal communication across the MDT, and joint support for decision-making across disciplinary boundaries.
2. Inclusion of colleagues from a range of disciplines and inter-professional relationship building.
3. Addressing barriers (e.g. traditional hierarchies, lack of role clarity, divergent expectations) to awareness and understanding of the knowledge, training, and benefit of working in an interprofessional way when dealing with complex, multi-morbid patients.

Contexts which facilitate this mechanism are reported to be: managerial recognition and support of MDT working; and cultivating trust in place of resistance towards other professions.

6.3.2 *CAUSAL LINK 3:7 - CO-SUPPORT AND DECISION-MAKING*

Qualitative (5) and mixed methods (1) studies in the US (5) and the UK (1) show that in addition to promoting care planning for individual patients (see below) exposure to multi-disciplinary working (through for example, 'embedding' (seconding) or co-locating staff) creates more opportunities for different professions to improve understanding of each other's treatment approach.[88] It also shifts providers' expectations for communication and increases their awareness of the importance and benefits of involving other primary care providers in complex cases, upskills primary care providers and promotes shared responsibility. A narrative case study of mental health integration in a chronic care model showed that this co-support across disciplinary boundaries helps members of each profession not to feel alone in the face of complex multi-morbidity issues about which they are not specialists and to make shared decisions on complex problems.

6.3.3 *CAUSAL LINK 3:7 - BOUNDARY-SPANNING ROLES*

Many studies about how MDTs surmount organisational barriers described new or expanded boundary-spanning roles as a key mechanism. These boundary-spanning roles improved coordination and integration of services through improving communication (formal and informal) between the various other care providers, through coordinating multiple services, addressing psychosocial as well as physical health issues, providing the conduit for GPs, community health, and other health and social care providers to work together more closely. They also provided support for clinical and administrative staff.[88] MDTs are also part of the health care delivery system redesign and connection to the community care resources involved in the chronic care model. A study of focus groups with 387 people from ten USA communities suggested that having non-medical staff in boundary-spanning roles helped coordinate patients' care and address barriers to it. Patients appreciated having individual care plans with a holistic orientation, including a personal physician providing access to continuous comprehensive care; reported similar findings.

Whilst MDT members might see these roles as the 'glue' holding care coordination and care teams together, interviews with 25 clinical pharmacists and 17 primary care clinicians found that traditional status hierarchies could be a barrier to effective collaboration and communication in PCMHs where there were new roles for some or all professionals. An online focus group of people self-identifying as care coordinators in PCMHs described

primary care doctors as the biggest such barrier. The MDT had to win them over by strong self-promotion if these resistant doctors were to become a resource to the rest of the team.[88] This focus group also indicated the importance of boundary-spanners being embedded within a primary medical care practice.[88] Interviews and a survey of people in different MDT roles in the PCMH (US) found that the benefit of these new roles was maximised where there were loosely specified implementation protocols and a vision of the roles' full potential. Similarly, policy- and decision-makers in a chronic aged and complex care network suggested that boundary-spanners need to have the seniority and expertise to be leaders who earn and maintain the respect of the MDT by initiating culture change, and to have sufficient flexibility in their role to work with GPs to support and add value to the care they provide.

6.3.4 Causal Link 3:7 - Role clarity and expectations

MDTs often involve team members taking on new roles. This creates the potential for lack of clarity about roles and expectations between MDT members and thus strained relationships across disciplinary boundaries. In a case study Matiz and colleagues observed that responding to PCMH team members' concerns and clarifying roles by educating teams about each profession's strengths and limitations proved essential to integrating the MDT. Interviews with primary care providers and clinical pharmacists in PCMHs showed that despite frustrations between professionals with different opinions about new roles within PCMHs, being exposed to an accepting the other professions' reasoning improved understanding, respect and communication.

6.3.5 Causal Link 3:7 - Relationship building

Most of the barriers and facilitators to care coordination at the organisational level identified in an online focus group of self-identified care coordinators in PCMHs by Friedman and colleagues88 related directly to relationship building in MDTs, which was facilitated by boundary-spanning roles, enhanced communication (e.g. on-site mental health services), electronic health records that interfaced well with outside organisations, and training in motivational interviewing.[88] Interviews and a survey with mental and primary care staff in PCMHs showed that mutual familiarity across disciplines through the use of a staff directory (with picture and contact information for each clinician), cross-disciplinary training and a listserv for ongoing, informal, patient non-specific consultation all improved inter-

professional relationships. A focus group of seventeen primary care clinicians from different 'integrated' care models in the US showed the importance of staff perceptions and knowledge about the training of other disciplines. At first most doctors seemed reluctant to consider pharmacists as providing patient care but reviewing their training and knowledge led some physicians to value pharmacists' contribution to patient care.

6.3.6 Causal Link 3:7 - inclusion of new roles in MDTs

Structured team communication in the PCMH in the US facilitated the inclusion of the new members as part of the MDT and improved recognition of other MDT members' value. Two studies of the US PCMH model found that facilitators of improved communication are clearly defined expectations with agreed time frames for written updates, judicious use of HIT, electronic information exchange that met confidentiality requirements, jointly determining key information to be shared and frequency of updates, and using faxes for routine updates so as to reserve the use of phone calls for urgent matters and pre-planned consultations. Faxable forms worked better if they were concise, easy-to-use, included the desired data and clinical impressions, used tick-boxes to document information and contained a pre-agreed expected minimum level of information to be shared by each discipline. Clinical pharmacists and primary care providers in the PCMH described how delays due to communicating back and forth electronically, the absence of real-time (or face-to-face) explanations, and diverging inferences about each other's intentions could impede communication within the team

6.3.7 Causal Link 3:7 – Contexts

Contexts facilitating operation of the above mechanisms included: management, skills development, and professional attitudes. One was for managers to encourage mutual support between staff of different professions. Interviews with twelve participants in American PCMHs found that giving clinic administrators protected time for interdisciplinary meetings or consultation and allowing for warm handoff in clinicians' schedules facilitated inter-disciplinary working. A qualitative study of US integrated care models found that those which were successful on at least one of clinical outcomes, satisfaction, and spending, managers had found successful boundary-spanners and facilitated their relationship with other staff (clinical and non-clinical). Conversely, lack of understanding of the integrated care model and the

roles of other professionals within it prevented MDTs surmounting organisational barriers. Training programs can increase such understanding and address the scope of practice for each profession, liability, and confidentiality issues. Interviews with people in 'successful' integrated care models in the US suggested that people in boundary-spanning roles need to be able to be assertive when necessary, to understand practice culture in its setting, and maintain good relationships with everyone caring for the patient. Clinicians needed to be aware of their own limits of expertise and of the skills and limits of each professional, and to consult and refer when a clinical problem was beyond their scope. A mixed methods study of eighteen complex care management organisations in the US found that educating providers about the roles and responsibilities of care managers and providing complementary services that fill patient care gaps helped generate trust and support within MDTs.

There was a fragile balance between resistance to including new disciplines (e.g. pharmacists) as MDT members and acknowledging the need for them. In one study, some doctors expressed concerns about having pharmacists challenge their prescribing decisions directly or overstepping their professional boundaries, whilst others valued having pharmacists work with them as team members and saw them as a critical piece of a patient-centred medical team. Single-handed doctors, doctors not affiliated to physician networks, or those who had never worked with clinically trained pharmacists in primary care had more difficulty envisioning collaborations with pharmacists that did doctors in group practices or a hospital-physician network, who had previous working experience with clinical pharmacists. In general, the studies we found suggested that it was necessary to work around or weaken defensive professional perceptions of other professionals; and around doctors' and patients' resistance to boundary-spanners cultivating cross-professional and cross-organisational relationships.[88]

6.3.8 Causal Link 3:9 – MDTs produce health planning and better preventive care

A narrative case study of an integrated mental health service in the USA found that MDTs allow better territorial planning of health as a whole regarding:

1. the health needs of the whole population;
2. reducing 'medical deserts' and;
3. organising support networks which promote preventive and ambulatory care offering medico-social work, social care and at need hospital care.

Coleman and Phillips created a ‘teamness’ index based on whether non-physicians shared responsibility for managing and coordinating care. Practices that scored high in ‘teamness’ were more likely than low-scoring practices to report well-functioning processes to support communication and access to care, and to connect chronically ill patients to self-management programs. Hong’s mixed methods study of eighteen American complex care management organisations found that care coordinators negotiating a care plan that reflected the individual patient’s, and their family’s, priorities and preferences facilitated various actions including identifying patients’ behavioural health and social service needs, and using motivational interviewing to encourage patient activation and self-management.

A Canadian survey of adult patients and administrators found that MDT working produced better preventive care through better First Contact Accessibility (FCA) and Accessibility-Accommodation (AA) which increased equity of access to such services. AA was the way primary health care resources were organised to accommodate a wide range of patients’ abilities to contact health care clinicians and reach health care services. FCA was the ease with which a person could obtain needed care (including advice and support) from the practitioner of choice within a time frame appropriate to the urgency of the problem. Carroll and colleagues found that FCA was better in clinics with 10 or fewer doctors; a nurse; telephone access 24 hours a day 7 days a week and evening walk-in services.

Further US studies corroborated that integrating community and/or mental health professionals into MDTs improved preventive care. Matiz and colleagues found that doing so made care delivery more comprehensive and identified high-risk populations for care coordination. Such organisations had decreased emergency department utilisation and hospitalisations for asthma resulting in overall improved outcomes. Briot and colleagues found that mental health professional integration offered good quality ambulatory care to more patients at a lower cost, and better managed complex family health problems than traditional forms of organisation did. Similarly, in a descriptive quantitative study including pharmacists in PCMHs allowed screening of diabetes and hypertension patients, care reviews, inclusion/exclusion decisions and provision of preventive pharmaceuticals.

6.3.9 CAUSAL LINK 3:9 - PATIENT ENGAGEMENT, PATIENT SELF-CARE, ACTIVATION, AND EMPOWERMENT

Evidence from two qualitative studies of PCMHs[88; ;89] suggested that mechanisms by which MDTs improved patient engagement were care coordinator roles and capitalising on the primary care relationship. An online focus group of care coordinators in PCMHs reported improving engagement of patients by using motivational interviewing, being patient but persistent, keeping promises, listening carefully, using humour, sharing personal anecdotes, and earning trust with small gestures so larger problems could be tackled later.[88] In interviews with medical and mental health clinicians (5 and 7 respectively) in PCMHs, Rajala and colleagues[89] found that capitalising on a patient's relationship with their primary care office to connect them with mental health services was one of the largest factors in increasing patient engagement and access to mental health care.[89] By making their healthcare more co-productive, a US learning network (ImproveCareNow) of patients and healthworkers increased remission rates from 60% to 79%. for children and adolescents with irritable bowel disease.[101]

Six qualitative studies (four of PCMHs,; 88; ; one of mental health services in USA, and one of a geriatric network in France) evidenced how MDT working produced patient self-care, activation and empowerment through social prescribing, integrating community and mental health in to primary care teams, and better informed physicians.

Social prescribing appeared to be more acceptable to patients than other prescriptions in the retrospective observational study of the EPSILON geriatric network in Versailles, with compliance rates of 72% for medical prescriptions, 74% for paramedical prescriptions and 100% for social prescribing. Focus groups with 387 people from ten US communities found that patients appreciated PCMH models which included access to education, social, and support resources (e.g. nutritionists, smoking cessation classes, exercise and fitness programs, weight loss classes, meditation, counselling services, religious groups, peer-support groups) to help patients manage their care better.

Four qualitative studies in the US also provided some evidence that integrating community and mental health workers into primary care teams produces better patient self-care, activation and empowerment. For mental health services Briot and colleagues found that integrating mental health professionals in to the MDT promoted families' capacity to mobilise themselves if a family member was in distress. A case study found that integrating community

health workers into PCMHs is a means of providing support and education to hundreds of patients. Also in the USA Collinsworth and colleagues found that these workers improved patient knowledge and activation levels, primary care providers' ability to identify and address specific patient needs, and improve patient outcomes. Preventive care improved if an MCP-like model of primary care enabled community health workers to undertake disease/illness education, nutritional counselling, patient follow-up; to e identify patient barriers to care or self-care, patient activation, social and self-management support (e.g. for diabetes control); to link patients to community resources, and to coordinate care. These boundary-spanning roles directly facilitated patient activation through trust, cultural understanding, common language, manageable goals, and a team approach and availability. They did so indirectly by making primary care clinicians more informed about patient goals and barriers and preparing patients more for meeting primary care clinicians. Another study corroborated that MDTs improved patient confidence through making doctors better informed. In interviews with people working in PCMHs Grace and colleagues found that routine structured communication facilitated continuity of care and improved coordination among team members, which made physicians better informed on the status of shared patients. Well-informed physicians communicated more effectively with patients and increased patient confidence, trust, and satisfaction.

6.3.10 Causal Link 3:9 - Contexts for patient engagement through MDTs

Studies showed that patients' own responses were a context determining whether MDTs succeed in promoting preventive care. At times the expectation of greater involvement in their care could be a barrier to patient engagement and create discomfort for them. Friedman and colleagues'88 online focus group of care coordinators highlighted patients' lack of trust, insufficient understanding of the care coordinator's role, and inability to take responsibility for self-management of chronic conditions as barriers to improving patient self-care, activation and empowerment. Some patients who agreed to work with care coordinators continued to call multiple people in the clinic and attend the emergency department for needs best treated in the clinic. They 'technically have a [care coordinator] but they continue to have fragmented care'.[88] Patients could feel scared to express their views in front of a MDT, and when asked might interpret this as an admission from the MDT that they don't know what they are doing: 'it's tricky, you know – [clinician] was trying to be patient-centred, but [patient] didn't have a context for it'.[7] When Rajala and colleagues interviewed five medical

and seven mental health clinicians in PCMHs they found that patients were often surprised when a mental health provider was invited into their appointment, but typically came to appreciate it, for instance when mental health clinicians were introduced in terms of how they could help treat the patient's particular symptoms. However, some patients experienced integrated care as a loss of control over their information.

Our review also discovered evidence for additional causal links (Table 5) to those in the initial programme theory in which MDTs are the mechanism to create change in other MCP components.

Table 5: Causal links not in the initial programme theory, for which MDTs are the mechanism

MCP Component (1-13) **IF**	**MCP Component (1-13)** **THEN**	**IPT Causal Link**
3 MDTs are established	4 Culture changes occur in the participating organisations	3:4
	5 Voluntary sector becomes involved in MCPs	3:5
	6 Care coordination through IT use will develop	3:6
	8 Demand management systems will develop	3:8
	10 Care planning for individual patients will become more prevalent and systematic	3:10
	11 More patients will be diverted from in-patient to primary care services	3:11
	12 Patient experience will improve	3:12

6.3.11 Causal Link 3:4 – MDT working produces culture change in the health system

One Australian study concluded that MDT working has the potential to change the culture of the healthcare system. This qualitative study of a chronic aged and complex care service model found that the creation or expansion of roles to work across traditional boundaries between other members of the primary care team instigated or enabled system-wide culture change through improving communication (formal and informal) between the various care providers.[61]

6.3.12 Causal Link 3:5 – MDT supports voluntary involvement

Just one study suggested that MDTs encourage family and carer support for patient care. In five instances of MDT initiatives in the UK, enhanced access strategies of telephone MDT, Hospital at Home, and Advice and Guidance services produced better patient experience and less inconvenience and disruption for patients and families, and extra skills and confidence to look after their unwell child without professional support.

6.3.13 Causal Link 3:6 – MDT working produces informational continuity of care

One quantitative descriptive research study of pharmacist recommendations and physician responses related to 954 complex patients in a PCMH found that MDT working produced better use of electronic health records (EHR) and electronic communication. However for remote electronic communication to be successful, face-to-face contact was also needed to build the relationships required.

6.3.14 Causal Link 3:8 - MDTs produce better demand management systems

Three case studies in the UK and the US,[12] provided evidence that MDTs could strengthen demand management systems and redistribute workload pressures across the care system. A multiple case study of five NHS vertical integration projects for paediatric/young persons' services found that MDT working produced better gate-keeping and need- and/or risk-stratification. GPs with access to advice and guidance from a consultant developed specialist expertise and could manage more complex cases without referring to secondary care, so easing the workload there. A study of the American VHA found that nurse visits in primary care were associated with a decreased risk of all-cause hospitalisation for veterans older than 65.[102] Briot and colleagues' case study of mental health integration in Utah[65] found evidence that MDT working redistributed workloads. When consultations were multi-disciplinary, health professionals jointly put into effect care strategies individualised and coordinated (through a case manager) for the user and her family, using the family's own health and social networks. That gave users good overall care by a better team at lower cost, reduced GP workload and freed specialists to support more severe cases.[65]

6.3.16 Causal Link 3:10 - MDTs produce care planning at the patient level

Eleven studies suggested that MDT working facilitated care planning at the patient level through the operation of boundary-spanning roles and giving greater access to enhanced primary care.

6.3.17 Causal Link 3:10 - Care Planning and Boundary-spanning

Nine studies provided further evidence that boundary-spanning roles facilitated many forms of care 'integration'. These roles may be filled by care coordinators, nurse practitioners, community health workers and many other occupations. These roles increased awareness and use of care plans in the MDT, organising access to types of care that patients need and desire.[65,76,81,91,92] Alidina and colleagues[67] found that high performing PCMHs typically had at least one dedicated care coordinator position. Lower performing PCMHs typically had none (care coordination responsibilities were shared between staff).

Several studies reported how MDT members in boundary-spanning roles helped coordinate the MDT to effect individualised care strategies coordinated around the patient and her family, make use of a health and social network to provide education for patients and their families, and put their counsellors at their disposal, providing the patient with good overall care, at the right moment, by a better team, at lower cost. Briot and colleagues describe this in mental health services in Utah. For physical health similarly; boundary-spanning MDT members (e.g. embedded community health workers) with close contact with patients found what barriers to treatment patients faced, and communicated these barriers to other MDT members who could then work with patients to overcome them[,,,67] and increase the use of care plans (from less than 5% to 39%). Although the GPs in a study in Australia did not have time or resources to deal with psycho-social aspects of patients' health, the general practice liaison nurses were able to arrange case conferences between all necessary professionals and develop care plans for patients. A case study of Buurtzoorg found that by working in this way a MDT was able to deliver more person-centred care by allowing staff to organise care that made sense to them and the patient, which made them feel able to deliver good quality, holistic care and allowed the MDT to organise itself so as to achieve the best possible outcomes for patients.[19]

In the Mount Druitt project (Australia) McNab and colleagues found that primary care providers appreciated the familiar face and voice of the boundary-spanner, with whom they felt they could over time build an ongoing relationship of mutual trust. The boundary-spanners' local knowledge of services and time to liaise with them benefitted the GPs because it allowed more efficient and effective liaison than they could themselves provide and made a huge difference to service provision and support for chronically ill patients. Many primary care professionals in a US study acknowledged spending more time coordinating care for patients before these roles were implemented, and saw the time savings as allowing them to communicate more effectively with patients.

6.3.18 Causal Link 3:10 - MDT working gives patients access to a wider range of primary care services

In their case studies of five integrated care initiatives, Woodman and colleagues described how enhanced access strategies used by MDTs improved patient care. If MDTs discussed complex cases at high risk of needing secondary care by phone each month, GPs became more motivated and confident to manage these patients, gaining skills and access to specialist support to do so that patients received higher quality care from their GP. MDT members better understood their colleagues and service thresholds, established professional relationships and shared norms. Families perceived and patients experienced a more 'joined up' healthcare service, trusted the care they received from the GP, felt motivated to seek help from primary care, became confident in managing their own chronic conditions, experienced fewer exacerbations of chronic illness, and experienced less inconvenience and disruption. In a qualitative study in Australia, people working in new boundary-spanning roles were found to make a broader range of services available to patients through case conferencing, care planning, liaison and information provision, and being a single point of contact for GPs to access all the other services and professionals in the community.

6.3.19 Causal Link 3:10 - Contexts for MDTs facilitating patient-level care planning

In the above studies, the most important context is case-mix. MDTs are particularly necessary for stimulating the use of individual care plans when patients have complex conditions about

which clinicians have a lower level of knowledge than for more common conditions and reciprocal coordination of treatments is necessary.[67]

Other contexts were similar to those facilitating MDTs in undertaking network-level care planning. One interview study of embedding community health workers in a CCM in the USA highlighted the importance of other team members' trust in care coordinators as a context supporting better care coordination, but also that it could take a year of working together to establish this trust. Primary care doctors said they gained trust in the community health workers as they recognised their many competencies and saw their positive impacts on patients. After recognising their value, these doctors sought to provide the community health workers embedded in a CCM with 'plenty of support' in addressing patients' clinical needs and helping them to deal with challenging situations. A qualitative study of five PCMH pilot sites found that primary care doctors did not always value the boundary-spanning roles. Some reported only ad-hoc meetings with the boundary spanners to discuss specific complex cases, ambiguity about the appropriate tasks to delegate to them, and indicated that more structured communication was needed. Another study provided evidence that trust in the sense of willingness to delegate work within the MDT was another aspect of this context.'When we first started putting care coordinators in the offices, we got pushback from the doctors that we were taking away some of the things they do. But after they got familiar with it and realised that these aren't things that you really need a medical degree for and it actually means that the minutes I'm in the room with the patient I can talk to the patient about their health, they were OK with it' (ACO interview).

Limited evidence from two studies in the US; suggested that training of staff working in MDTs and care coordination roles supported patient-centred care. Hong and colleagues described how 'successful' CCMs offered customized training, including didactic experiences, mentoring and shadowing. A uniform training and education platform for all new and existing care coordinators, irrespective of profession, was found in another large ACO to ensure a consistent approach to providing care coordination services to patients. Training, together with recruitment difficulties, the retention and cost of care coordinators were other barriers to MDTs' care coordination work.[67]

6.3.20 *Causal Link 3:11- MDTs divert patients from hospital to primary care*

Two systematic reviews[105] and one quantitative study[106] found that MDT working reduces hospital re-admission rates. Two of these studies described the importance of specialist involvement in the MDT, and two that of care coordinators. An umbrella review ((systematic review of systematic reviews) of case management found that the chronic care model, discharge management, complex interventions, patient self-management, and multidisciplinary teams - particularly when they focused on one specific health conditions (in particular heart failure and COPD) and included condition-specific specialists (medical, nursing, pharmacist) - together decreased emergency admissions. Half the systematic reviews quantified the reductions, giving figures ranging from 25% to 43% .

In a quantitative study of PACT PCMH implementation by the US Veterans' Health Administration Nelson and colleagues[106] found that greater continuity of care (i.e. all other providers all working with and communicating with patient's primary care provider) was associated with lower likelihood of hospitalisation and mortality. Nurse visits in primary care were associated with a decreased risk of all-cause hospitalisation for veterans older than 65.[106] As less direct evidence, a systematic review of RCTs of transitional care interventions that aimed to improve care transitions from hospital to home and to reduce hospital readmissions for chronically ill patients found that a home visit within three days, care coordination by a nurse, and communication between the hospital and the primary care provider were significantly associated with reduced short-term readmission rates.[105] Kinjo describes *zaitaku* primary care MDTs, as yet on a small scale, replacing hospital end-of-life care in Japan.

6.3.21 *Causal Link 3:11 - MDT working diverts patients from in-patient to primary care services*

Three studies found that where MDTs enabled the flexible mobilisation of a range of professional expertise, training and knowledge, including from community providers, care was more centred around the patient's goals and needs.[19] In an historical narrative case study of a programme for clinical integration of mental health specialists with community primary care medicine, Briot and colleagues found that the use of the MDT team members adapted according to the severity and complexity of the pathology in order to co-support in a scalable way. MDT care adapted flexibly to the service users' mental and physical health, family circumstances, medical and social co-morbidities, and fed into the provision of

specialised care. A similar example was Buurtzorg (the Netherlands), which used self-managed teams to produce and plan patient care, with teams of 8-12 nurses and nurse assistants covering a geographical patch that they themselves choose.[19] A mixed methods study of 11 purposively sampled ACOs in the US provided another example of how flexible mobilisation of community resources by an MDT supported patient-centred care and thus reduced demands on hospitals: A physician-led ACO network in the Northeast of the USA used an interdisciplinary care team to work with patients with complex needs. One was a patient 'who went 132 times in 12 months to the emergency department. She is ... in a wheelchair ... lives in a house with no ramp. She doesn't have much social support, doesn't have any food. A diabetic, out of control. She doesn't have a refrigerator for insulin. From one visit, we engaged our team of care management [who] . . . built her a ramp, donated a refrigerator, and hooked her up to an equivalent of Meals on Wheels so she has food, and arranged for transportation to get her to regular visits to her primary care physician. And in the past ten months . . . she's not been back [to the ER] one time'.[1]

6.3.22 *Causal Link 3:12 - MDT improves patient experience*

Our secondary evidence suggested that MDTs which included pharmacists, nurses, and community health workers can improve patient experience, outcomes and continuity of care. We found some evidence that MDT working improvds patient experience through boundary spanning roles (see above), enhanced access to primary care (see above), better communication between providers and thus more patient confidence, trust in, and satisfaction with care. Twenty eight patients and informal caregivers and twenty health care providers in community-based primary health care in Canada described MDTs as providing a holistic care experience to their patients.[108]

A virtual MDT (team members linked remotely by telephone or HIT) and hospital-at-home schemes produced better patient experience with less inconvenience and disruption for the patient and family receiving paediatric healthcare. In 'successful' US primary care–integrated complex care management (PC-CCM) programs, the MDTs' key role was to build trusting relationships between patients and families, and primary care providers and their staff. Routine structured communication in MDTs facilitated continuity of care and coordination so that the doctors were better informed on the patients' status and thus communicated more effectively with patients, which increased patients' confidence, trust, and satisfaction. In

another study, patients indicated that the boundary-spanners were able to bridge the gap between them and the doctors by talking to them on a level they understood, understanding cultural barriers, and patiently answering questions. Conversely, a sample of US patients said that a lack of boundary-spanning MDT members tended to leave patients lacking understanding about what was going on with their care, feeling left out of the dialogue and decision-making, and feeling vulnerable as a result of their uncertainty. In the Australian Mount Druitt project, boundary-spanner care coordinators made patients feeling more supported and less anxious and thus reduced hospital visits.

A re-analysis of administrative data in PCMHs and ACOs that involved pharmacists found that pharmacists identified 708 drug therapy problems through direct patient care (336/708; 47.5%), population-based strategies (276/708; 38.9%), and education (96/708; 13.6%). Pharmacists combining academic detailing with direct patient care and population-based medication management probably helped optimise patient outcomes. Woodman and colleagues found that UK nurses making home visits in a hospital at home team improved child safeguarding and heightened awareness and paediatric referral to all community nursing services. In two cases, informants reported that commissioners and providers had warned of potential harm to children. Similarly, in a study of PCMH implementation by the American VHA nurse visits in primary care were associated with greater continuity of care and lower mortality rates among a patient cohort[106] Interviews with Community Health Workers (CHWs), patients, and primary care providers in CCMs found that CHWs facilitate trust, communication, understanding of roles, and PCP support, leading to such patient outcomes as improved HbA1c control.

6.4 Culture Change

The initial programme theory assumed that culture changes in the participating organisations in an MCP were a mechanism to produce MDTs, demand management systems, and preventive care (Table 6). We also found evidence for causal links not in the initial programme theory in which culture change was the mechanism (Table 7). We first describe evidence for the causal links in the initial programme theory, and then evidence for the new causal links.

Table 6: Causal links for which component 4 (culture change) is the mechanism

MCP Component (1-13) IF	MCP Component (1-13) THEN	IPT Causal Link
4: Culture changes occur in the participating organisations	3: MDTs will develop	4:3
	8: Demand management systems will develop	4:8
	9: Ppreventive health care will develop	4:9

6.4.1 Causal Link 4:3 - If culture changes occur in the participating organisations then MDTs will develop

The programme theory firstly assumed that a shift in the culture of care delivery organisations and professions would include shifts in their assumptions about desirable models of care, inter-organisational and inter-professional working practices, all of which would produce workforce development and engagement in ways that promoted the development of MDTs.

6.4.2 Causal Link 4:3 - Workforce development and engagement

Two studies provided evidence that culture change supports different professionals to work together across disciplinary boundaries. Greene and colleagues conducted qualitative interviews with and a survey of providers and staff in mental health and paediatric primary care practices in the USA and found that culture change enabled new ways of working and communicating which dismantle a key barrier to collaboration, including improving shared expectations, increasing awareness of what other professionals within the wider care team have to offer, and building better understanding of the culture of other professions. Conversely Bergman and colleagues interviewed key informants in PCMH and team-based care models and found that those working in more traditional roles can feel defensive around their boundaries and roles and that their expertise or specialism is under threat. Interviews with 5 medical and 7 mental health workers (PCMH, US) showed that the latter could also be culturally resistant to practising in an integrated model.[8]

People working in new boundary-spanning roles may attempt to prevent other team members from feeling threatened by their recommendations or opinions by using indirect, non-threatening forms of communication such as gentle hints, suggestions, and questions like 'are you sure that’s really what you wanted?” These indirect communications risked important

information not being effectively communicated in safety-critical situations. Bergman and colleagues concluded that ways to reduce these risks and help the new roles become a driver for culture change were by:

- Creating a culture of openness (feeling comfortable speaking up to reduce error when problems are suspected) through training to improve communication across hierarchies, for example the Crew Resource Management training adopted in some US medical and pharmacy training programmes.[109-111]
- Agreeing at the outset of their collaboration clear (e.g. written) scopes of practice between different professions, to cultivate awareness and shared expectations of each other's duties and responsibilities.

Two studies found that respect could overcome or bypass the perceived threat of new boundary-spanning roles. McNab and colleagues found that other members of the certain primary care teams came to respect people in boundary-spanning roles when they saw the latter changing culture. That respect enabled further culture change through supporting formal and informal communication between the various clinicians. Bergman and colleagues provided an example: when primary care doctors working with pharmacists in new expanded roles were exposed to situations in which there opinions conflict, they came to recognise that the pharmacists were 'usually right' (about pharmacy-related matters), learned to respect them and see value in their expanded role; which facilitated multi-disciplinary working. Producing trusting working relationships between primary health care doctors and people in boundary-spanning roles has been found to take around a year.

6.4.3 Causal Link 4:3 - 'Joined-up' working

A web-based survey of ACOs in the USA found that shared culture was necessary for their success.

Two studies offered evidence about how to create culture change so as to improve primary care teams' integration. In their qualitative interviews with and a survey of staff in mental health and paediatric primary care practices in the USA, Greene and colleagues found that shifting shared expectations, improving awareness of other professionals' roles in the primary care team, and understanding the culture of other professions enabled ways of working and communicating to change, dismantling a key barrier to collaboration Weldon and

colleagues'[112] study found that Sequential Sequencing workshops, in which workshop participants' experienced and then discussed in groups 'real world' examples of their role within the healthcare system and how what they did impacted upon collaborative (person-centred co-ordinated) care, improved staff knowledge and understanding of the impact upon collaborative care. In one workshop with GP receptionists in the UK, a new professional structure for GP receptionists appeared to be emerging, with receptionists empowered to see the importance of their role within the wider context of healthcare system, as well as how crucial they were for integrated care to work.[112]

McNab and colleagues found that where there is no system-wide culture change in support of integrated multi-disciplinary working across teams embedded in the partner organisations and established throughout the primary health care sector to support integrated multi-disciplinary team working, there remained a heavy dependence on leadership from the general practitioners and community health workers on the network steering committee.

6.4.4 Causal Link 4:3 - Contexts for culture change producing MDTs

The same study found that one way to support the above culture changes across professions was by creating boundary-spanning roles that themselves instigated or enabled system-wide culture change by improving both formal and informal communication between the various care providers. Wholey and colleagues argued that tasks are the functions that a team has to perform to achieve its goals (e.g. care coordination) and so they, and not culture, are the logical starting point for MDT design. Chapter 7 considers this apparent contradiction more closely.

Interviews and a survey in 13 PCMH practices in the USA found that existing cultures of individual excellence, individual accountability, and established practice norms were an obstacle to collaboration.[67]

6.4.5 Causal Link 4:8 – IF culture changes then Demand management systems develop

We found no published research about whether or how culture change in an integrated model

of care makes demand management systems develop.

6.4.6 Causal Link 4:9 - IF culture changes then Preventive care develops

We found a little evidence from one study that culture change increased preventive care. In a systematic review, the creation of a non-intimidating environment/culture was reported to be an enabler for improvements in patient knowledge, self-care behaviour, and self-efficacy. Busetto and colleagues reported that a community health centre collaborative could not have led to increased patient self-management without changing the health centre philosophy towards more patient-centredness and empowerment[1131]Another study however suggested that other, less resource intensive mechanisms for improving prevention may be more acceptable and feasible.[78] None of these studies described what the contexts (in the realist sense of the term) were required.

Beyond the initial programme theory, the secondary literature reported further ways in which culture change might be a mechanism for creating change in other MCP components (Table 7), although none of the found studies stated what contexts (in the realist sense) were required.

Table 7: Causal links not in the initial programme theory, for which culture change is the mechanism

MCP Component (1-13) IF	MCP Component (1-13) THEN	IPT Causal Link
4: Culture changes occur in the participating organisations	7: Planned referral networks will develop	4:7
	12: Better patient experience, outcomes, and staff wellbeing	4:12

6.4.7 Causal Link 4:7 – If culture changes occur in the participating organisations then planned referral networks develop

As noted, McNab and colleagues' Australian study found that culture change itself resulted in part from introducing boundary-spanning work roles; but also that a wider culture change was needed to ensure practices and processes are embedded in the member-organisations of an MCP-like network, including by implication any inter-organisational referral networks. Two

further studies reported the particular need, in setting up ACOs, to have a cross-cultural dialogue between medical and mental health providers.[89,90]

6.4.8 *Causal Link 4:12 - If culture changes occur in the participating organisations then there will be better patient experience and outcomes*

Demiris and colleagues',, narrative literature review found that implementation of patient-centred care depended on culture change in health care organizations and among healthcare consumers. In their systematic review Busetto and colleagues[114] reported a study by Borgermans and colleagues in which the presence of interdisciplinary diabetes care teams was associated with significant improvements in HbA1 and LDL-cholesterol levels, and increased statin and anti-platelet therapy use, which were attributed to the quality and task orientation of the teams, shared leadership and shared group norms. Busetto and colleagues'[114] also reported a study in which Yu and Beresford found three critical success factors for their chronic illness model that led to improvements in HbA1C, blood pressure, LDL and urine albumin-to-creatinine ratio, namely: leadership commitment to change, increased clinical staff involvement and residents acting as change agents. They also found that the same shift in the culture produced a non-intimidating environment which facilitated better-coordinated patient-centred care and improved health workers' mental health and wellbeing.[1146]

6.5 Voluntary sector involvement

The initial programme theory assumed that voluntary sector involvement in MCPs (Table 8) would produce better demand management systems, (component 8), better preventive health care and improved patient experience of care.

Table 8: Causal links for which voluntary sector involvement is the mechanism

MCP Component (1-13) IF	**MCP Component (1-13) THEN**	**IPT Causal Link**
5: Voluntary sector becomes involved in MCPs	8: Demand management systems will develop	5:8
	9: Preventive health care will develop	5:9
	12: Improved patient outcomes and experience of care	5:12

6.5.1 *Causal Link 5:8 – If there is voluntary sector involvement in MCPs demand management systems will develop*

Hitchcock Noel and colleagues[78] found that community linkages are utilised less often than the other components of the Chronic Care Model. Bodenheimer and colleagues (2002; reported in Lafortune[108]) described linkages between clinical settings and community health resources as highly important, particularly for health care professionals who are not operating as part of a large team-based organization and for those treating patients with chronic illness (and, we add, may in the USA have difficulty obtaining health insurance). These apart, we found no studies reporting how, or even whether, voluntary sector involvement in MCP-like networks helps them manage the demand either for hospital services or for formal primary care services, carers or voluntary organisations.

6.5.2 *Causal Link 5:9 – If the voluntary sector becomes involved in MCPs then preventive care will develop*

Whilst the MCP programme theory emphasises access to a wide range of resources around a person's goals, studies reporting whether and how voluntary sector involvement strengthens preventive care were sparse. From focus groups with 387 participants in 10 US communities, Mead, Andrew and Regenstein described the barriers to involving the voluntary sector in the PCMH model. Despite patients reporting a need for community resources, such as education classes, diet and exercise groups, and peer support groups to provide additional support to help them deal with the burdens of managing chronic illness, the PCMH model was limited to formal services within the health care system and lacked have processes to support, pay for or even refer patients to resources outside the health care system that could be useful for their health. Hence this paper suggests that providers who treat disadvantaged populations need training to develop relationships with service providers who will take on low-income un- or underinsured patients, and to be innovative. Understanding each patient's personal constraints and not just the typical medical history is a critical aspect of patient-centred care but not highlighted as a key component of the PCMH model. Participants highlighted the importance of religious organisations and community-based organisations, and cited several examples of how these resources provided important support for in the managing their overall health and

well-being. A qualitative study of community-based primary health care in Canada found that self-management support groups and resources allowed patients to be more engaged in maintaining their own health and helped to prepare them for discharge or care transitions.[108] Neither study reported what contexts (in realist terms) favour voluntary sector involvement.

6.5.3 *Causal Link 5:12 – If voluntary sector becomes involved in MCPs then patient outcomes improve*

We found a little evidence consistent with the initial programme theory that involving the voluntary sector in MCP-like networks might improve patient outcomes. In comparative case studies of a German scheme (Kinzigtal), a Netherlands-wide programme (one care group) and 16 English pilot schemes Busse and Stahl[63] report that in the Kinzigtal care model multi-sectoral collaboration had after 2.5 years reduced mortality rates by half (from 3.74% to 1.76%) for those enrolled in the programme compared to those who were not. Although the network had voluntary sector input these results are attributed to the network as a whole, leaving it uncertain whether the voluntary sector input contributed to these mortality improvements, and if so to what extent and through what mechanisms and contexts.[63]

6.6 Care Coordination through health information technologies (HIT)

The initial programme theory assumed that care coordination through health information technologies (HIT) was a mechanism for producing MCP components 7, 10, and 11 (Table 9).

Table 9: Causal links for which HIT is the mechanism

MCP Component (1-13) IF	**MCP Component (1-13) THEN**	**IPT Causal Link**
6: HIT are used to strengthen informational continuity of care	7: Planned referral networks will develop	6:7
	10: Care planning for individual patients will become more prevalent and systematic	6:10
	11: More patients will be diverted from in-patient to primary care services	6:11

6.6.1 *Causal Link 6.7 - If HIT is used to strengthen informational continuity of care then PLANNED REFERRAL NETWORKS will develop*

Many MCP-like organisations used HIT effectively. A national survey of US physicians found EHR use in ACO or PCMH settings was associated with increased activity in health management at population level, quality measurement, patient communication, and care coordination. Two other studies (reported in King,) found that PCMH doctors who used EHRs had 'greater quality improvements and changes in utilisation over time on some measures'. One systematic review (Fontaine et al, reported by Lafortune[108,p.9]) found evidence for electronic health systems as a way to improve patient safety, reduce medical errors, improve access to data, and decrease staff time spent on administrative tasks. Through semi-structured interviews with physicians in PCMHs, Petersen and colleagues found that well-designed EHRs allowed them to better coordinate care and share information. Links with hospitals were also important. A study of six ACOs found that timely, consistent information about patients' admissions and discharge enabled the planning of follow- up services that patients might need within 30 days of discharge.

Two additional studies described individual projects that effectively used HIT to coordinate care in MCP-like contexts. The Gesundes Kinzigtal project reported improved patient and health-worker experience, and reduced costs and mortality. The project relied on sharing an EHR system across providers to coordinate care.[63] Buutzorg used a simple, web-based solution designed by nursing assistants, nurses, and back-office employees to communicate and share information in real-time between locations such as the patient's home, in the office, or on the road.[19]

In many cases however HIT systems which had not been carefully designed and implemented hindered health professionals in communicating and sharing information. Recurrently-reported barriers to effective HIT implementation included lack of interoperability between HIT systems (see §6.6.2), lack of necessary data analysis tools (§6.6.3), lack of workflow tooks (§6.6.4), and the limitations of current technology (§6.6.5).

6.6.2 *Causal Link 6.7 - Lack of interoperability between HIT systems (both within and between organisations)*

Almost every study discussed the importance of HIT connectivity both within and between provider organisations. Participants across different studies emphasised the importance of using a common health information system between services, or redesigning systems so that they communicated with one another.[89,98] In many cases HIT systems within an organisation were flawed. Two studies described how care managers needed to use a completely separate system from physicians, resulting in clunky *ad hoc* systems to collect and manage data.[88,116]

6.6.3 *Causal Link 6.7 - Lack of necessary data analysis tools*

Research participants across studies lamented the inability of their IT systems to do basic data analyses such as risk-stratifying patients, tracking sub-populations of patients, determining which patients need follow up, generating relevant reports, and tracking hospitalisations.

6.6.4 *Causal Link 6.7 - Lack of workflow tools*

Many studies reported that health workers wanted an IT system that would more effectively track patients. Studies recurrently mentioned such tools as: task management systems; care planning systems; standardised care pathway templates for physicians; notification systems for changes in patient status, and; individual patient tracking through the healthcare system.;[108,116; 117] A recurring frustration was inability to get the right information at the right time, which resulted in participants assembling *ad hoc* systems to piece together different software systems to generate needed reports. Richardson describes the 'shadow system' of data captured through 'homegrown' methods that was often used when EHRs failed to adequately meet an organisation's needs.[117;88;100%]

Many organisations reported difficulty in extracting and piecing together data even from EHRs that complied with the continuity of care document standard (CCD) for interoperability, suggesting that these standards may be insufficient for MCPs' needs.[117]

6.6.5 *Causal Link 6.7 - Limitations of current technology*

Two studies discussed the limitations of current HIT for MCP purposes. Bauer noted that traditional HIT tools were not built to monitor populations and sub-populations of patients, actively flag patients for follow-up, or respond to real-time data on patient progress.[118] Rudin and Bates (reported in Richardson[117,p.815]) concluded that the current health IT marketplace 'has failed to provide adequate solutions' for care coordination. Another study noted that PCMHs tended to use IT systems for more straight-forward uses, but more complex patients were dealt with offline due to underdeveloped technologies.[67] Finally, one study found that having an EMR did not automatically improve care coordination. These two studies suggested that previous generations of EHRs may not be suitable for new models of care, as the difficulties which many organisations have faced in implementing them symptomatised.

Many studies in our review corroborated that integrated IT systems alone would not lead to coordinated care systems. Other mechanisms, such as reworking staff roles and a shared physical space, were also likely to be required.

Several studies specified staff attitudes and skills that were important for a successful EHR. One systematic review found that personal barriers to integrated care interventions included: staff reluctance to use HIT; unawareness of system features; unwillingness to share data; and lack of IT skills.[114,] Another paper implied that the structure of the EHR inadvertently made it a battleground between physicians and pharmacists. The same study found that 68% of clinical pharmacists who were surveyed in the PCMH context referred to examples of problems with electronic communication in their relationships with primary care physicians.

Many studies emphasized the importance of task delegation, workflows, and routines. One study found that primary care teams that used EHRs consistently for data entry and agreed on communication methods between staff members were more likely to score high on the National Committee for Quality Assurance (NCQA) 2011 PCMH recognition tool. Best practice in the use of EHRs to facilitate communication between staff members included: access to patient information for all staff members; instant messaging; within-chart notes; phone templates that could be routed to team members' inboxes; task assignments, and; 'huddle sheets' for the day embedded in the EHR.

Finally, care managers emerged as an important facilitator of effective HIT use. Morton found that practices with a non-clinician member of staff who was responsible for coordinating care

were much better at care coordinating activities, and at conducting these activities electronically. Other studies also noted that the care manager provided much needed support to ensure smooth operations.[118]

6.6.6 Causal Link 6:7 – Contexts

Overall, the evidence suggested that HIT systems can support communication and data sharing between health professionals at MCPs, but only provided that these HIT systems be designed and implemented with care. Otherwise they risked being a barrier to effective MCP working.

6.6.7 Causal Link 6:10 - Informational continuity of care produces care planning at the patient level

The evidence from our review supported the assumption that EHR systems, when set up to support coordinated care processes, can improve patient outcomes. Two different studies reported in systematic reviews found that effective EHR use enabled teams to increase quality of care for diabetes patients.[, 114]Several studies have also found that electronic patient registries can improve patient quality outcomes.[86, 121;118]

Across studies, participants agreed on features that increased the effectiveness of EHRs for patient care. A recurring theme was the importance of using the EHR to guide physician practice and workflow, and provide reminders for actions. One practice used 200 different symptom-specific templates. The template system increased productivity and allowed physicians to focus better on patient needs during their appointment (100%). Xenakis' study corroborated this, and participants in other studies lamented the lack of a template system in their EHR.[108]

Other EHR features that study participants repeatedly requested included: ability to create care plans (recording goals, barriers, and specific steps to that goal), notification systems to help staff engage patients when the patient's status changed (e.g. following hospital admission, no-show at follow-up appointments).[117;;] Yet despite widespread agreement about the characteristics of an ideal EHR we found only limited evidence of its ability to improve

patient care, probably because many provider organisations did not yet have the requisite features for its optimal use.

Many studies described patient-facing electronic tools. One systematic review found very little evidence that an electronic personal health record (accessible by patients) increased care outcomes, care coordination, or patient engagement.[,] By contrast, another found that patients had very positive responses to a patient portal. These contradictory findings may be explained by the slow uptake of personal health records, and a lack of studies connecting personal health records to patient outcomes. Another study (reported in Bauer[118]) described technology-enabled delivery of mental health interventions, such as mobile devices assisting self-management. However, the same study cautioned that patient-facing tools are most effective when combined with a relationship with a health worker such as a counsellor. Using technology to build a relationship can provide more accountability and support patient engagement, whereas stand-alone interventions require patients to be much more self-motivated.[118]

Overall, there is evidence that EHRs can improve patient outcomes, but only when they include robust functionality such as care planning and tracking population and individual level data over time. However, HIT use alone does not guarantee improved care. Instead HIT, whether an EHR or patient-facing tools, must be carefully designed to complement inter-personal relationships.

6.6.8 Causal Link 6:11 - Informational continuity of care helps divert patients from hospital to primary care

Our review found mixed evidence for the assumption that effective use of data in MCPs can lead to reduced unnecessary A&E admissions. Kaushal[122] found no difference in emergency department visits, hospital admissions, or hospital readmissions between PCMH and non-PCMH settings over a three- year study period. However other studies found mixed or inconclusive evidence. Two studies reported by Demiris[,] found opposite results for emergency admission rates for home telehealth programs, but not in MCP-like settings. Two additional studies found weak evidence. One survey found that ACOs were slightly more likely to track inappropriate emergency department use than their non-ACO counterparts[54] while another concluded that PCMHs with patient registries have the potential to use data to

reduce unnecessary Emergency Department (ED) admissions. The same study recommended network analysis for tracking patients' movement between providers so that care and resources can be better coordinated, possibly leading to reduced admissions.

This review also found evidence for additional outcomes of HIT beyond those in the initial programme theory (Table 10).

Table 10: Causal links not in the initial programme theory, for which (HIT is the mechanism

MCP Component (1-13) IF	**MCP Component (1-13) THEN**	**IPT Causal Link**
6: HIT are used to strengthen informational continuity of care	3: MDTs will develop	6:3
	8: Demand management systems will develop	6:8
	9: Preventive health care will develop	6:9
	13: NHS costs will reduce	6:13

6.6.9 Causal Link 6:3 - Information continuity of care produces MDT working

Whilst most research on MDT working focused on face-to-face meetings rather than virtual communication, several studies noted that well-designed HIT can support effective communication both within organisations and across service providers.[72]

We found examples of HIT supporting relationships between physicians and pharmacists, for instance of pharmacists having shared access to the EHR to approve drug requests or, in one case, select patients for further physician screening.

Many studies noted the importance of creating a shared understanding between staff about routines, roles, and processes. Some studies reported confusion as to proper use of the EHR: 'like tasks you put in the EMR [electronic medical record], where do you put it, how do you write it, what do you say, what language do you use, what format, all that stuff". Other studies reported best practices that worked in particular organisations, such as the ability to send instant messages for informal communication (e.g. for a 'warm" hand-off), creating task lists and delegating roles in the EHR, ability for notes to be embedded in a patient chart, phone

templates that could be routed to team members' inboxes, virtual 'huddle sheets' with patients scheduled for the day in the EHR.[3, 7] Systems for accomplishing this shared understanding varied between practices, but all studies emphasized the importance of being able to communicate informally through the EHR and for each staff member to use the EHR consistently.

There were many examples of positive working relationships facilitated through EHRs in the evidence. However, these relationships may be strengthened through opportunities for in-person communication and free text notes built into the EHR.

6.6.10 Causal Link 6:3 - Contexts

Using HIT to mediate inter-professional relationships must be done carefully. Bergman describes a particularly complex EHR causing poor relationships between physicians and pharmacists because they negotiated drug approval requests without the support of informal communication (such as free text explanations for approvals or rejections). Conversely personal relationships, for example team huddles or informal chats, could make virtual communication more effective. Two studies emphasised the importance of primary care staff being able to communicate both on- and off-line.[3]

6.6.11 Causal Link 6:8 - Informational continuity of care produces demand management systems

One study in our review found that one attribute of a successful ACO program is that it can stratify patients by risk. Many MCP-like networks and organisations did so (though the methods and risk groups differed) but most did not report whether this helped providers manage resources better.[63] However the Mount Sinai (New York) ACO did report successfully using risk stratification data to guide staff workflow in different ways depending on identified care gaps and whether risk was categorised as high, rising/moderate, or low.

6.6.12 Causal Link 6:9 - Informational continuity of care produces preventive care

Care processes in ACOs or PCMHs were more likely than those in their standard counterparts

to:

- Create lists of patients due for tests or preventative care, and
- Provide patient reminders for preventative follow-up care.

ACOs and PCMHs that used electronic health records were more likely to do so than providers without such records. Xenakis described an ACO with workflows in its EMR to support disease prevention, and Johnson a case where patients received automated text message reminders about recommended preventive services. Overall, there was a little evidence to support the assumption that HIT and EHRs can assist preventive care, but more research is needed to test these claims.

6.6.13 *Causal Link 6:13 - Informational continuity of care produces cost savings*

We found some evidence that HIT can increase organisational efficiencies. Colla[72] concluded that ACOs with HIT investment was likely to save postacute care costs. Another study found that telemedicine-based collaborative care was more cost effective than a practice-based model in medically underserved areas. Several studies found that HITs could increase administrative productivity, thereby saving costs.[108;] A qualitative survey of PCMHs found that electronic systems reduced administrative burden and increased data accuracy for physicians when teams had specific role definitions stating who recorded what onto the system, and how they recorded it. One prospective cohort study described how information technology in the PCMH context led to a reduction in specialist visits.[122]

Although these studies describe MCP-like organisations or networks using HIT to reduce costs, few of them clearly explained the links between the two. Overall, they suggested that organisations can reduce costs through using EHRs, but only in certain contexts.

6.6.14 *Causal Link 6:13 – Contexts*

Colla's[72] finding that HIT investment probably saved postacute care costs arose from a context of US incentive structures which reward or penalise ACOs according to their costs and of private hospitals which can make large investments in data analytics. A multi-site

ethnographic study found that organisations which used a combination of electronic and paper chart systems increased the time demands on staff, suggesting that IT systems need to be fully electronic to be cost-effective (McMurray et al, in Lafortune[108.100%]), not duplicated through a shadow paper system of files.

A common context for the above mechanism (HIT) to bring about the other MCP component outcomes described above was that HIT must be well designed and mirror the care processes which health workers use in practice. It was consistently reported that technology which was bespoke to the organisation(s) and designed with the users in mind had better outcomes on a variety of measures.

6.7 Planned Referral Networks

Next we consider the causal links in Table 11 in which the mechanism is planned referral networks.

Table 11: Causal links for which planned referral networks are the mechanism

MCP Component (1-13) IF	MCP Component (1-13) THEN	IPT Causal Link
7 planned referral networks develop	8 Demand management systems will be strengthened	7:8
	9 Preventive health care will develop	7:9
	10 Care planning at individual patient level will become more prevalent	7:10
	11 More patients will be diverted from inpatient to primary care services	7:11

6.7.1 *Causal Link 7:8 – If planned referral networks develop then demand Management Systems will develop*

We found no evidence to support - or refute - the initial programme theory assumption that referral networks produce better demand management systems. Neither did we find any evidence as to whether referral networks produce preventive care.

6.7.2 *Causal Link 7:9 – If planned referral networks develop then preventive health care will develop*

Shortell reported a respondent from an American ACO saying that installing a patient portal had made patients more willing to 'engage' with planning their own care. That finding would only be relevant to this link if 'engaging with care' included 'engaging with preventive care', which the paper does not say. So we found no evidence unequivocally corroborating this link.

6.7.3 *Causal Link 7:10 – If planned referral networks develop then Care planning for individual patients will become more prevalent*

We found some evidence that establishing a referral network produces greater use of care plans and more patient-centred care generally.

Colla and colleagues[72] evaluated the impact of ACOs on care coordination and care management for older populations by exploring the extent to which ACOs incorporated postacute care into their referral networks. Although the associations were not all statistically significant, Colla and colleagues concluded that doing so resulted in more comprehensive CCM programmes, and the creation of systems to assure smooth transitions of care across different organisations and settings (ACO, USA).[72]ACO referral networks which included post-acute care services were more likely than those without to have established processes for identifying, counselling, and planning for end of life care across settings of care.[72]

Alidina and colleagues[67] carried out a mixed methods study of 13 PCMH 'medical neighbourhoods' (local referral and care coordination networks of PCMHs) to understand what role coordination mechanisms play in them. These networks used communication, negotiation, and decision mechanisms through which neighbouring PCMHs agreed how to coordinate care and explicitly allocated mutual responsibilities for communication and care coordination for shared patients. Such mechanisms included care compacts and agreements negotiated through local independent physicians associations. High- performing PCMHs typically had written care compacts with specialists, low performing PCMHs did not [67] For care coordination at patient level the most important activities were inter-organisationally agreed common working routines, information connectivity and (again) the creation of boundary-spanning roles. A combination of these mechanisms, adjusted to the contextual conditions noted below, could improve inter-organisational care coordination.[67] There was a little evidence from a qualitative study of ACOs and PCMs that care was more patient-centred when referral networks existed.[72]

6.7.4 *Causal Link 7:10 – Contexts*

As previously noted, Alidina and colleagues[67] provided important information about what contextual factors call for communication, negotiation, and decision mechanisms. These referral network mechanisms are more necessary for patients about whose condition staff have low levels of knowledge; for more complex patients; and where reciprocal coordination is required (i.e. patients transfer from one organisation to another and back again). Barriers to establishing care compacts were geography (small or isolated communities), small general practices (small referral base), misaligned payments, and time costs (e.g. search costs to find

'good neighbours', bargaining and decision-making costs, time to build relationships, and costs of internal re-organisation).[67]

In their qualitative study of integrating mental health into a primary care setting under the PCMH model, Rajala and colleagues described the operational barriers to care coordination through a referral network in the PCMH in the US: providers having different workflows and expectations, separate medical records or limited access to records, and a separate referral process for mental health services. The latter barrier resulted in long waiting lists, poor follow-up, and less patient-centeredness. If mental health services functioned as their own separate sub-system within primary care there was increased difficulty coordinating services.

Patients' own behaviour may be another relevant context. A cross-sectional national survey of ACOs defined self-referral as an indicator of *in*effective care coordination. It found that the trend in the weighted absolute number of self-referred visits among Medicare and private-insurance beneficiaries remained generally stable from 2000-2009. Aliu concluded that whatever attempts ACOs had made at care coordination, patients had by-passed them by making self-referrals as well.

6.7.5 Causal Link 7:11 – If planned referral networks develop then more patients will be diverted from inpatient to primary care

Five studies provided evidence supporting the initial programme theory that referral networks can divert patients from in-patient care.[61,72,105,119,127] Reassigning care to the PCMH enabled primary care teams to take on additional tasks, reducing specialty visits for low, and to a limited extent, medium, morbidity patients. In a cross-sectional analysis of the National Survey of ACOs, Colla and colleagues[72] found that ACOs which included post-acute care providers were more likely than those which did not to report a fully developed program to reduce preventable hospital readmissions. The six components of Wagner's Chronic Care Model (CCM) are: community resources and policies, healthcare organisation, self-management support, delivery system design, decision support and clinical information systems. Five studies ([26, 28, 29, 46, 50]) reported in a systematic review of integrated care models for patients with chronic diseases found that projects which incorporated at least two of the six had significantly fewer admissions and fewer inpatients days than other integrated care projects.[127]

Huber and colleagues attributed reductions on likelihood of hospital admission for cardiovascular and COPD, but not respiratory disease, patients.to the introduction of care coordination and care guidelines in Swiss primary care networks.

A case study of a complex care referral network in Australia found that it increased referrals across organisational boundaries and reduced emergency department use. Referrals to physiotherapy, podiatry, occupational therapy, dietetics and psychosocial services rose and there were fewer referrals to less specialised community home nursing. People enrolled into the programme with chronic and complex conditions had in the following 12 months fewer emergency department presentations and significantly reduced length of stay in the emergency department compared to the 12 months before. Almost 30% of participants had no hospital presentations. In Canada a cross sectional patient experience survey for ambulatory sensitive conditions found that First Contact Access (FCA) and Accessibility-Accommodation (AA) created a referral network whose care planning process dealt with preventative and acute emergency care in ways thated divert patients from acute secondary services. A meta-analysis of RCTs[105] found that transitional care interventions were associated with reduced intermediate-term (31–180 days) and long-term (181–365 days) all-cause hospital readmissions of chronically ill patients.

A set of UK case studies highlight reduced tariff income for NHS hospitals when patients were diverted from hospital to primary care as a barrier to patient diversion, but against this patient diversion was also an opportunity for the hospitals – in any event not lacking work – to free up of staff time and beds, and meet performance targets. One enhanced access initiative (advice and guidance) created additional capacity in outpatient hospital clinics, which could help hospitals reach performance targets as well as generate additional income by hosting tertiary care clinics. In another example, clinicians spent less time transferring patients to other hospitals after the hospital at home initiative reduced admission and length of stay for other patients.

We only found one study about whether in-reach into hospitals ensures timely discharge of patients, but it was a systematic review. It found that transition from hospital to home was most effective when interventions to expedite it were initiated during the inpatient phase and continued post-discharge.

6.7.6 *Causal Link 7:11 – Contexts*

Two studies stated a specific contextual requirement for referral networks to work as a mechanism for diverting patients from hospital to primary care.[70;] The mechanism worked best for high users of acute care and for low and medium morbidity patients who could be effectively managed in the community, but high morbidity patients still required more intensive co-management by primary care teams and specialists. An analysis of routine administrative data from 380,000 records for high users of A&E living at the poverty level found that referral network schemes for diverting patients from hospital had the greatest effect when targeted on the 1% of heavy users (5 or more hospitalisations per year)[70] Another study, a 48-month interrupted time series study from a baseline through PCMH implementation and post-implementation periods for 36,805 hypertension patients, also found reductions in specialist use, but only for low and medium morbidity patients. Indeed high morbidity patients made significantly increased use of specialist use after PCMH implementation. The study authors concluded that referral networks between primary care teams and specialists in the 'medical neighbourhood' should cater above all for high morbidity, clinically complex patients. The increased referrals of high morbidity patients highlighted that primary care teams and specialists the need also to sustain effective co-management of these patients.

6.8 Demand Management Systems

Table 12 lists the causal links in which demand managements systsms are the mechanism.

Table 12: Causal links for which demand management systems are the mechanism

MCP Component (1-13) IF	**MCP Component (1-13) THEN**	**IPT Causal Link**
8 Demand Management Systems are established	9 Preventive health care will develop	8:9
	10 Care planning at individual patient level becomes more prevalent	8:10
	11 More patients are diverted from inpatient to primary care services	8:11

6.8.1 *Causal Link 8:9 - Demand management systems enable preventative care and vice-versa*

Mead reports evidence from ten focus groups (participants n = 387) in purposively-sampled US communities which supported the assumption that people with complex health conditions seek ED care when problems with access to preventive services make it difficult for them to manage their health. Then, one apparent solution was to 'empower' patients to managing their own condition. However the few studies that we found were equivocal about what effects that mechanism had.

A German study using routine data described how after 2004 osteoporosis prevalence increased (+18%) faster in Kinzigtal than in Baden-Württemberg (+ 6 %) as a whole, but the available data were insufficient to determine whether the Kinzigtal increase was an epidemiological trend or resulted from a screening and prevention programme.

Before primary care physician reimbursement was linked to patient quality outcomes, Hibbard's survey (no sampling strategy reported) in the USA found that only 10% of physicians intended to develop patient self-management as a way of improving incomes. Hibbard's follow-up survey after reimbursement had been linked to patient quality outcomes used different variables so an exact comparison was not possible, but it found that 60% of primary care physicians had made little or no increase in their support for patient self-management. Hence reimbursement changes alone were insufficient to incentivise physicians to develop and support patient self-management.

A non-systematic review of informatics support for patient-centred care identified how communication and information-access portals could facilitate patient-centred care, but were not themselves sufficient to enable it.'

6.8.2 *Causal Link 8:9 – Contexts*

In the above studies, doctors' and patients' characteristics were an obvious context for mechanisms 'empowering' patients to manage their own health. Hibbard's survey in the USA found that some physicians expressed frustration at their inability to change patients' unhealthy behaviours regarding diet, inactivity, smoking, and so on. Seventy per cent of the primary care physicians surveyed identified 'patients' unwillingness to change behaviours' as

an obstacle to achieving care quality metrics (compared with: 65.1% 'lack of time to spend with patients'; 47.7% 'lack of high-quality support resources'; 24.8% 'not knowing how to support patients in behaviour change'). Among the 15.3% of primary care physicians who nevertheless reported that they had increased their support for patient self-management, there were twice as many under 35 years old than older

6.8.3 *Causal Link 8:10 – if demand management Systems are established then care planning for individual patients develops*

We did not locate any evidence about whether, or how, demand management systems such as risk stratification affected the use of care planning for individual patients.

6.8.4 *Causal Link 8:11 – if demand management Systems are established then more patients are diverted from inpatient to primary care*

Taken together, the two relevant studies in our review were both equivocal about whether demand management systems (as opposed to individual care plans: see below) diverted patients away from hospital and into primary care.

One cross-sectional study in the USA, which used a convenience sample (n=150), compared 'comprehensive care' (i.e. one physician managing both the primary and tertiary healthcare needs of a child: a form of gatekeeping) with usual services. Under comprehensive care there were fewer emergency department contacts (IRR 0.51, 95% CI 0.33-0.78) and a lower hospitalisation rate. Without directly comparing it with comprehensive care, this study also reported that 'coordinated care' (defined as a provider sharing information and communicating effectively with child, family and consultants, as well as linking to community resources) did not have either effect.

In a retrospective analysis of longitudinal routine data (2,607,902 patients from 796 clinics), Yoon[132] reported how a PCMH model in the USA increased the use of primary care services. The increase arose from practice re-organisation rather than from patient-facing efforts to increase access to care (e.g. by offering flexible and same-day appointments and non-face-to-face services such as telecare). More granular analysis showed however that certain elements

of practice organisation, such as team huddles and tracking laboratory tests, were associated with fewer primary care visits per patient, which Yoon characterised as greater 'efficiency'.[132]

6.8.5 Causal Link 8:11 – Contexts

Being about the USA, these studies presupposed a particular context. As Chapter 1 explained, the concept of PCMH corresponds to the principles under which NHS general practice has already been organised in principle, and often in practice, since 1948. Therefore even if the above changes to (the equivalents of) general practice coordination did divert patients from hospital to primary care, they may already have been adopted in much of the NHS. So the scope for marginal gains in patient diversion may in the NHS be less than Yoon's findings suggest. The practice of the same doctor providing (and coordinating) a patient's primary, secondary and tertiary care only occurs under the 'admitting rights' model of hospital medicine which exists in much (though not all of) the US health system but hardly at all in the NHS.

Besser's before-and-after study in the USA found that increased service provision led to increased service use. The introduction of a mental health provider in a PCMH led to an increase in the percentage of visits for depression (2010 0.86%; 2011 0.54%; 2012 1.02%; 2013 1.26%) and a significant increase (from 3% to 33%) in the percentage of depression visits seen by mental health specialists. Besser concluded that these increases occurred due to services addressing hitherto unmet needs (and therefore also preventing use of other services in the future), but the paper reported no data substantiating that. 'Roemer's law' that 'a built bed is a filled bed' is well-established regarding the USA and, with qualifications, many European health systems.[135-137] It implies that even if demand management methods do reduce admissions from existing care groups, other hospital admissions are likely to take their place. In part this is a consequence of per-patient payment systems used by sick-funds, corporate insurers and those public bodies which have copied from them a DRG-like payment system,

6.9 Preventive care

Just one causal link is at issue here (Table 13).

Table 13: Causal link for which preventive healthcare is the mechanism

MCP Component (1-13) IF	MCP Component (1-13) THEN	IPT Causal Link
9: Preventive health care develops	11: More patients will be diverted from in-patient to primary care services	9:11

We did not locate any evidence directly reporting whether preventive healthcare enables referrals to be diverted from hospital, nor any about whether patient self-care activation produces better demand management systems for general practice.

6.10 Care Planning for Individual Patients

The initial programme theory's causal links from component 10 are shown in Table 14.

Table 14: Causal links for which care planning for individual patients is the mechanism

MCP Component (1-13) IF	MCP Component (1-13) THEN	IPT Causal Link
10 Care planning at individual patient level becomes more prevalent	9 Preventive care will improve	10:9
	11 Patients will more often be diverted from in-patient to primary care	10:11
	12 Patient experience/care will improve	10:12

6.10.1 Causal Link 10:9 - Care planning at the patient level produces preventive care

The initial programme theory assumed that having a patient care plan builds patient confidence and their capability for making good decisions about their self-care, and so improves preventive care. One US PCMH study confirmed that having an embedded case manager using joint care planning and motivational interviewing resulted in more trusting relationships between the patient and doctor, care more customised to their patient's individual needs, and in patients making the most of their appointments and taking a more active role in their care. Similarly, a case study in a PCMH found that case managers using motivational interviewing, assessment skills, and joint care planning enhanced the value of

primary care visits for patients and engaged patients more in their own care.

In contrast a survey of 10,990 adults with asthma, diabetes, or chronic heart disease in a US PCMH[139] found that having an individual treatment plan was not associated with patient empowerment. Nevertheless these adults were more likely to report using preventive and ambulatory care when their care involved at least two of: care coordination, care continuity, and a care plan. In this study, unlike the others, the unit of analysis was the patient rather than the provider organisation.

6.10.2 Causal Link 10:9 – Contexts

Taken together, the findings from the three relevant studies on preventive care imply that patient empowerment is sufficient, but not necessary, to stimulate increased use of preventive and ambulatory care.

6.10.3 Causal Link 10:11 - Care planning diverts patients from in-patient to primary care

Various studies describe mechanisms by which individual care planning diverts some patients from in-patient to primary care. MDTs' boundary-spanning roles assist in identifying patients in need of care coordination.[61,88,132,138,140] A UK study of paediatric care identified daily specialist community nurses visits to acutely unwell complex patients at home, and telephone consultations between the community nurse and hospital duty consultant, as means whereby an MDT could support joint care planning so as to avoid emergency hospital admissions and, if they should occur, enable the child to be discharged earlier

As to the outcomes so produced, four studies[61,132,138,140] found that care planning for individual patients increased patient diversion from hospital to primary care. One study – described below – did not. Two studies found that care planning during and after the transition from secondary to primary care reduces readmission rates,[105,141] and another two that having operational facilitators to support care planning reduced readmission rates.[87,105]

In a matched case-control study of American PCMHs Clarke and colleagues implemented and

evaluated a program that embedded non-licensed comprehensive care coordinators (CCC) in 14 PCMHs to help primary care doctors execute care plans in order (*inter alia*) to extend each practice's ability to support patients before, after and between primary care visits. This intervention reduced ED admissions by 20% annually compared with the control practices. Treadwell also found that 'embedding' a case manager in a PCMH reduced admissions per thousand patients over the following 18 months. Similarly Yoon and colleagues'[132] retrospective longitudinal study of 2,607,902 patients from 796 VHA primary care clinics in the PCMH model found that creating individualized treatment plans, assessing treatment barriers, and better coordinating visits to other physicians decreased the mean number of ED visits by 0.04 visits per patient ($p = .018$). A panel study of patients in Philadelphia found that care management by PCMHs (rather than improved access to primary care) reduced emergency department attendances by between 5.24% and 7.78%, but only for chronically ill patients (especially CAD, hypertension, CHF, COPD, asthma). A case study of a chronic aged and complex care service model in Australia found that the number of emergency department presentations and length of stay in the emergency department fell significantly in the 12 months following enrolment compared to the previous 12 months. Almost 30% of participants had no hospital presentations after enrolment. Referrals to non-hospital physiotherapy, podiatry, occupational therapy, dietetics and psychosocial services (but not to community nursing) increased[6]

Against this, Pourat and colleagues found that the combination of care coordination, continuity of care, and care plans did not decrease the likelihood of Emergency Department use, although it did increase use of preventive and ambulatory care and improved clinicians' communication with patients. This is an absence of evidence for the outcome that NHS policy makers had assumed, not evidence of an opposite effect. This study also implied that care planning at the patient level is most effective when combined with coordination and activities to increase the continuities of care plan.

Other studies argued that individual care planning and coordination during and after the transition from hospital to home reduced readmission rates to emergency departments. One specific mechanism was illness-specific specialised education to support patients in self-management post-discharge i.e. phone advice on how to monitor one's weight and look out for warning signs that would prevent an ED visit or hospitalization. This intervention did indeed make patients more likely to monitor their weight and change their health behaviours, but no less likely to be admitted or re-admitted to hospital A systematic review of transitional

care interventions[105] found that three components of care were associated with reduced short-term admission rates: care coordination by a nurse (most frequently a registered nurse or advanced-practice nurse), a home visit within three days, and communication between the hospital and the primary care provider. Most of the interventions in the review that reduced intermediate and long-term readmissions involved care coordination.[105] A mixed methods study of 18 complex care management organisations suggested that CCM teams that receive timely notifications of their patients' emergency department visits could intervene to avoid hospitalizations. Methods for ensuring safe transitions included medication reconciliation and developing contingency plans in case certain trigger events occurred.

6.10.4 Causal Link 10:11 – Contexts

Only two studies about diverting patients from hospital to primary care identified contexts in the realist sense. To minimise re-admissions, CCM teams must help patients find the resources they need in local health systems and communities.. Verhaegh and colleagues[105] observed that developing a valid and reliable method to measure the preventability of a readmission was important to enable clinicians to implement targeted readmission policies and penalties for preventable readmissions. Case management is one form of care planning for individual patients. Damery and colleagues' umbrella review, found that only one out of eight systematic reviews showed that case management reduced hospital admissions, that is diverted patients from in-patient to primary care. The exception was a review showing a 49% relative risk reduction of hospital admission for patients with heart failure.

6.10.5 Causal Link 10:12 - Care planning improves patient experience

The evidence that we found supported the assumption that care plans for individual patients improve patients' experience of care (10:12) but the studies were few. Just one study reported US focus groups' opinions that joint care planning with patients gained for healthcare providers a comprehensive understanding of the client's or family's healthcare needs, barriers and potential action regarding a patient's social support, health literacy, understanding of the care plan, plan adherence, and care preferences.

We found limited evidence from three studies that patient involvement in decision-making

about (i.e. planning) their own care improved patients' experience of care.[92,103,108] When patients felt they had been left out of decision-making about their own care, they felt vulnerable. A mixed methods study of American ACOs suggested the value of involving in care pathway redesign: 'We gave them (patients) an initial care pathway as we saw it and had them fill in what we missed. Every single interview raised using catheters as a point of anxiety for the patient and the urologists didn't realize that was a point of anxiety'. In three Canadian focus groups with 28 patients and informal caregivers in community-based primary healthcare, patients expressed support for the role of patient advocates who helped them navigate the care system and participate more fully in decision-making. This was particularly important for patients without a family member to bring to appointments.[108]

6.10.6 Causal Link 10:12 - Contexts for improved patient experience

As the context for care planning to improve patient experience, a study of focus groups across 10 communities found that trusting and open relationships between patients and providers created the conditions for care customised to the patient's specific needs, suggesting there may be a virtuous circle between trusting and open patient-provider relationships and patient-centred care.

6.11 Patient Diversion

Table 15 shows the causal links in the initial programme theory from patient diversion (component 11). These links are in a sense the kernel of the initial programme theory, in the sense of being a key intermediate outcome in the MCP model between (most of) the other components and the final intended outcomes.

Table 15: Causal links for which diverting patients from in-patient to primary care is the mechanism

MCP Component (1-13) IF	**MCP Component (1-13) THEN**	**IPT Causal Link**
11 More patients are diverted from in-patient to primary care services	12 Improved patient outcomes and experience of care	11:12
	13 NHS costs will reduce	11:13

6.11.1 *Causal Link 11:12 - Diverting patients from in-patient care improves patients' experience of care*

Three studies published since 2014 reported evidence about what effect diverting patients from secondary care had upon their experience of care. A 'qualitative analysis' of documentation[65.50%] described how a programme which integrated mental health care into ambulatory care enabled practitioners to support those with acute mental health needs and promote a more holistic and empowering approach to self-care which encompassed welfare and healing. The context for these perceived effects is noted above. An analysis of patient experience indicators compared the Integrierte Versorgung Gesundes Kinzigtal (IVGK; 'Healthy Kinzigtal Integrated Care') programme with 'usual care'. The adjusted comparison showed that approximately a third of the indicators were significantly better for people in the IVGK programme. Another third of the indicators changed in the desired direction, but not statistically significantly. The remaining third did not change. In some areas of care, such as osteoporosis treatment, important outcomes such as the number of fractures (closely related to quality of life and of patient experience) was significantly lower for people in the IVGK programme than the control.[8]

In a descriptively analysed study of telephone interviews with patients (convenience sample, n=15) who received care from the EPSILON geriatrics team network (France), patients reported being satisfied with the way the network enabled access to expert advice and support that would otherwise require hospital admission. 'Compliance' with medical and paramedical prescriptions in this small sample was reported as 72% and 74% respectively, but Canali and colleagues reported no comparisons with patients outside the network.

6.11.2 Causal Link 11:13 - Diverting patients from in-patient care reduces costs

We found few post-2014 studies reporting how diverting patients from in-patient care to outpatients departments or nursing homes reduces costs. Regarding the use of ED services, one US case study 'qualitatively analysed' IHI documentation and publications to examine the cost impact of integrating mental health care provision into ambulatory care for mental health service users with light, moderate and severe levels of complexity. This integrated approach cost less than a non-integrated approach. Users of the integrated service used urgent

care services 54% less than non-integrated service users, although the study did not quantify how much money was saved. In primary mental health services the per-patient costs of care increased for both integrated and non-integrated services, but less for integrated care.[6]

A matched case-control study in the US evaluated a program that embedded non-licensed CCCs in 14 PCMHs to help primary care doctors execute care plans so as to extend each practice's ability to support patients before, after and between primary care visits. This intervention reduced ED admissions by 20% annually compared with the control practices, saving payers approximately US$2000 per ED visit, which implied an estimated total annual cost reduction of US$1.4 million for the whole programme. Salary and benefits costs of the personnel dedicated to the program (but ignoring the hidden costs of medical directors' and other support staff time) were approximately US$950,000 annually. Treadwell and Giardino also report the equivocal finding that in two out of five case study sites PCMH-based care coordination by an 'embedded' case manager reduced the number of admissions per thousand patients and therefore reduced claims costs by US$7 per member per month in one site and US$14 in the other. The range of costs narrowed across all five sites, suggesting stronger managerial control of costs.

A German study used a difference-in-differences approach to compare the care costs (based on routine data) for people in the IVGK programme with those who were weren't. Care costs for people in the IVGK programme were €322 less per annum than the 'usual care' group, with the greatest savings in relation to hospital care (€179 per person), other services (€93 per person), and medicinal products (€37 per person). Huber and colleagues attributed annual cost savings of CHF440 (cardiovascular patients), CHF780 (diabetes) or CHF200 (respiratory illnesses) to the introduction of care guidelines in consequence of 'integrated care' in Switzerland.

Damery, Flanagan and Combes' found that in general, the evidence that 'integrated care' (mechanisms not specified) reduced healthcare costs was 'poor and heterogeneous'; and equivocal, with some SRs reporting cost savings, especially for the CCM, and others not.

6.11.3 Causal Link 11:13 – Contexts

Treadwell and Giardino did not report what contexts (in the realist sense) differed between the

PCMHs where patients had been diverted away from hospital care (reducing costs) and those where they had not. Briot and colleagues emphasised the necessity of integrating mental health care provision into (general) ambulatory care. Clarke and colleagues gave no contextual information (in the realist sense). Huber and colleagues described capitated (as opposed to activity-based) payments to providers as a favourable context. Kinjo and colleagues found that replacing hospital with PHC end-of-life care only reduced costs if community care began more than 30 days before the patient's death, although that finding reflected the Japanese structure of GP payments.

6.12 Other assumptions

We did not locate any evidence published since the beginning of 2014 relating to the final two causal links in the initial programme theory (Table 16).

Table 16: Other causal links in the initial programme theory

MCP Component (1-13) IF	**MCP Component (1-13) THEN**	**IPT Causal Link**
11 When more patients are diverted from in-patient to primary care	General practice will benefit	Other
Care coordination and demand management systems together occur	More responsive urgent care will develop	Other

7 Building a revised logic model

7.1 Strength of evidence for the initial programme theory

None of the causal links in the initial programme theory had a strong evidence-base by the standards of Cochrane or other systematic reviews, although some individual studies were methodologically strong. For each top-level causal link in the initial programme theory of MCPs, Table 17 summarises the extent of evidential support in the studies we found. In Table 17 a combination of primary studies with a systematic review is categorised as 'substantial evidence', multiple primary studies as 'supporting evidence', and a single primary study as 'minimal evidence'. 'Partial support' means we found evidence supporting some parts of this

causal link but not others, i.e. qualified support. ‘Equivocal’ means that we found evidence both for and against the causal link.

Table 17: Evidential status for the causal links in the initial programme theory

№		Causal Link	Studies: Number (quality appraisal score)	Evidential status
1	2	IF NHS managers will establish MCPs, THEN network management will develop PROVIDED that the specified of contextual conditions apply.	2 (100%), 2 (75%), 2 (50%), 1 (0%)	
	7	NHS managers will establish MCPs THEN referral network planning will develop	1 (100%), 2 (50%)	
2	3	IF Network management develops THEN Multi-disciplinary teams (MDTs) will be established.	2 (100%), 6 (75%), 3 (50%), 2 (0%)	
	6	IF Network management develops THEN care coordination through HIT use will develop.	1 (100%), 6 (75%), 5 (50%), 2 (25%), 1 (non-SR 0/11) review	
3	7	IF Multi-disciplinary teams (MDTs) are established THEN referral network planning develops	3 (100%), 6 (75%), 2 (50%), 2 (25%)	
	9	IF MDTs are established THEN preventive health care will develop	3 (100%), 6 (75%), 1 (50%)	
4	3	IF Culture changes occur in the participating organisations THEN MDTs develop	5 (100%; Inc. 1 SR 7/10), 3 (75%), 4 (50%), 1 (25%), 1 (0%)	
	8	IF Culture changes occur in the participating organisations THEN that will produce demand management systems	0	
	9	IF Culture changes occur in the participating organisations THEN that will produce preventive care	2 (100%; Inc. 1 SR 7/11)	
5	8	IF the voluntary sector becomes involved in MCPs THEN Demand management systems will be strengthened	0	
	9	IF the voluntary sector becomes involved in MCPs THEN Preventive health care will develop	2 (100%)	
	12	If the voluntary sector becomes involved in MCPs THEN patient outcomes and experience of care will improve	1 (75%)	
6	7	IF health information technologies are used to strengthen informational continuity of	6 (100%;), 88 (75%), 1 (50%), 1	

		care, THEN referral networks will develop	(narrative review 1/11) .	
	10	IF Information technologies (IT) are used to strengthen informational continuity of care, THEN care planning at the patient level will become more prevalent and systematic	3 (100%), 2 (75%), 1 (50%), 2 SRs (7/11, 0/11), 1 narerative review (1/11)	
	11	IF Information technologies (IT) are used to strengthen informational continuity of care, THEN patients will be diverted away from hospital services	1 (100%), 1 (75%), 1 narerative review (0/11).	
7	8	IF Referral network planning occurs THEN Demand management systems will be strengthened	0	
	10	IF Referral network planning occurs THEN Care planning at individual patient level will become more prevalent and systematic.	2 (100%), 1 (75%), 1 (50%)	
	11	IF Referral network planning occurs THEN More patients will be diverted from inpatient to other services (through admission avoidance, discharge support)	3 SRs (9/11,9/11, 7/11),, 2 (100%), 2 (75%), 2 (50%)	
8	9	IF Demand management systems are established THEN preventive care will become more prevalent and systematic; which will in turn strengthen demand management	1 (100%), 1 (75%), 1 (0%)	
	10	IF Demand management systems are established THEN care planning at individual patient level will become more prevalent and systematic.	0	
	11	IF Demand management systems are established THEN more patients will be diverted from inpatient to primary care	2 (100%)	
9	11	IF Preventive health care becomes more prevalent and systematic THEN more patients will be diverted from inpatient to primary care.	0	
10	9	IF Care planning at individual patient level becomes more prevalent THEN Use of preventive care will increase	1 (100%), 1 (50%), 1 (25%)	
	11	IF Care planning at individual patient level becomes more prevalent THEN more patients will be diverted from in-patient to primary care.	3 (100%), 3 (75%), 2 (50%), 2 (25%), 1 SR (7/11).	
	12	IF Care planning at individual patient level becomes more prevalent THEN Patient experience will improve	1 (100%), 2 (75%), 1 (25%)	
11	12	IF Patients are diverted from in-patient care THEN patient experience will improve	1 (50%)	

	13	IF Patients are diverted from in-patient care THEN NHS costs will reduce	1 (75%), 1 (50%), 1 (25%)	
		IF patients are diverted from hospital care THEN general practice will benefit	0	
		IF care coordination and demand management systems both develop THEN urgent care will become more responsive	0	

KEY	
	No evidence found
	Partial/minimal support
	Supporting evidence
	Supporting evidence, with elaborations and additions
	Equivocal evidence
	Equivocal evidence (substantial)
	Substantial evidence

On that basis weremoved certain causal links from the initial programme theory, qualified others, and elaborated or expanded others again. We continue to flag in bold italics ***(like this)*** which of the policy-makers' original causal links each revision applies to.

7.2 Causal Links Removed or Qualified

The causal links which lacked evidential support appeared superfluous to an evidence-based logic model. (Table C of the supplementary website material lists these superfluous links in full.) 18 We therefore did not take them forward into the revised logic model. We also removed the un-evidenced assumptions about what prior contexts favour the establishment of MCP-equivalents ***(1:2).*** We found no evidence as to whether the state of social services, or whether health professionals and organisations viewing those whom they care for as people not patients, is relevant to establishing MCP-equivalent networks.

Removing the above elements produced a truncated but more strongly evidence-based revised logic model.

For some causal links the evidence conflicted. To the realist mind, this ambivalence is a clue that the outcomes of these mechanisms may depend heavily upon contextual factors[149] unidentified in the published research we reviewed. One such causal link is that the formation of MCP-equivalents necessarily stimulates care planning at an organisational and inter-organisational level ***(1:7).*** Whilst it gives proof-of-concept that it *can* result, the evidence from ACOs also shows that 'horizontal' PHC networks do not automatically produce inter-organisational care planning, in particular between the equivalents of general practitioners and community health services. Causal link ***(6:11)*** that if HIT is used to strengthen informational continuity of care, patients will be diverted away from hospital services was another unresolved case. Another variant, where different contexts are defined as different stages in a project's life, might arise with causal link ***(8:11)***: demand management schemes may initially increase demand for services (because of more case-finding) before a reduction follows. The evidence was also equivocal as to whether diverting patients from in-patient to primary care ***(11:12)*** saves costs.

Causal link ***(4:3)*** was that if organisational culture changes in the relevant organisations, multi-disciplinary team working will develop. Some studies identified culture change as a pre-requisite,

one study produced evidence to the contrary, and another proposed that culture change was a *consequence* of collaboration. Causal link (***1:2)*** however suggests a possible resolution of this seeming conflict. The formation of an MCP-equivalent might – in the right contexts - initiate a virtuous circle: organisations which already have collaborative cultures are more likely to set up inter-organisational networks, they provide care in more collaborate ways as a result, and this in turn reinforces their collaborative culture, and so on.

7.3 Contextual Qualifications

Our secondary evidence reported certain contexts (moderators of the proposed MCP mechanisms) that the policy-makers' programme theory omitted, and some which qualified the (remaining) MCP mechanisms.

We found considerable additional evidence about favourable contexts for establishing MCP-equivalents (causal link ***(1:2)***). Organisations are more likely to join them when:

1. joining endorses general practices' existing activities
2. providers think the MCP-equivalent seems relevant to their care group(s) and clinical tasks.
3. GPs (or the equivalent) are in partnerships rather than single-handed.
4. the MCP-equivalent seems to offer its member-organisations external resources and/or money.
5. similar organisations which they admire join the MCP-equivalent.
6. external controls are permissive and light, and the MCP-equivalent has local champions.
7. staff are professionally qualified.
8. doing so seems likely to reduce the risks they face, for instance the risks of competition.

However we found no evidence to support the following assumptions about the context for causal link **1:2**:

1. Initial conditions favouring MCP setup include:
   (a) The populations served are of a size and type likely to benefit.
   (b) They desire autonomy and control over their health and healthcare, and are likely participate health-maintaining activities.

Secondary evidence about causal link ***(1:7)*** (MCP-equivalents lead to the development of planned referral networks) included a report that one PCMH negotiated 50 'compacts' with specialist providers whilst other nearby PCMHs negotiated few or none. Contexts that obstructed making care

compacts were geographical (small, isolated communities), small general practices, misaligned incentives (payments), and the time required.[67]

Contexts for MCP-equivalent networks to establish HIT-based care coordination (causal link ***(2:6)***) included the credibility and track record of the lead (network-coordinating) organisation, and good relationships between organisations. Payment models can incentivise, and contractual hangover inhibit, inter-organisational care coordination. The inclusion of health centres (or the equivalents) in MCP-equivalents aids provision and coordination with less common services. For MCP-equivalents to establish virtual MDTs (causal link ***(2:3)***) requires HIT infrastructure. HIT training and above all system development for sharing EHRs was an indispensable context. 'Embedding' or co-locating allows informal and meeting-based care coordination, improved mutual understanding.

Traditional status and deference hierarchies are a barrier to MDTs developing organisational-level and inter-organisational care planning (causal link ***(3:7)***). Such planning also requires role clarity, mutual familiarity with other professions' contributions, and that boundary-spanning staff have enough seniority, assertiveness and relational skills. It is necessary that MDT members trust each other and the team coordinator; have confidence about their own skills and are clear about not being liable for outcomes beyond their own personal control. Managerial support can help create these conditions. In particular, it is necessary that doctors do not resist boundary-spanning activities. MDTs require clearly structured communication and common training (e.g. on different professions' roles and contributions). Shared group goals also help improve patient outcomes. Other favourable contexts for inter-organisational care coordination include the credibility and track record of the lead (network-coordinating) organisation, and good relationships between organisations. They also include case-mix: high complexity and low knowledge about a patient's condition increased providers' dependency on boundary-spanners for making care coordination work. Payment models can incentivise, and contractual hangover inhibit, inter-organisational care coordination. The inclusion of health centres (or the equivalents) in MCP-equivalent networks aids provision and coordination with less common services. Employment by same organisation helps MDT working, as does staff familiarity with other professions' roles and contribution to care, and allowing staff time to participate in collaborative activities.

If changes in organisational culture ***(4:3)*** are to promote the development of MDTs, the main contextual requirements were trust between occupational groups (itself reinforced by experience of working together successfully), mutual respect, shared training (see below) and the application of

other, unspecified ‘resources’.

For HIT to be used to coordinate care (causal link ***(6:7))***, the quality of HIT design is as noted all-important, but the current IT market is deficient in that respect. HIT systems do not by themselves produce care coordination, but only in a context of corresponding care management practices. Despite wide agreement about the ideal characteristics of an EHR there is only limited evidence to confirm its ability to improve patient care (causal link ***(6:12)***), and reports of failures, probably because many provider organisations do not yet have such a system and/or exploit in it their everyday working practices. Many reports of successful uses of HIT for MCP-equivalent purposes come from the USA, where corporate hospitals can invest large sums in data analytics.

The effects of planned referral networks upon the diversion of patients from in-patient to primary care (causal link ***(7:11)***) depend on the case-mix (care group(s)) involved. The outcomes are greatest for low and medium morbidity patients, especially the 1% of heavy users (with 5 or more hospitalisations per year), but the opposite outcome occurs for high-morbidity patients (a finding consistent with studies suggesting that case-management also increases case-finding among patients with complex needs[32]). For care planning at inter-organisational level to stimulate care planning for individual patients (***(7:10)*** and for individual level care planning and preventive care to develop ***(3:9) (4:5) (5:8) (7:10) (9:11)*** patients must:

- Trust care coordinators and understand that role.
- Use the care coordinator to coordinate their care, rather than the patient spontaneously contacting different providers directly.
- Do not find MDT care worrying.
- Have suitable language skills and acculturation.
- Agree to adopt healthier behaviour.

And that:

- MDTs have time to discuss the resulting care plans with patients before implementing them.
- Younger doctors may be more responsive to incentives for care planning for individual patients ***(7:11) (7:10)***.

For demand management activities to divert patients away from secondary care (causal link ***(8:11)***), tariff payments to hospitals (where present) are a perverse incentive. The same applies where providers (e.g. some ACOs in the USA) are paid by volume of activity (e.g. for attracting insurance subscribers as patients) rather than paid by, say, capitation or according to the character

of a resident population served. More generally, we add that any culture change in favour of diverting patients from hospital to primary care has to emerge from, and despite, a context of the medicalisation of ageing, under-provision of social care and under-use of hospices.

We found evidence that individual care planning does divert patients from in-patient to primary care ***(10:11)*** but also strong evidence (umbrella review) that case management schemes are an exception to this tendency.

As for causal links ***(11:12)*** and ***(11:13)*** (diverting patients from hospital care will reduce costs and improve patient experience), the required context was development of preventive care and making ambulatory medico-social work services and social care support routinely available and financially viable. This context also applies to causal links ***(7:11, 8:11, 10:11)*** since they too have patient diversion as an outcome. Since our search focused on primary care networks, it is not surprising that we found no studies about factors other than referral patterns reducing hospital costs (***11:13)***. However it has long been known that because many hospital services are indivisible, substantial hospital cost reduction only occurs if referrals decrease enough for whole clinics or wards to close. Having to provide a wide spectrum of clinical specialities limits how far district general hospitals can do this, and the more immediate effect may be diseconomies of scale (reduced efficiency) rather than lower total costs. Shortening hospital length of stay (e.g. by 'unblocking' beds) reduces total cost per episode, but does so by reducing low-cost (recovery and 'hotel') rather than the high-cost (initial diagnosis and treatment) bed-days.[32]. When the freed bed-days are used for additional patients the overall effect is therefore to replace low-cost with high-cost bed-days. By increasing throughput this increases hospital productivity and efficiency but also raises (not reduces) total costs. The required context for mechanism ***(11:13)*** to work is therefore the opposite of these conditions. Then, under a tariff system, the savings per episode (from reduced hospital income) accrue directly to the primary care provider or payer in the form of reduced tariff claims.

7.4 Additional, Elaborated or Qualified Causal Links

Chapter 5 noted additional evidence found for causal links that were not in the initial programme theory but are nevertheless relevant to MCPs' intended outcomes. These additions focus, qualify or elaborate the initial MCP programme theory.

On that basis causal links ***(1:2)*** and ***(2:3)*** should be qualified by noting that which organisations and professions (e.g. whether mental health professionals are included) are included when constructing an MCP-equivalent defines (or if absent, limits) what services that MCP-equivalent, and the MDTs in it, can coordinate. There are also, so to speak, degrees of networking ranging from monitoring, information exchange alone to contractual relationships, and to a formalised network with a permanent central coordinating body.

The evidence about causal link ***2:6*** (that network management develops HIT-based care coordination) identified specific media and artefacts ('boundary objects') through which such coordination occurs: care compacts, standardised and agreed care processes and pathways, actively managing across the whole pathway, pooled resources, uniform training across staff groups, case conferences, and information feedback between clinicians in separate organisations. Similarly, we found evidence specifying how causal link ***3:7*** (establishing MDTs leads to care planning at organisational and inter-organisational level) works. Studies relating to several causal links ***(2:7) (2:3) (3:7) (4:3)*** indicated the necessity for boundary-spanning roles, and of health-workers mutually supporting and assisting each other across organisational boundaries. Face-to-face communication is quicker, more responsive and less ambiguous than IT-based (evidence for preferring co-located to virtual MDTs).

Care plans for individual patients care planning has its effects (causal links ***(10:9,10:11,10:12))*** through the mechanisms of advocacy, care coordination by staff in boundary-spanning roles, increasing the continuities of care, making care more person-centred, and making decision-making a more shared activity.

The largest addition to the initial programme theory concerned MDTs as a care coordinating mechanism (causal links ***(3:7) (3:9)***). Besides those already listed in the initial programme theory we found evidence that MDTs are also a mechanism for producing or undertaking:

- Culture change among health professionals ***(3:4)***.
- Voluntary sector involvement ***(3:5)***
- Informational continuity of care ***(3:6)***
- Demand management systems, through gate-keeping and need- or risk- stratification ***(3:8)***.
- Care plans for individual patients ***(3:10)***
- Diversion of patients from unnecessary secondary in-patient to primary care ***(3:11)***.
- Better patient care in the senses of greater continuity and informal carer involvement ***(3:12)***.

Causal link ***4:3*** (culture changes in the participating organisations promote MDT working) can be specified more closely: the necessary cultural changes are to strengthen health workers' knowledge of and favourable attitude towards, other professions' contribution to care; a climate of psychological safety; focus on tasks which are practically useful to the MDT members; development of shared expectations and values across the MDT, in particular dialogue between medical and mental health providers. An important skill is that of communicating important information clearly in safety-critical situations, but in such ways as to maintain good informal relationships. Convergent working practices help produce cultural convergence across professions, as does cross-professional training. We also found evidence that culture change in an MCP produces patient level-level care planning, better patient experience and staff well-being.

For voluntary sector activities to strengthen preventive care (***5:9***) requires social prescribing or a similar mechanism for patients to access voluntary sector resources.

In using HIT to coordinate care (causal link ***6:10***), the clearest requirement is high quality HIT design. *Inter alia* different organisations' HIT systems must be capable of communicating with each other, requiring in turn adherence to published common standards and standardised data templates. The systems must be capable of the necessary data analysis (e.g. risk stratification, workflow tracking of patients' care in real time). Electronic health records (EHR) ***(6:3,6:7,6:9,6:10,6:13)*** have multiple uses: enabling access to patient information for all staff members; instant messaging; within-chart notes; phone templates that can be routed to team members' inboxes; task assignments; and keeping 'huddle sheets' besides storing personal clinical information. Not least was the importance of using the EHR to guide physician workflow and good clinical practice, including action reminders. Non-clinical care coordinators may be better than clinicians at coordinating care electronically. The HITs that produce informational continuity of care can also, by enabling need and risk stratification, promote demand management systems. Besides those mentioned in the initial programme theory, additional causal links from 'care coordination through HIT' to other MCP components were:

- Promotes MDT working ***(6:3)***
- Supports demand management activities ***(6:8)***
- Promotes preventive care ***(6:9)***
- Save cost ***(6:13)***

Table E in the supplementary website material summarises the evidential status of the additional causal links to those in the initial programme theory.

~~18~~

We therefore added these additional causal links between MCP components to the programme theory, except for those producing the outcome of staff well-being, which was not a central aim of the original programme theory and policy.

7.5 A Revised MCP logic model

Adding these additional causal links to the truncated version of the initial MCP programme theory and resolving certain ambiguities produced a revised, more strongly evidence-based logic model. Some concepts in the policy-makers' causal links from which we developed the initial MCP programme theory were, in realist terms, ambiguous:

- 'MCP set-up': ambiguous between the mechanism of setting up MCPs (i.e. NHS managers' actions) and the context (favourable or unfavourable initial setting).
- 'Demand management': ambiguous between the mechanisms for managing demand (e.g. referral screening, risk stratification) and their intended outcomes (fewer referrals and admissions to hospitals).
- 'Patient diversion': ambiguous between the mechanisms for diverting patients away from hospital (e.g. providing non-hospital care) and their intended outcomes (fewer hospital admissions, quicker discharge). Furthermore, 'patient diversion' means both diversion *from* hospital and *into* primary care, extended or enhanced as necessary.

For the purposes of testing the initial programme theory as it stood, we had left these formulations untouched when comparing it with the secondary evidence. But to produce a more coherent, less ambiguous, more evidence-based revised logic model we resolved the first ambiguity by defining 'MCP establishment' as the mechanism (NHS managerial action) and the other two as the resulting (intermediate) outcomes (e.g. the resulting activities or systems) like the other analogous entities in the initial programme theory. At one point in their causal links, the policy-makers' had skipped a link. Creating an MCP is of course a precondition for the subsequent mechanisms which depend on that, but not necessarily the *immediate* precondition. The mechanism of creating an MCP-equivalent

network leads, the secondary evidence suggests, to network management activity in general, and *that* mechanism (rather than the initial creation of an MCP *per se*) is what promotes care planning at organisational and inter-organisational levels. We therefore revised the programme theory accordingly.

These subtractions, additions, qualifications and resolutions of ambiguity together yielded the top-level context-mechanism-outcome (CMO) statements of a revised, more evidence-based programme theory. Table D in the supplementary website material lists its components and the causal links between them. Appendix 14 shows in greater detail the revised logic model and which causal links in the initial programme theory had a least some evidential support (column IPT+E); which ones the evidence review added to the initial programme theory (column E); and which links in the initial programme theory we found no supporting evidence for (column IPT). Chapter 4 sets out the ways in which the initial programme theory operationalised (defined) the causal links it contained. Some of these causal links carried forward unchanged from the initial programme theory into the revised logic model, So, therefore, do the ways in which they are operationalised (defined).

7.6 Dependencies and Priorities

Figure 4 shows the revised sequence and dependencies among the set of C-M-O links that together make the revised logic model for MCPs.

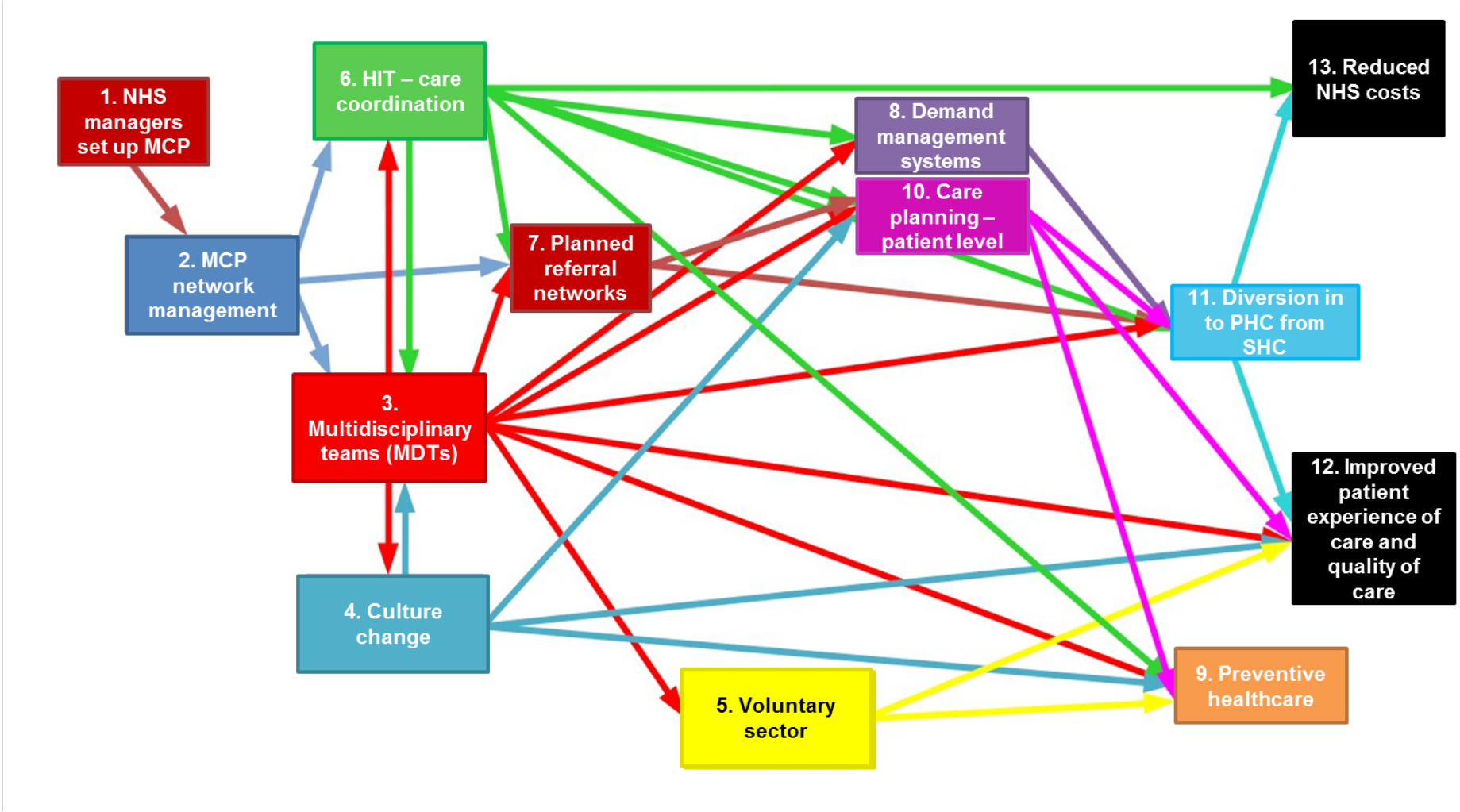

Figure 4: Revised logic model

In Figure 4 each arrow represents a mechanism. The corresponding outcome is indicated by the box at the right-hand end. All except the first two mechanisms MCP components (NHS managers set up MCP; culture change) are the outcome(s) of some previous mechanism(s). The realist metaphor of a 'mechanism' should not, of course, be misunderstood as implying that each component will act as a mechanism for another component automatically without (in this case) any activity (reasoning, actions, use of resources) by NHS managers, staff and any other relevant agents (not least, patients), or with a guaranteed outcome. Rather, their activities *are* the mechanisms. Furthermore, each of these mechanisms is only able to produce its intended outcome when the requisite context(s) are present. The final outcomes of cost reduction and improved patient experience depend on all the antecedent mechanisms. This finding is consistent with strong evidence that implementations of the CCM were significantly more effective when multiple components of the CCM were implemented rather than just one.

Figure 4 makes apparent how central two components are in acting as mechanisms to bring about change in other components. One is the operation of multi-disciplinary teams (Component 3). MDTs are the mechanism or joint mechanism to produce eight other components on which achievement of MCPs' two main intended outcomes (improved care, reduced cost) depend. MDTs also contribute *directly* to improving the quality of patient care and to changing the culture of healthcare organisations. Similarly the second central component is using HIT for care coordination (Component 6). HIT is the mechanism or joint mechanism for four other components on which achievement of MCPs' two main intended outcomes depend, and contributes directly to producing one of these outcomes (cost control). Furthermore, MDTs and the use of HIT for care coordination reinforce each other in a virtuous circle. MDT activity and culture change (Component 4) reinforce each other in a second virtuous circle. In the more evidence-based revised logic model, preventive care (Component 9) is not on the causal path to reduced costs (Component 13) or improving patients' experience of care (Component 12). The justification for it is independent of that (most obviously, that preventive care is worthwhile in itself). However, the very specific contexts required for cost reduction (see Chapter 5) remind one that for these causal links to 'work', the favourable contexts noted above must either exist or be created.

7.7 How well evidenced is the revised logic model?

Despite the above revisions, even the revised logic model did not always have a strong evidence

base by the criteria of the hierarchies of evidence used in most non-realist systematic reviews. Even the systematic reviews that support parts of the revised logic model often summarise uncontrolled (non-comparative) or descriptive studies. These criteria have however to be applied with caution in realist review and synthesis, and indeed to qualitative and mixed methods studies, which the majority of the studies we selected consisted of. Furthermore, weak evidence is nevertheless better than still weaker evidence, or none. Even so, causal links had minimal supporting evidence (just one study). Table 17 categorised each causal link according to its strength of evidence compared to the other causal links that we reviewed. (The categories are defined above.) Table 18 combines and summarises those categorisations for all the causal links, both inherited and added, in the revised logic model.

Table 18: Revised programme theory causal links: relative strengths of evidence base

Strength of evidence	Causal links in Revised Programme Theory
Substantial	Culture changes in provider organisations help multidisciplinary teams develop (R4:3).
	Culture changes in provider organisations help preventive healthcare develop (R4:9).
	Culture changes in provider organisations enable individual care plans to become more widely used. (R4:10).
	Culture change in healthcare providers produces better patient experience (R4:12).
	Use of information technologies (IT) to strengthen informational continuity of care enables wider use of individual care plans (R6:10).
	Planned referral networks make it more likely that patients will be diverted from unnecessary secondary care to primary care. (R7:11).
	Individual care plans make it more likely that patients will be diverted from unnecessary secondary care to primary care. (R10:11).
Supporting	MCP network management helps multidisciplinary teams to develop (R2:3).
	MCP network management helps care coordination through IT develop (R2:6).
	MCP network management helps planned referral networks develop (R2:7).
	MDTs produce culture change in the health

	system (R3:4).
	Multidisciplinary teams help planned referral networks to develop (R3:7).
	MDTs produce better demand management systems (R3:8)
	IF Multidisciplinary teams are developed THEN preventive healthcare develops. (R3:9).
	MDTs produce care planning at patient level (R3:10).
	MDTs produce better patient experience and outcomes (R3:12).
	Voluntary sector involvement helps preventive health care develop (R5:9).
	Voluntary sector involvement contributes to improved patient outcomes (R5:12).
	Informational continuity of care promotes MDT working (R6:3)..
	Information continuity of care (through IT) helps planned referral networks develop (R6:7).
	Informational continuity of care (through IT) promotes demand management systems (R6:8).
	Informational continuity of care (through IT) promotes demand management systems (R6:9).
	Planned referral network assist the use of care plans for individual patients.(R7:10).
	IF Care planning at individual patient level becomes more prevalent THEN Use of preventive care will increase (R10:9)
Partial	R1:2,. IF NHS managers set up an MCP THEN MCP network management develops (R1:2).
	Demand management systems make it more likely that patients will be diverted from unnecessary secondary care to primary care. (R8:11).
Equivocal	IF Care coordination through IT develops THEN Individual care plans are used (R6:10)..
	Care coordination through IT makes it more likely that patients will be diverted from unnecessary secondary care to primary care. (R6:11).
	Planned referral networks make it more likely that patients will be diverted from unnecessary secondary care to primary care. (R7:11).

	Diverting patients from unnecessary secondary care to primary care will reduce NHS costs (R11:13).
Minimal	Multidisciplinary teams assist culture change in provider organisations (R3:4)
	Multidisciplinary teams assist voluntary sector involvement (R3:5).
	MDT working produces informational continuity of care (R3:6).
	Multidisciplinary teams make it more likely that patients will be diverted from unnecessary secondary care to primary care. (R3:11).

Alidina and colleagues' study[67] implies that causal link R4:3 (cultural changes lead to MDTs) should be interpreted as meaning that culture change is sufficient to produce MDTs, but not necessary; MDTs can form for other reasons without that. The equivocal evidence about R6:7, R6:11, R6:10 and R7:10 was substantial on both sides of the argument. Were it not for a single (small and weak) study which found no effect (rather than a contrary effect), causal link R9:11 (IF care planning for individual patients becomes more prevalent THEN more patients will be diverted from in-patient care) would have had 'substantial' support. To the realist mind, equivocal evidence suggests that contextual factors unrecognised in the original studies condition the production of the corresponding outcomes.Figure 5 adapts Figure 4 so that the widths of the arrows reflect which of the above categories of evidential support each causal link in the revised logic model has.

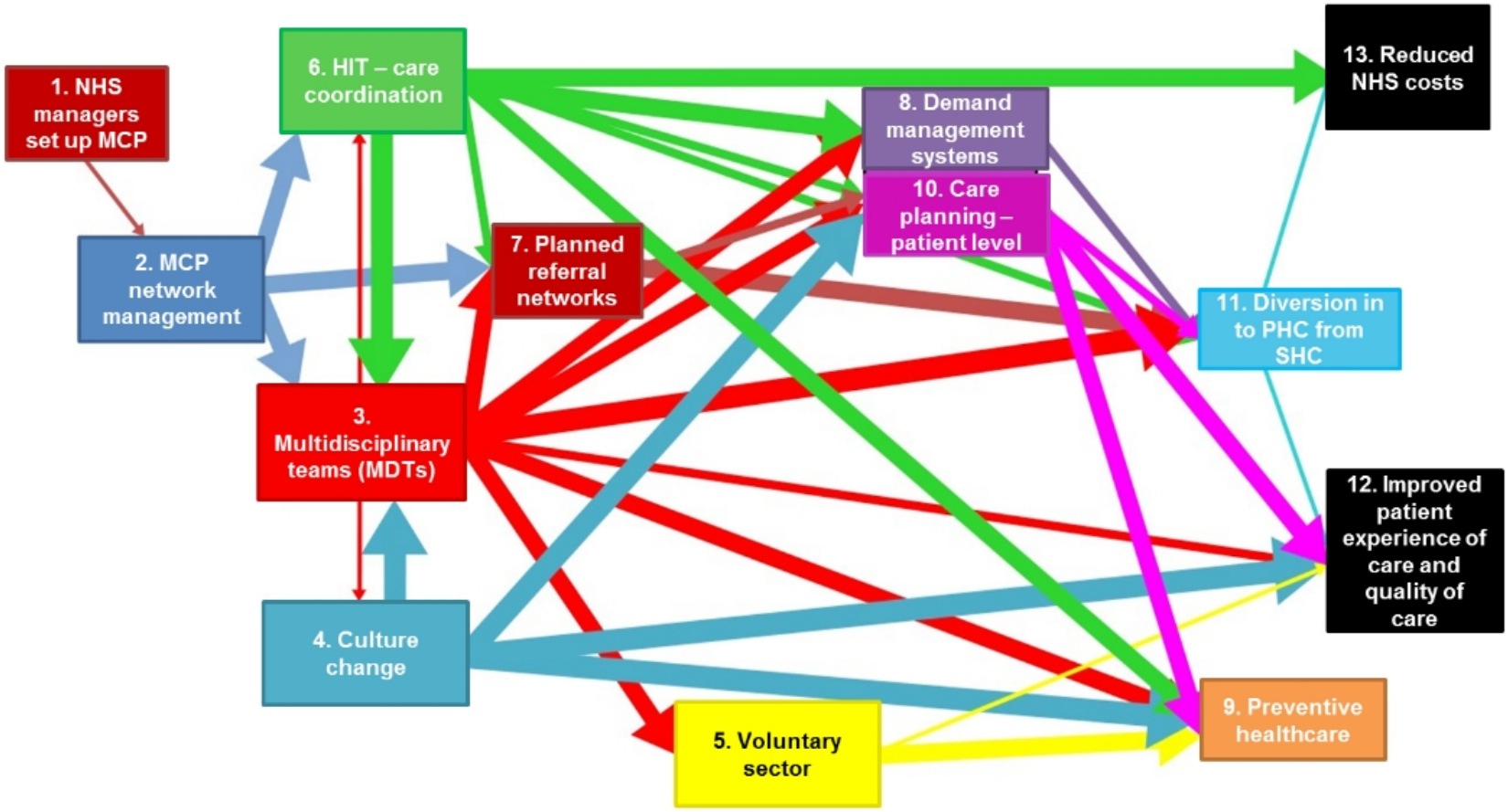

Figure 5: Revised logic model of the causal links through which MCPs produce their outcomes: relative strengths of evidence base

The distribution of evidential support approximately matches the dependencies mapped in Figure 4 The central place of MDTs and HIT in terms of dependencies is largely supported by an evidence base which is strong by the standards of this research literature, if not necessarily in Cochrane terms. The same applies to network management and cultural change. Even so, publication bias may still have resulted in successful rather than failed attempts to set up such mechanisms being reported in the literature that we reviewed. Because of their lack of attention to context, we also doubt that the studies we reviewed have collectively identified all the feedback loops at work in such large, complex health system changes. The above findings are therefore more likely to err towards over- than under-estimating the likely effects of implementing even the revised logic model.

Like its predecessor the revised logic model contains successively linked (concatenated) mechanisms: the outcome of some mcchanisms is to trigger one or more further mechanisms, or indeed feedback loops, virtuous or vicious depending on the context. If a later mechanism in the sequence is not in fact triggered, it matters little that if would have been a powerful mechanism if only it had been triggered. The evidence for the whole chain of mechanisms (that is, for the revised logic model as a whole) is therefore only as strong as the evidence for the evidentially weakest mechanism in it. Similarly, the outcomes of the whole chain are constrained by, and depend on, the weakest mechanism(s) and intermediate outcome(s) within it. In the present revised logic model these considerations apply particularly to the final-step mechanisms. Evidence that diverting patients from hospital into primary care will increase the quality and reduce the costs of patient care was scant among the papers we found, and the contextual requirements quite restrictive.

8 Discussion and Conclusions

This review was commissioned by NIHR HSDR as part of a suite of contemporaneous reviews to improve understanding about the new models of care. The other reviews being conducted were:

- 15/77/05 Hanratty ‘Innovation to enhance health in care homes: Rapid evidence synthesis’
- 15/77/10 Baxter ‘Understanding new models of care in local contexts: a systematic review using frameworks to examine pathways of change, applicability, and

generalisability of the international research evidence'

- 15/77/15 Turner 'An evidence synthesis of the international knowledge base for new care models to inform and mobilise knowledge for Multispecialty Community Providers (MCPs)'
- 15/77/25 Bunn 'Supporting shared decision making for older people with multiple health and social care needs: a realist synthesis to inform emerging models of health and social care'

Findings from these reviews will, together, probably provide greater insight into the complexities of designing and delivering new models of care in the English NHS. However, because this review was the earliest it was not possible at the time of writing (July 2017) for us to compare our findings with those from the others. To facilitate use of our findings we have formulated (boxed) 'prompts for decision-makers' that provide an action-oriented, condensed set of prompts for decision-makers to consider in the light of their own local and/or regional knowledge.

In this section we report on the strengths and limitations of our review and take the opportunity to critically reflect on how we applied a realist approach to this broad and complex review topic. Our methodological reflections can inform both the design and commissioning of future reviews on complex, system-level health and social care topics, as well as contribute to the development of realist methodology. To prompt methodological development, we also make methodological research recommendations. First, in Chapter 8, we present and discuss our conclusions about the policy makers' original programme theory. Next, we do the same for step 2, the evidence review; and then the same for step 3, the synthesis comparing initial programme theory with evidence review findings.

In this review we followed the RAMESES publication and quality standards (see Table A in the supplementary website material). We used a realist approach in order to gain insight into how MCP-like mechanisms operate in the contexts of different complex systems. Grounded in the knowledge needs identified by service leaders, policy makers, researchers, and our stakeholder group, the review provides a decision-relevant, empirically-refined understanding of how MCPs might work. We also drew on a broader international literature.

We have documented (Chapter 3, Appendices 2,5,6&7) how we applied a realist approach so that the processes for identifying, elaborating, and refining programme theories are

transparent. Nevertheless, we acknowledge that the complexity of the review topic, and the lack of specificity in many included studies about programme components, their implementation, and/or the context in which they were delivered limited the extent to which we could contextualise the operation of mechanisms. The vast amount of published research about the policy issues which MCPs address contrasted with the limited time and resources available for completing this project, which is why we limited our selection of studies to those published from the end of 2013 to the present (July 2017). Whilst some earlier studies are also cited, and whilst post-2014 systematic reviews should (and often did) include the most important findings from earlier studies, further earlier studies might also usefully have been included had circumstances allowed. That was the biggest potential empirical limitation in this review. These constraints also limited our opportunity to focus on particular key aspects of the system in depth (as Petticrew, Anderson et al. recommend.) Economic evaluations tended especially to focus was on linear cause-effect relationships with descriptive outcome measures rather than on capturing the CMOCs and their interactions in relation to health and cost outcomes. Our recommendations for further research address some of these issues.

Few reviews endeavour to explain the complex interactions that take place in a health system as a whole. Configurative systematic reviews of social and organisational processes may provide greater insight than inappropriately applying hypothesis-testing systematic review methods to complex social phenomena. In this way, our review heeded the call for research that improves understanding of how events play out within a system and capture the ways in which interactions over time can lead to the conditions that enable or inhibit further interactions. Because of the complexity of the system we were researching we applied Occam's Razor (explanations should be only as complex as they need to be, and no more) when constructing the 'If-Then' statements. Not that we thought of these statements in linear cause-effect terms; rather, we used them to get insight into the way that context-mechanism-outcome configurations emerged over time, interacted and were 'nested'. Neither do we go beyond the conventional 'boxes and arrows' representation to explore less linear ways of graphically representing logic models, so as to encompass such concepts as emergence, feedback loops, and tipping points (as Funnell and Rogers recommend[147]).

Where policy documents were ambiguous or elliptical, focused 'realist interviews' may have helped to elucidate proposed explanatory steps within stakeholders' programme theory and provided additional insight at this stage. At the theory-refining stage, we 'populated' the imputed steps using the located secondary evidence. A further development of our realist

approach would be to link its analytic framework more fully to other theories of organisation and health systems so as to facilitate the translation of findings between and across fields of practice, policy, and academic inquiry.

The strength of our review is that we have appraised and synthesised evidence about how complex systems of care operate and brought it to bear on policy makers' explicit and implicit understandings about how the NHS operates. Whilst time and resource-limitations constrained, in part, the depth and complexity of this review, we believe that it does demonstrate how to conduct collaborative secondary research into complex systems. We believe that our findings, in the form of a revised, evidence-based logic model (and 'prompts for decision-makers') are directly relevant to decisions that national policy-makers and regional commissioners will confront in the near future. The way in which we have applied realist synthesis, with both its strengths and limitations, contributes not only to the critical development of research methods into complex systems but also to broader debates in public health.

From the foregoing findings we can summarise answers to our research questions.

8.1 The Initial Programme Theory of MCPs

We begin with the policy makers' original assumptions (step 1 above). .

8.1.1 How do policy makers and top NHS managers predict MCPs will generate the policy outcomes stated in 5YFV?

Chapter 4 answers more fully, but in brief there was no simple answer to this question. The policy- makers' programme theories proposed a large number of links, all originating from three starting points (see Figure 1, Chapter 4):

- NHS managers' action in setting up MCPs as network coordination structures for (at least) general practice and CHS, and for a complex of other services which varied between MCPs but usually included social services and urgent care, and (less often) mental health services.
- Changes in the culture of these organisations and across the whole MCP.
- Voluntary sector willingness to contribute to the activities noted below.

Between them, these three would be the mechanisms producing (as first-wave intermediate outcomes):

- Network management of the above constellation of organisations
- Formation of multi-disciplinary care teams
- Referral networks, now planned and managed rather than emergent.
- More active development of preventive care
- 'Demand management' systems

Combined with other linkages, these outcomes would then launch a further set of mechanisms, producing as (second wave) outcomes:

- Care coordination by means of health information technologies (HITs)
- Further development of 'demand management' systems
- Care planning for patients
- Diversion of patients from hospital into primary care

Finally, the latter outcomes would become the mechanisms for reducing the cost of NHS care and improving patients' experience of care. These effects would result from various parallel, mutually supporting and parallel mechanisms whose main linkages only are summarised above. NHS cost reduction was assumed to be the outcome of (depend upon) thirty-nine prior mechanisms in all, improved patient experience upon forty.

8.1.2 *What variants of MCP are policy makers creating?*

So far (spring 2017) neither the policy materials we analysed, including the first-wave MCP logic models, nor professional press rapportage, suggests that there are any groups of MCPs whose shared characteristics can be contrasted with those of other groups of MCPs with different shared characteristics. Rather, MCPs at this stage all serve essentially the same function (according to 5YFV) of horizontally coordinating managed referral networks across: general practices (and/or general practice 'at scale'); CHS; social services; mental health; urgent care; and (varying by site) miscellaneous other services. Accordingly MCPs have as yet a similar architecture, with a central body (perhaps one their member-organisations) coordinating the aforementioned activities and mechanisms across the network as a whole. Where MCPs do so far vary is in how each is adapted to its particular local setting and

assemblage of member-organisations. At most one might say that the 14 first wave MCPs represented 14 variants. However MCPs are still at an early stage of development so the question of whether distinct types (groups) of MCPs will develop remains open. In particular, the relationship of primary care homes models to MCPs is at present uncertain. In their size, structure, function and governance they are quite different to MCPs. Their policy relationship to MCPs – whether primary care homes are an alternative or a part of MCPs - remains at present an important undecided aspect of NHS policy. The relationship of MCPs to the English version of accountable care organisations is also unclear at present.

8.2 The review of evidence – what equivalents of MCPs or components of MCPs exist?

In current NHS policy, the main function of an MCP is to coordinate healthcare provision 'horizontally' across multiple primary care and related (e.g. social care) services. International equivalents are therefore the organisations and networks which perform a similar function in other health systems. Chapter 1 briefly described a selection of them. Chapter 6 provided more detail. On a realist view similarity of context is the all-important consideration in deciding whether an MCP-equivalent might be practically transferable into NHS settings. Here, 'context' means factors outside the MCP-equivalent mechanisms which moderate their intended outcomes. When considering whether MCP-equivalents could successfully be replicated in another health system, it is health-system, inter-organisational and organisational-level contexts that are relevant (rather than contexts operating at individual patient level). Its context determines whether a project reported in another health system provides a proof-of-concept for the NHS or, say, for health systems based on social insurance. Furthermore, MCP-equivalent organisations or network outside England may have been set up for different purposes than MCPs; that is, to produce different outcomes - for example commercial or insurance outcomes. We therefore report next which of the MCP-equivalent entities reported in the literature we found were equivalent to MCPs in terms of:

- How their client population is defined (a similarity or dissimilarity of context)
- Which services they plan and manage referral networks across (a similarity or dissimilarity of mechanisms)
- Their governance structure (a similarity or dissimilarity partly of context, partly of mechanism).

8.2.1 CLIENTELE

What population is served defines the scale, range and geographical distribution of the services an MCP has to coordinate, and what constraints (e.g. extent of patient choice) that apply. Our review showed that MCP-equivalent organisations or networks were designed to cater for either of two kinds of clientele:

1 Individual subscribers to particular social health insurers ('sick-fund'), public (e.g. Medicaid), mutual or corporate insurers. Then, MCP-equivalent entities can only plan for part of the population of a locality, must plan for a clientele which may be widely geographically dispersed, and for being (e.g. in Germany) unable to decide which providers their clients use. Then, for example, they must recruit patients voluntarily to any programme which selects service providers with a view to reducing referrals and costs. Unless they can informally negotiate other arrangements, they are obliged to pay hospitals for each referral the hospital can attract. This applies to the Kinzigtal project, French and German primary care providers generally, and most American ACOs and PCMHs. In the USA, providers can and do select their clientele by insurance status.
2 Like the NHS as a whole, MCPs cater for whole populations defined by place of residence. The same applies to MCP-equivalent bodies in Sweden (e.g. the Norrtälje project, some Catalan primary care providers, USLs in Italy, LHINs (Canada), and the (in that respect atypical) population-based ACO in New Jersey.[70] Planning and referral network management mechanisms developed in this context are more likely to be . directly relevant to MCPs.

Within either clientele some MCP-equivalents serve everyone whilst others serve specific care groups defined by morbidity, such as people with multiple long-term conditions, frail older people or mental health problems (again, Chapter 6 gives some details). The literature we reviewed focuses less upon groups of people with a single major condition (but when they do, coronary heart disease is often studied), but more often on morbidities with functional impact morbidities (e.g. diabetes) and some forms of high functional impact multi-morbidity (e.g. dementia).

8.2.2 SERVICES

Which MCP-equivalent organisation or network is the most relevant proof-of-concept, even prototype, for a particular MCP will depend upon which services the latter is especially

attempting to coordinate i.e. which inter-organisational boundaries it is attempting to surmount. Interface by interface, that approach suggests the following international partial equivalents to MCPs.

1. Primary medical care (GP or equivalent) with community health services: In the existing NHS these organisations are separate. International equivalents include Kinzigtal (Germany), the Versailles geriatics network, LHINs in Canada, certain ACOs (e.g. in Texas and Colorado) and some instances of PCMH (e.g. in Manhattan). As proof-of-concept examples of what can be done to integrate these services organisationally the most relevant international equivalents are Swedish primary health care clinics (PHCC: *vårdcentral,* 'polyclinic'*).* Intermediate between the two are the Italian USLs, where domiciliary nursing care is organisationally integrated with primary medical care, but in a structure of separate sub-hierarchies ('silos') with a common manager only at the most senior level. Catalan Primary Care Centres typically organisationally integrate GP with community health services, with also specialized services for women's health and paediatrics, and on occasion other specialties.

2. Primary medical care (excluding CHS) with mental health services: International equivalents include the Norrtälje project (Sweden), Inter-Mountain Health, Utah and (more narrowly because essentially contract-driven) the *Integriete Versorgung* mental health schemes in Germany.[151-153]

3. Primary medical care with social care: For this interface, international equivalents include Local Community Services Centers (LCSCs; Quebec), public clinics providing health with social services; as does the Mount Sinai organisation in New York. Italian USLs organisationally integrate primary medical care and social care, but (as noted) in a structure of separate sub-hierarchies ('silos') with a common manager only at the most senior level. Primary Care Centres in Catalonia offer strong coordination by including the provision of social care services, although health and social services remain managed through different hierarchies.

4. Primary medical care with community pharmacy: Accounts of this interface were rare. We found just two studies[79,100] that described how these two services were coordinated, although older studies about the UK also exist.

5. CHS with social care: For organisational integration between CHS and several forms of social care, some of them (including nursing homes, hospices) residential, an obvious international equivalent to an MCP (including separation of CHS from general medical practice) is Buurtzorg in the Netherlands.[19] In the Italian USLs social care is organisationally integrated with primary medical care, but in a structure of separate sub-hierarchies ('silos') with a common manager only at the most senior level; much as in in Northern Ireland in the past.

6. CHS with mental health services: Again Inter-Mountain Health instantiates such coordination, but Canadian LHINs (for instance in Toronto) developed in a context more similar to that of the NHS, the Norrtälje project in a context more similar still with substantial local government role and mental health services previously organisationally separate from other health services.

7. General practice 'at scale': If this means many small, even single-handed, practices coordinated through a hub, the Mount Druitt project in New South Wales provides the equivalent for those parts of the NHS with many single-handed, general practices dealing with deprived populations. If 'at scale' means employing large numbers of PHC doctors in one organisation, more relevant MCP equivalents include some large US providers (e.g. Group Health, Kaiser Permanente). Swedish Primary Care Clinics also tend to be managed in large groups, either by a municipality, a corporation or, in the case of Praktikerjänst, a healthworker cooperative which supplies over 15% of primary medical care in Sweden. The Primary Care Medical Home concept derived originally from US perceptions of NHS general practice has now been re-imported back to England as a 'New' Model of Care. It is probably intermediate between general practice and an MCP with a larger population and ambitions to incorporate community services and reach across the interface to hospital, but could also be a constituent of a large MCP operating across the catchment of one district general provider hospital.

The above are possible prototypes for inter-organisational coordination (through referral networks) or organisational integration of primary care. For MDT prototypes and for successful instances of using HIT for care coordination one has to look to the particular studies cited above (Chapter 5).

8.2.3 GOVERNANCE STRUCTURES

The types of governance structures within which MCP-equivalents are embedded are important contexts defining their relevance (equivalence) to MCPs. Governance structures within them are another point of equivalence (or not) for MCP mechanisms. Modifying Thomson's categories the three types of governance structures relevant to MCPs are quasi-markets, hierarchy, and networks.

1. Networks. The more numerous and varied the member-organisations a network contains, the more numerous and varied are the inter-organisational boundaries it has to surmount. Similarity in the number and mix of member-organisations are therefore important criteria of equivalence (relevance) to a given MCP. Hence two important equivalents (or approximate equivalents) to MCPs are:
   a. Networks of doctor-owned practices, including substantial proportions of both single-handed practices and partnerships (see the discussion of 'general practice at scale' above). In these respects, the nearest equivalents to MCPs are Medicare Locals in Australia; in particular the more 'integration' minded ones such as Mount Druitt, and local networks (a category partly overlapping with ACOs and the PCMH, but also with Health Maintenance Organisations (HMOs)) in the USA.
   b. Mixed networks of doctor-owned practices, corporations and voluntary organisations. The relevant examples here are networks such as the Kinzigtal and the Versailles examples, many ACOs in America, and LHINs in Canada.

2. Quasi-Markets: For attempts to govern MCP-equivalent groups of organisations by means of contracts (quasi-market governance), the relevant examples are the American ACOs and the *Integrierte Versorgung* mental health networks in Germany. Whilst these instances suggest that contracts could finance, even incentivise, organisations to join a network, pursue common goals and MCP-equivalent care coordination, US legal studies also suggest that contracts alone are both too incomplete and too inflexible to establish, by themselves, the mechanisms of action described below. For contracts are between payer- and provider-organisations, not between clinicians nor (even in France and the USA) between clinicians and patients. Other governance and coordinating mechanisms are required to supplement them.

3. Hierarchy, as the external context of MCPs, would imply either organisational integration into, say, a municipality or, as in the current NHS, a highly centralised and centrally controlled network of formally independent organisations: a 'quasi-hierarchy'. As already noted the nearest equivalents to a hierarchically-structured MCP are the Swedish and Finnish primary care clinics, USLs, some US organisations (Group Health, Kaiser Permanente), and some primary care providers in Catalonia.

The above lists are not exhaustive even of the MCP-equivalent entities that our secondary data covered. Many studies only say vaguely that a given project 'brings together' different providers, omitting the all-important (for present purposes) details of the mechanisms used and whether the providers remained organisationally separate. However the above lists do suggest starting-points for developing sampling frames for more detailed research into the mechanisms used.

8.3 How do these equivalents and their mechanisms compare to those proposed in the initial programme theory for MCPs in the NHS?

8.3.1 Does evidence about how MCP-equivalents 'work' support our revised logic model?

The exact mechanisms vary equivalent by MCP-equivalent. Chapter 7 itemises the causal links between the components of MCPs in our revised logic model. Nevertheless certain triggers of care coordination mechanisms recurred across many MCP equivalents and contexts.

Tables 17 and 18 in Chapter 7 illustrate the number of studies providing supporting evidence for each mechanism. The six most frequently mentioned mechanisms (each across their different causal links) are what we next report. Five of the six most frequently mentioned mechanisms them were also the ones with 'substantial' evidential support (i.e. both systematic reviews and additional primary research) according to our realist review (see Tables 17 and 18). The exception was network management, based on 'supporting' rather than 'substantial' evidence. Most of the studies we reviewed were non-realist and therefore present their

findings in terms of what we have called the 'components' which are antecedents or triggers of the mechanisms which make up our revised logic model. For short we use term 'MDT based' to indicate the set of mechanisms, all of which MDT is the antecedent or trigger for (and analogously for the other groups of mechanisms).

8.3.2 HIT-BASED MECHANISMS

A recurrent theme was that HIT, in particular the electronic health record, had its effects through its impacts on work processes such as task reminders, delegation, workflows, and informal communication among staff, instant messaging; within-chart notes; phone templates that could be routed to team members' inboxes; task assignments, and 'huddle sheets' among others, in addition to data retrieval and communication. One study found that primary care teams that used EHRs consistently for data entry and agreed on communication methods between staff members were more likely to score high on the National Committee for Quality Assurance (NCQA) 2011 PCMH recognition tool. This compound mechanism relies heavily on the quality of HIT design in terms of functionality (whether an HIT can perform risk stratification, manage workflows etc.) and interoperability between IT systems; with the prior requirement that such systems are actually available at all.

We conclude therefore that HIT based mechanisms will underpin achievement of multiple MCP like functions and that they can operate whatever the structure of teams and organisations.

Box 1: Prompts for Decision-Makers: Health IT

The right-hand cannot work effectively if it doesn't know what the left-hand is doing. How are care plans and work roles be communicated across organisations in your system? What IT systems are available to support this? Importantly, are the IT systems designed so that each health worker can easily and conveniently access and use all the data that she needs to read and write, in order to coordinate a patient's care? Is there just one system (and no parallel paper systems)? Can patients access their care plan?

8.3.3 Multidisciplinary Team-based mechanisms

A similar theme recurred in studies of multidisciplinary teams (MDTs). MDTs improve patient experience through their impacts on many everyday clinical working practices: enhanced patient access to services (e.g. to primary care as an alternative to unnecessary hospital admission); better communication between providers and thus more patient confidence, trust in, and satisfaction with care; and a more holistic approach to care. For MDTs to work it is necessary that they focus on tasks of practical value to their members, include the relevant services, and actually work in a collaborative, inter-professional way within the team itself. An essential component of this mechanism are boundary-spanning roles such as that of the care coordinator, whose professional origin appears less important than her capacity to support care planning for individual patients (see below), improve the continuity of care, make care more person-centred and promote shared decision making. Although rare in practice, patient participation in the MDT facilitates all this. Where different professions work for different organisations, the boundaries to be spanned are simultaneously inter-professional and inter-organisational. Several studies reported the value of face-to-face communication within teams, which implies a practical value for care coordination in co-locating MDT members.

But whilst the formalising of multi-disciplinary working into teams, with clarity about roles and boundary spanning activity, is likely to contribute to MCP objectives, it is unclear in what contexts new teams should form or existing ones be enhanced, and which functions (admission avoidance, proactive care planning or enhancing social connectivity) are particularly supported by MDTs. Neither is there clear guidance about how much to focus on protocolised role clarity or on flexibility and reducing differentiation between occupational groups.

Box 2: Prompts for Decision-Makers: Multidisciplinary Working

Multidisciplinary working is central to well-coordinated ('integrated') care delivery. Individuals are motivated to participate in multidisciplinary teamwork when it improves care and makes their work easier or more productive. Do professionals and patients in your region have a good understanding of how multidisciplinary working can improve care? Do professional and organisational cultures reward or discourage multidisciplinary working? Where are the key points in your system where 'boundary-spanning' roles could facilitate multidisciplinary working? Do not underestimate either the importance of patients' participation in multi-disciplinary team meetings (their 'seat at the table' can provide the focus that makes care more patient-centred) or of the need to consider power differences between professionals, and between professionals and patients.

8.3.4 Care plan-based mechanisms

As a mechanism for diverting patients from hospital to primary care, care plans work by being implemented above all by a boundary-spanner e.g. care coordinator. This implies a single care plan (not multiple duplicating plans as often happens in practice) for each individual covering all their health care needs. The care plan can be disease oriented or address an individual's more social and emotional goals as well as aim to reduce burden of care. As a mechanism for diverting patients from hospital to primary care, care plans work by being implemented above all by a boundary-spanner e.g. care coordinator. One component of this mechanism is to develop patients' self-care and self-management of their condition, which may itself require patient education and indeed patients' and/or informal carers' participation in the care planning, shared decision-making, and even patient advocacy. Another component is real-time information about what is happening to the patient (see HIT, above) so that the care coordinator can plan and manage the transitions between hospital and home, and other changes in the patient's condition or circumstances.

The studies available to us contained little evidence about how clinicians or an MDT might use the making of a care plan as a means of deciding with the patient, or at least among themselves, whether the patient needs certain kinds of more intense care (e.g. medications, hospital admission). Whilst enhancing care planning activity – both the interactive decision-making itself, and then making shared, comprehensible documentation of the decisions

available – appears key to generating better outcomes, there is little evidence to guide the level of complexity and multimorbidity that necessitates a shift towards more complex, multi-disciplinary plans.

8.3.5 Culture change-based mechanisms

Of all the mechanisms in the initial programme theory, these were the most obscure. Many studies examine organisational cultures and cultures of multi-professionality or collaboration in other healthcare settings. Among the studies that we found, many invoked culture change as a mechanism which organisations or networks exploited but few explained how that culture change was produced. Those that did mentioned inter-professional and/or inter-organisational training. Some appeared to assume that 'leadership' was responsible, perhaps for culture change but certainly for setting up the boundary-spanning mechanisms described above. Two studies[61,67] implied that culture change was not the original change-driving force, but perhaps a part of a virtuous circle driven by other causes.

Despite this lack of evidence, we did not interpret culture change as being unimportant, rather that we need more research to define what aspects of culture (for example interprofesional equality, person centredness, positive risk taking) are most important and whether they should be the direct subject of training or seen as indicators of success.

Box 3: Prompts for Decision-Makers: Organisational Cultures

Professional and organisational cultures are important, but we know less about exactly how they impact on achieving change in the delivery of care. This is an area that requires further research. For now, don't assume that what is accepted in one profession or organisation will necessarily be accepted in the same way by others. We can begin by asking ourselves and our colleagues 'what are our organisational values?'

8.3.6 Planned Referral Networks-based mechanisms

This component was one of designing referral pathways for the main care groups, establishing

agreed divisions of labour and working practices across different provider organisations ('care compacts'), criteria of appropriate referral and, for patients who do not need hospital admission, alternative destinations than hospital, including what in the UK is called 'social prescribing' to voluntary sector resources.

8.3.7 Network Management-based mechanisms

A network managing (or coordinating) body is the mechanism for managing the care 'continuum', i.e. the patient's experience of care as a whole and over time. Critical components of this mechanism are shared goals, and boundary-objects i.e. objects used in common by all the member-organisations at their interfaces; such objects as care compacts, EHR, patient care plans, formularies, agreed care standards and inter-organisational care pathways (in addition to any that are used just within a single organisation). Such a network coordinating body deliberately supports the production of these goals and objects for the network as a whole, whether by creating them itself from scratch or by adopting and developing any such goals and objects which have already spontaneously emerged 'bottom up' from within and between the network's member-organisations. Boundary-spanning staff roles are one essential component of this mechanism too. Another is referral network planning (see below).

Box 4: Prompts for Decision-Makers: Care Coordination

Co-ordinating the delivery of complex care across organisations is not easy. The 'tools' to enable this co-ordination (such as care plans, electronic health records, designated roles) need to be accessible to multiple parties, contain and communicate accurate information, *and* be perceived as useful and usable. In introducing or revising these tools, a balance needs to be struck between 'bottom-up development' and 'top-down prescription'. How can this be achieved given the particularities of your area?

8.3.8 How do these mechanisms depend upon specific contexts

Chapters 6 and 7 itemised which specific contexts each MCP component requires when

operating as a mechanism to produce other components. Nevertheless certain contexts recurred across more than one causal link between the 13 components. Briefly, they were:

1. Prior collaboration and mutual trust between provider-organisations.

2. Funding for the start-up costs (network formation, HIT, training), and to establish primary care alternatives to hospital, include payment to enable patients to access voluntary sector support.

3. Clinician time for setting up and then participating in MDTs.

4. Status differences between professions and professionals are weak, or deliberately weakened, to facilitate the culture changes mentioned above.

5. Lack of health worker resistance; GP (or equivalent) participation in particular is indispensable.

6. Patient's active participation, in the coordination of their care and in self-managing their condition, where feasible.

7. Suitable HIT systems exist (or can be constructed) and are obtainable.

8. Alternative PHC services to hospitals exist, and are of the necessary types and scale.

9. A suitable case-mix of patients, that is patients who:
   (a) Are heavy users of hospital services (five or more admissions annually)
   (b) Have complex, not well understood health problems, whose management often requires informal discussions among health workers.
   (c) Have chronic single conditions with well-defined treatment plan, hence are therefore more suitable for HIT-based methods of care coordination.

10. Co-located staff, whether out-posted, 'embedded' (i.e. seconded) or all employed by the same provider organisation. Co-location requires a suitable clinic (or similar) as the place of co-location or, failing that, organising base for virtual MDTs. It could also be the place for the coordinating body of the MCP as a network of provider

organisations, and as the central 'hub' for a network of general practices. Not least, co-location provides the opportunity for inter-professional working not only in formal meetings but in everyday, informal working practices such as 'huddles'.

Some evidence about contexts was conflicting; on the realist view a possible marker for as yet undiscovered contextual moderators of the mechanisms mentioned above.

Some of the component mechanisms were mutually reinforcing and had common elements (e.g. boundary-spanning staff). Such were multi-disciplinary teams and HIT; and cultural change and MDTs. Notwithstanding the 'mechanism' metaphor, all the above components of MCPs when acting as mechanisms consist (we reiterate) of the individual actions, understanding and resource use (in short, working practices) of the clinicians, managers, other staff and the other agents involved; not least, patients. It should also be noted that the above components act as mechanisms for cross-organisational provision and coordination of care, typically for people with chronic, and often multiple, health problems. They are not necessarily needed for providing more casual, non-complex episodic care.

8.3.9 *What policy outcomes are these equivalents reported to produce??*

Our evidence review provided evidence about MCP equivalents and whether and how they bring about the two central outcomes of the initial MCP programme theory i.e. cost reduction and good quality of patient experience of care.

8.3.10 Diverting patients from secondary to primary care, thereby reducing costs

A number of studies reported MCP-equivalent organisations and networks diverting patients from secondary back to enhanced primary care. A few of them suggested what mechanisms and contexts had produced these outcomes. Again, Chapter 6 gives further detail. These studies offer proofs-of-concept that the above mechanisms can produce these intended outcomes *provided* the mechanisms are correctly implemented *and provided* the relevant contextual conditions are present.

Across several countries the balance of evidence tended to suggest that more active care coordination across organisations (and, for emergency admissions, home telehealth programs can reduce ED use, hospital admissions or readmissions. Studies from Australia[61,91] and Canada,[99,119] England and the USA[65.131.132.138.140,14] reported various combinations of such reductions and greater use of (enhanced) primary care services. A systematic review[127] and a meta-analysis of RCTs[105] both suggested that transitional care interventions tend to reduce hospital readmissions of chronically ill patients. The three exceptions to this pattern were only partial exceptions. One US study showed no decrease in emergency department use but did show greater use of preventive and ambulatory care. Two US studies[70,128] showed reductions in specialist use for low and medium morbidity patients but the opposite for high morbidity patients. The overall pattern therefore suggests that MCP-like interventions can, in favourable contexts, produce the desired outcomes but with two important caveats. First, we have to be aware of publication bias; failed attempts may be less likely to be published. Second, the devil in these studies is in the detail of what specific mechanisms and contexts were necessary (see above).

Supposing that in favourable contexts these mechanisms do reduce unnecessary referrals, we found less evidence as to whether overall costs of care consequently fall. Several studies (see Chapters 6&7) attributed cost reductions through HIT to the partial automation of work, provided the conditions mentioned in Chapter 6 were satisfied. HIT was also an element the Kinzigtal project, which achieved cost reductions for the social health insurers. However there was also a little evidence that HIT in the PCMH context reduced specialist visits.[122] One study did however estimate cost savings arising from stronger care coordination reducing ED visits (in that study, US$1.4 million annually across 14 medical practices serving 25,356 patients). So although the evidence base is smaller and weaker, this overall pattern also suggests that such MCP-like interventions can, in favourable contexts, reduce the use of hospital services in a suitable context, but the requisite context is, Chapter 6 suggested, narrowly defined unless the savings per episode accrue directly to the primary care provider or payer in the form of reduced tariff bills. Furthermore, this evidence comes from health systems facing less severe budgetary constraints than the current NHS.

8.3.11 Patient experience

For conditions whose very occurrence or exacerbation is itself an outcome, and for which

evidence-based treatments exist, some studies of MCP-like schemes did report improved outcomes, for instance fewer ED and hospital admissions due to asthma or increased screening of diabetes and hypertension patients leading prescribing preventive pharmaceuticals. Diabetes is one such condition, in which improved outcomes were according to several studies (including one SR) associated with MDTs, 'leadership' (managerial) commitment to changed working practices, shared goals and staff involvement (in designing and implementing the care pathway). The use of EHRs has also been reported to accelerate 'quality improvements and changes in utilisation over time on some measures' (p.259), again in several countries: Germany, Netherlands and the USA. Two other characteristics which are shown in several studies to improve patients' experience of care in MCP-like organisations and networks are the use of patient panels to strengthen trust in patient-provider relationships[92,163] and personalised care and support from people working in boundary-spanning roles.[65,164]

However the studies we reviewed generally lacked evidence about how to evaluate, monitor and adjust the overall flow of patients within an MCP-equivalent in order to ensure it can achieve its aims of improving care within tight resources.

8.3.12 Perverse or unforeseen outcomes

The studies which we reviewed also reported certain perverse outcomes from MCP-like networks and organisations, unforeseen in the UK policy documents.

1. More efficient demand management systems increase case-finding, leading (at least initially) to more rather than fewer hospital referrals.
2. Increasing hospital and PHC efficiency increases the total costs of care for the reasons noted in Chapter 6.
3. Roemer's law increased provision (in this case, enhanced primary care and reduced pressure on hospital beds) leads to increased service use, whether by lowering referral or treatment thresholds, meeting hitherto unmet needs (see point 1), adding preventive to existing curative services or making it easier for patients to access enhanced primary care.[132]

To these must be added the perennial uncertainties of implementation, especially where changes (such as revising occupational roles) are contentious and may be resisted or renegotiated. As Pineault and colleagues observed in Quebec, modifications of structures and

resources come first with new working practices always lagging behind.

8.4 Implications for MCP design

The evidence used to answer the above questions, and to base the revised logic model upon, has implications for organisational design (governance structures, internal management and working practices) of MCPs. These implications become especially clear if, from our earlier revised logic model (Chapter 7, Figure 4) we remove parallel (duplicated) links to leave the graphically simplified but still multi-link version which is Figure 6. Nevertheless the revised logic model is based on evidence about all links, both direct and indirect, between the main components of the programme theory.)

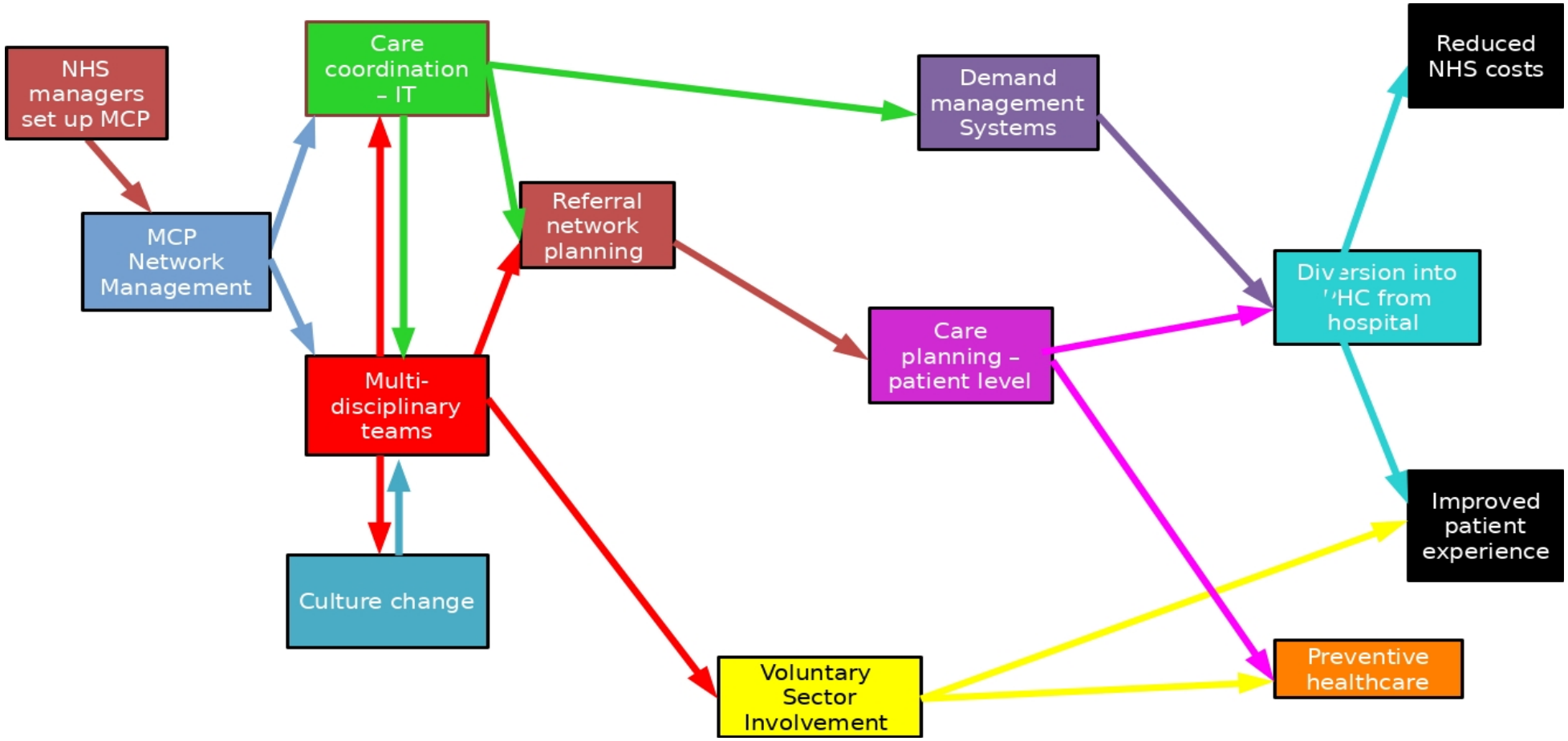

Figure 6: Simplified revised logic model: parallel (duplicate) links removed

A major implication of our evidence is that multidisciplinary teams are likely to be the central mechanism by which MCPs work, provided that the MDTs include the relevant professions (hence organisations) for their care group(s) and indeed, when it comes to care planning, for their individual patients. The foregoing evidence (Chapter 6) implies that there are three dimensions to this:

1 Setting up new MDTs as a core component of a managed referral network, such as the locality teams which many MCP are setting up to manage admission avoidance, for long-term care management, and for well-being promotion including social prescribing.
2 Enhancing existing teams (e.g. in general practices on the primary care medical home model) that already coordinate care for individual patients.
3 Supporting inter-professional links and collaborative working practices within existing MDTs at both the above levels.

The evidence available to us (see Chapter 6) did not really distinguish sharply between these different functions of MDTs, and the implications for how they might work as mechanisms within MDTs.

For MCPs, and MDTs within them, to function as care coordinators and operate the relevant referral networks requires the creation of roles that span the boundaries between organisations and professions. The care coordinator is the critical role, but not the only such. The means of boundary spanning, and for making MDTs impact upon working practices in ways that are of practical use and value to MDT members, are to create and use boundary objects such as agreed referral criteria, care compacts, shared documentation and agreed standards of care etc. (see Chapters 6-7). The use of HIT, in particular shared electronic health records, are an important such boundary object, provided they are not designed and implemented as part of clinical working practices, not independently of them. Other critical mechanisms are the inter-organisational management of MCPs as a whole referral network, and the use of a shared (not just uni-professional care plan for each patient with sufficiently complex needs. The most important contexts required appear to be, first, a strong culture of mutual knowledge between professions of what other professions contribute to care, of its value and hence attitudes of mutual respect favouring collaboration. A second main context is the existence of alternative primary care and social services to divert suitable patients into as an alternative to hospital. Co-location and co-employment of MDT members is a third favourable context. These contexts, however, facilitate the MDT and its associated mechanisms and are not substitutes for them.

Our findings also suggest that certain general characteristics of governance structures would appear to promote the purposes for which the NHS established MCPs. The governance structures need to enable information-sharing between provider organisations, including at clinician-to-clinician level. Information-sharing alone is however insufficient. Such governance structures also require the means to promote (to model, incentivise, even coerce) a system-wide division of labour and care coordination. They have to include all the relevant providers (§6.1). So far as possible, the governance structure should be based on (support, strengthen, formalise) existing collaborative and coordinational relationships. Specifically, they have to accommodate MDTs, making them collectively accountable for patient care (§6.2); boundary-spanning care coordinator roles (§6.2); and rich informal communication (e.g. 'huddles') (§6.8). More perhaps a question of governance style or culture than of governance structure, their managers should resist the temptation to micro-manage professional work (§6.1), or to restrict providers' flexibility to redesign care models and reallocate resources accordingly. Buurtzorg is proof-of-concept of what a high degree of delegation to MDTs is feasible, with concomitant managerial cost savings. At minimum these conditions imply a densely-linked care network with a central coordinating body. That is, multiple separate providers (general practices, community health services, third sector providers etc.) working together as a single entity with aligned goals and the coordinating body instigating collaborative working. The large literatures on healthcare networks and 'integrated' care report many examples.

Such a governance structure might be supplemented with contracts or developed into a single organisation.

Our findings suggest that whilst contractual coordination can under favourable conditions (as in the examples of Kinzigtal and certain American ACOs) be used for some MCP-like purposes, it also confronts certain difficulties compared to network and hierarchical governance structures. The difficulty of contractual 'overhangs'(§6.3) or 'carve-outs'[54] excluding relevant services from an MCP-like entity is a transitional problem until those contracts are re-negotiated. The same applies to converting non-aligned payments and incentives (§6.7) into a consistent set of contracts that share cost savings between different providers. A bigger difficulty is that of contracts being at once both too rigid and too incomplete (e.g. regarding practicable monitoring of outcomes) for coordinating care at MDT and individual clinician level. For some self-employed professionals an attraction of being

independent contractors is explicitly that it appears to limit the state's or a corporation's ability to control (including coordinate) their work (§6.1).

Alternatively, MCP-equivalents can be (and in some countries are) constructed as a single organisation. Our review found numerous structures and contexts which reportedly improve the continuities of care and other aspects of patient experience, and which would appear to be easier to implement within a single organisation. They included:

- compatible and interoperable IT systems, in particular EHRs (§6.6)
- data-sharing (§6.6), hence risk stratification
- informal contact and familiarisation with other professions' roles, hence the development of inter-professional trust (§6.2)
- co-locating staff (§6.6)
- mutually consistent working practices and routines such as care compacts, formularies and referral rules (§§6.2,6.3,6.6,6.7)
- shared standards of care (§6.2), arising partly from shared R&D (§6.2)
- cross-professional boundary spanning structures and roles (§6.7), including the construction of referral networks (§6.7)
- overcoming past isolation or separation of necessary services (§§6.2,6.7), to that extent removing inter-organisational boundaries
- mutual access to shared resources (§§6.2,6.3)
- uniform cross-disciplinary training about IT and care integration (§6.2)
- the planning of care pathways (§6.3)
- shared expections (§6.3) and cultures (§6.4)
- reduced role overlap and ambiguity (§6.3)
- structured communication within MDTs (§6.3)
- whole-population level service planning (§6.3)
- task delegation, referral and reallocation (§§6.3,6.7); and
- alignment of payments to different services (§6.7).

The case for a single organisation should not be over-stated. Some of the above conditions (e.g. shared IT systems) are necessary but not sufficient to improve care coordination (§6.8). Some of them (e.g. staff co-location) have also been achieved within networked structures. The above list of conditions also leaves unanswered the question of whether a single-organisation (organisationally integrated) MCP would be most likely to serve the purposes described in chapters 1 and 5 if it were under public, cooperative, partnership, corporate or

voluntary ownership. Without guaranteeing them, organisational integration would nevertheless appear to increase the opportunity for the above conditions to arise, whether emergently or in a deliberately managed way.

8.5 Recommendations for research: Models of care and methodology

8.5.1 Models of care

Further primary research would be required to test elements of the revised programme theory. In the research that we reviewed a number of gaps were apparent. They indicate further research needs. We judge them to be in the following descending order of importance. They concerned:

1. How, and what circumstances, MDT-based locality teams and enhanced general practice (the primary care medical home; and general practice 'at scale') compare and interact, or can be combined, in managing referral networks so as to reduce workload for other healthcare providers.
2. Whether, and if so how and in what circumstances, diverting patients from hospital into enhanced primary care does indeed:
   (a) Reduce the overall cost of healthcare
   (b) Improve patients' experience of care.
3. How general practices are affected and have to adapt if larger numbers of patients are diverted from hospital to enhanced primary care
4. How the other new models of care (above all, PACS) being developed concurrently with MCPs interact with MCPs. The work would compare and synthesise the findings from this studies with those from the concurrent studies of the other new models of care.
5. How urgent care services will be affected and have to adapt if more patients are diverted from hospital to enhanced primary care.
6. How care coordination through HIT supports (or not):
   (a) The management of inter-organisational referral networks
   (b) Diversion of suitable patients from hospital into enhanced primary care services
   (c) The production and use of care plans for individual patients
7. How the resources and mechanisms deployed in MCPs will contribute to changing care for different groups of people (defined by morbidity, e.g. single major condition (e.g.

cancer), multiple low functional impact morbidities (e.g. diabetes, HT), high functional impact multi morbidity (e.g. stroke, arthritis, dementia)).

8. How referral networks are established and managed in such a way as to establish referral management systems.
9. How and under what circumstances the management of referral networks promotes (or not) the use of care plans for individual patients.
10. How and under what circumstances the voluntary sector and MCP-like networks and organisations collaborate in pursuit of the ends for which MCPs were set up.
11. How organisational culture is produced and changes in MCP-like contexts (an area lacking research despite the abundance of studies in hospital and non-healthcare settings).

As previously noted, equivocal research findings suggest (to realists) areas where as yet unknown contextual factors might be strongly influencing the effects which component mechanisms of MCPs have. The main ambiguities, requiring further research to resolve them, concerned the contexts in which:

1. 'Horizontal' MCP-equivalent networks develop inter-organisational referral networks, in particular between GPs and CHS (or the local equivalents).
2. Care coordination through HIT supports (or not):
   (a) the management of inter-organisational referral networks
   (b) The diversion of suitable patients from hospital into enhanced primary care services
   (c) the production and use of care plans for individual patients
3. The management of referral networks promotes (or not) the use of care plans for individual patients.

8.6 Methodological development

Our methodological reflections relate to practical (the critical appraisal tool), conceptual (mechanisms and 'nested' or 'ripple' effects), and translational (practicable outputs for knowledge-users) issues for realist syntheses.

First, the practical: Our experience of using the MMAT critical appraisal tool was consistent with the evaluation which demonstrated acceptable inter-rater reliability and timely

completion. The MMAT tool fulfilled its task of structuring critical appraisal of quantitative, qualitative, and mixed-method studies, and of the different study designs within each of these paradigms. It also provided criteria for making a judgement about a global quality score for each included study. However, we found it somewhat restrictive in critically appraising the broader aspects of studies that in our view were important for enabling a more nuanced treatment of relevance and rigour in the synthesis. We therefore remain unconvinced, for the purposes of realist synthesis, of the benefit of using a mixed-methods critical appraisal tool over using multiple (study type-specific) tools or a generic critical appraisal tool.

Second, the conceptual: We adopted an established definition of 'mechanism' and used the 'trick' of working backwards from an identified outcome to help identify CMOCs. However, we struggled at times to identify mechanisms in the reviewed studies both because some included studies lacked conceptual clarity *and* because of the slippage we persistently encountered between mechanisms as 'the thing that causes' and mechanisms as 'the thing that is triggered by the circumstances'. This is an important distinction, especially when endeavouring to conduct research that accommodates systems concepts such as emergence, feedback loops, and tipping points. Realist thinking endeavours to capture this by allowing consideration of how, over time, mechanisms can lead to the circumstances in which they become contexts which in turn potentiate other mechanisms, which in turn may transform the context, and so on.[165]

This latter point leads us to consider the way in which the transformations that are enabled have been termed a 'ripple effect'.[165] Thinking in terms of a 'ripple effect' may indeed be valid for fundamental and wide-ranging mechanisms (such as trust) that have positive effects. However, this risks steering thinking and analysis towards identifying 'golden mechanisms' which explain everything at once rather than the somewhat knottier issue in complex systems of identifying multiple mechanisms firing concurrently, possibly in both desired and undesired ways. For example, in our review we identified how the perceived relevance of new structures and ways of working (to managers, practitioners, and service users) pivoted on whether they could see how those changes would contribute to meeting patient care needs. Similarly, we identified how practitioners' engagement was influenced by the value which they placed on the new models as a means of accessing to specialist knowledge or resources. In both of these examples, the mechanism ('valuing') could be either positive or negative, enabling or constraining progress towards a desired set of (demi-regular) outcomes, and occurring in concert with a range of other CMOCs. In these examples, thinking in terms of a

'ripple effect' is too stark and too strongly suggestive of configurations whose outcomes are only positive and synergistic. To accommodate concepts such as emergence, feedback loops, and tipping points, and both desired and undesired outcomes, it is better to think about CMOCs being 'nested' within each other.

Third, the translational: We have endeavoured to show the practical implications of our review. Whilst we do not have evaluative knowledge about the extent to which knowledge-users find such outputs nor even how (or whether) they use them, such translational outputs are reasonable at face-value, and are pitched in similar terms to our consistent with the discussions with our stakeholder group, who emphasised the attractiveness and ease of use of graphical representations, compared with the large amounts of text that NHS staff receive.

8.6.1 *Methodologyical Research Recommendations*

1. Comparative research to establish an optimal (i.e. accurate, usable within a reasonable timeframe) critical appraisal tool for the study components necessary for refining programme theory.
2. Exploratory research into ways in which consistent definitions of key realist concepts (in particular, 'mechanism') can be applied by those whose experience of applying realist methods ranges from 'novice' to 'expert'.
3. Exploratory research into how researchers and stakeholders apply mutable realist concepts in a way that is consistent with complex systems concepts.
4. Evaluation of complex review knowledge translation strategies (e.g. tailored prompts, infographics, workshops, coaching, and so on) for different groups of knowledge-users.

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APPENDICES

APPENDIX 1. FIRST WAVE MCPS

Table 19: Vanguards, their mechanisms and member-organisations

Site	Mechanism (work process)	Organisations
Principia Partners in Health (Southern Nottinghamshire)	1. Contractual responsibility for the health, and the quality and costs of care 2. Capitation payment 3. 'integrated care ... focussed on early intervention'	Community interest company of GP practices (126,000 list); CHS: CCG; 'social care partners'
All together better Sunderland	1. Enable self-care 2. Multi-disciplinary team, care and prevention.	Two GP Federations, CHS Foundation Trust, Hospitals Foundation Trust, mental health Foundation Trust ; Care and Support Services (former local authority direct care for adults); Health-watch, Local Medical Committee; Cumbria and North East Area Team; Voluntary and Community Action Sunderland.
Wellbeing Erewash	1. Prevention team including GPs, advanced nurse practitioners, mental health nurses, extended care support, therapy support 2. Care planning for people with long term conditions (e.g. diabetes, chronic vascular disease, chronic lung conditions). 3. Treatment plans accessible on A&E and OOH, help A&E and out of hours staff to 'talk frail and vulnerable people through their concerns and support them to remain in their homes when they do not require specific hospital treatment'. 4. Extend access to GP services.	Derbyshire Community Health Services NHS Foundation Trust, Derbyshire Healthcare NHS Foundation Trust, Erewash GP Provider Company, Derbyshire Health United (Out of Hours Service and 111), NHS Erewash Clinical Commissioning Group.

Site	Mechanism (work process)	Organisations
West Wakefield Health and Wellbeing Ltd	1. Integrated community teams including physical health, mental health and social care redesign care delivery 2. Alternative and sustainable models of care, to modify future demand 3. Care navigators, mostly administrative staff in first contact with patients, trained to direct patients to the most appropriate care. 4. Mobile clinic for 'hard to reach' groups (e.g. gypsy/traveller) 5. Digitally access to healthcare: online directory of local services, library of health apps, primary school pupils' competition to design health apps, self-service kiosks in general practices, potential email/instant messaging and video consultations.	Federated network of GP practices; Wakefield CCG; Wakefield Council; Wakefield District Housing; South West Yorkshire Partnership NHS Foundation Trust; Healthwatch Wakefield; Mid-Yorkshire Hospitals NHS Foundation Trust; NOVA (voluntary community sector representative body); Yorkshire Ambulance Service and Local Care Direct.
Modality Birmingham & Sandwell	1. Care-coordinators + care plans 2. Selected primary care centres expand their range of social, mental, community and enhanced secondary care services (community outpatient and diagnostics).	One GP partnership which operates from 15 practice sites (70,000 list).
Encompass (Whitstable, Faversham and Canterbury)	Extended primary care and community services through the expansion of community health and social care teams we will reduce hospital admissions and length of stay.	16 GP practices, CCG, hospital Foundation Trust, CHS Foundation Trust, NHS and Social Care Partnership Trust, Coast Ambulance Service Foundation Trust, Wellbeing Board, County Council, Pilgrims Hospices, voluntary and community organisations.
Dudley Multispecialty Community Provider	1. 'teams without walls' including specialist nurses, social workers, mental health	Metropolitan Borough Council, Black Country Partnership NHS Foundation

Site	Mechanism (work process)	Organisations
	services, voluntary sector link workers. 2. 24-hour rapid response and urgent care centre as single coordinated point of access so patients don't need to call 999.	Trust, Dudley Group NHS Foundation Trust, Dudley and Walsall Mental Health Partnership NHS Trust, Dudley Council for Voluntary Services, Future Proof Health Ltd.

Site	Mechanism (work process)	Organisations
Tower Hamlets Integrated Provider Partnership	Single shared assessment and plan for patients.	GP CIC; hospital +CHS trust; mental health trust; Borough of Tower Hamlets (social care); voluntary and community organisations, user groups.
Better Local Care (Southern Hampshire)	1. Care plan, 2. Regular check-ups at general practice or hospital, 3. Integrated (shared) care record	27 GP practices, NHS Foundation , 16 other local NHS, local government and voluntary sector organisation
Fylde Coast Local Health Economy	1. Integrated teams of community nurses, AHP, social care, mental health and third sector workers. 2. Single care record.	Fylde and Wyre CCG, Blackpool CCG, Blackpool Teaching Hospital NHS Foundation Trust, Lancashire CC, Lancashire Care NHS Foundation Trust, Blackpool Council, 'services provided by the voluntary sector'.
Calderdale Health and Social Care Economy	1. Expanded multi-disciplinary teams including mental health, social care, pharmacy. 2. ?Care (referral) networks	Network: Pennine GP Alliance (23/26 Calderdale practices); Calderdale and Huddersfield Foundation Trust; Calderdale CCG; MBC; South West Yorkshire Partnership Foundation Trust; Local community partnerships (NHS); Voluntary Action Calderdale (128 health-related organisations).
West Cheshire Way	1. 'Starting Well' programmes for babies, children and young people. 2. Integrated teams for LTC	NHS West Cheshire CCG and Primary Care Cheshire (a single entity); Partnership Foundation Trust; Hospital FT; Cheshire West and Chester Council.
Stockport Together	1. Single point of access for hospital urgent care 2. Integrated team working for complex EoL care needs.	MBC; Hospital FT; Community and mental health FT, CCG.
Lakeside Healthcare (Northamptonshire)	1. 'CorbyCare' - urgent care delivered in community and front-of-hospital	GP super-practice (300,000 list); 5 hospital FTs; Northamptonshire Healthcare

Site	Mechanism (work process)	Organisations
	locations 2. Ambulatory care service, to relieve pressure at hospital ‘front door’; 3. LTC management for frail elderly and others allowing admission to short-stay community beds 4. GP-led complex-care management service 5. Hospital outpatient and planned care services (dermatology, ophthalmology, MSK, geriatric medicine, mother and baby). 6. Multidisciplinary teams provide ‘extensivist primary care services’ giving longer, in-depth consultations with enhanced continuity of care. 7. 'work alongside hospital consultants to provide better and more integrated access to specialist care' 8. Employ its own consultants in key specialties.	Trust; Northamptonshire CC; Corby Town Council; Celesio (Lloyds Pharmacy), local social service providers; voluntary and community sector
New cities of Ebbsfleet and Bicester.	Health and care garden city, rethinking physical design of the infrastructure, new technologies, 'deep integration of health and care with supported housing and other public services'[166] .	NHS England, LGA.

Sources: NHS England Guidance[166] and websites[12,167] ,

APPENDIX 2. SCOPING SEARCH STRATEGY AND HITS

Scoping searches

Integrated care and chronic conditions

Database: HMIC
Host: Ovid
Data Parameters: 1979 to July 2016
Date Searched: 25/8/2016
Searcher: SB
Hits: 3667

Strategy:

"ageing population*".tw,nt.

((older or geriatric or frail or vulnerable) adj2 (person* or people or patient* or population* or "local resident*")).tw,nt.

older people/

(("long term" or chronic* or complex* or multidimensional or "multi dimensional" or multiple) adj4 (need* or condition* or problem* or healthcare or care or patient* or disease*)).tw,nt.

Long term care/

chronic disease/

or/1-6

((integrat* or continuity or continuous or "co ordinat*" or coordinat* or collaborative* or "multi disciplinary" or multidisciplinary or "culturally appropriate" or transition* or transmural or seamless or comprehensive) adj2 (health or healthcare or service* or care or "social care" or "personal commissioning")).tw,nt.

integrated care/

collaborative care/

((community or outreach or "out reach") adj1 (health or healthcare or service* or care or hospital*)).tw,nt.

((personali?ed or "person centred" or "person centered" or "patient centred" or "patient centered" or holistic* or tailor*) adj3 (health or healthcare or service* or care)).tw,nt.

patient centred care/

(network* adj2 (care or healthcare or service* or provider* or provision)).tw,nt.

((continuity or continuous) adj2 (provider* or provision)).tw,nt.

("primary and acute care system*" or PACS or polyclinic* or polysystem*).tw,nt.

((GP or "general practice*" or "general practitioner*" or "family physician*" or "family doctor*" or "family medicine" or "family practice*") adj6 ("health centre*" or "health center*" or "co-operative*" or cooperative* or collaborative* or "community health")).tw,nt.

("allied health professional*" adj2 ("general practice*" or gp)).tw,nt.

("multispecialty community provider*" or "multi specialty community provider*" or MCP* or MSCP*).tw,nt.

(virtual adj2 (ward* or provider*)).tw,nt.

(("co located" or colocated or collocated) adj2 service*).tw,nt.

(hospital adj2 (outreach or "follow up")).tw,nt.

((vertical* or horizontal*) adj2 integrat*).tw,nt.

((shared or sharing) adj3 ("patient* record*" or "patient* data" or "patient* information" or "patient* assessment*" or "information technology")).tw,nt.

((ambulatory or "out of hours") adj1 care).tw,nt.

("medical home*" or "primary care hub*" or "care home liaison*" or "self management plan*").tw,nt.

("single assessment process*" or "single access point*" or "multi dimensional assessment plan*" or "multidimensional assessment plan*").tw,nt.

or/8-27

(buurt?org or "one window model*" or "hospital at home" or "community assessment and rehabilitation team*" or "working unit for continuous care" or "multidimensional assessment district unit*" or "multi dimensional assessment district unit*" or "wiesbaden geriatric rehabilitation network*" or "wiesbaden network for geriatric rehabilitation" or "wiesbaden geriatric network*" or "information system for all activities carried out in the territory" or "rapid response team*").tw,nt.

(7 and 28) or 29

limit 30 to yr="1991 -Current"

Table 20: Total and unique number of records retrieved: Integrated care and chronic conditions

Database	**Records**
HMIC	3667
Total number of records	3667
Duplicate records	201
Unique records	3466

Healthcare divisions and strategies

Database: HMIC
Host: Ovid
Data Parameters: 1979 to July 2016
Date Searched: 25/8/2016
Searcher: SB
Hits: 357

Strategy:

(gap or gaps or inequalit* or division* or divide*).nt.
(health or care or service* or healthcare or hospital*).nt.
(change* or need* or sustain* or financ* or save* or saving* or strateg* or policy).nt.
1 and 2 and 3

Table 21: Total and unique number of records retrieved: Healthcare divisions, strategies

Database	**Records**
HMIC	357
Total number of records	357
Duplicate records	3
Unique records	354

APPENDIX 3. STAKEHOLDER GROUP MEMBERS

Table 22: Stakeholder group members

Patient 1	PPI
Patient 2	PPI
Patient 3	PPI
Patient 4	PPI
Social Care Lead	CLAHRC
Director of Integration	AHSN
Manager 1	CCG
Director	NHSE
Manager 2	CSP
Social Work Manager	CAFCASS
Lead author Sheffield MCP review	Midlands & Lancashire Commissioning Support Unit
Head of Research & Clinical Effectiveness.	Partnership NHSFT
Assistant Director	Strategy and Improvement, CCG
GP 1	MCP in formation
GP 2	MCP in formation
GP 3	MCP in formation
GP 4	MCP in formation
GP 5	MCP in formation
Researcher-in-residence	NHS FT
Evaluator	NHS England
Director	MCP in formation
Business Analyst	NHS Trust
Director of Intelligence	AHSN
Project Manager	AHSN
Manager 3	NHS
Manager 4	CCG
Advisor	Health Foundation

APPENDIX 4. IF-THEN STATEMENTS FROM POLICY SOURCES AND STAKEHOLDERS

Table 23: If-then statements from policy sources and stakeholders

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
1	MCP#1 Five Year Forward View, NHS, 2015, p. 6 & 16.[4]	If artificial boundaries between hospitals and primary care, health and social care, and generalists and specialists are 'broken out of'	Then care will be genuinely coordinated and personalised around what people need and want, and long-term conditions better cared for	NHS Policy makers
2	MCP#1 Five Year Forward View, NHS, 2015, p. 16.[4]	If there is a partnership with patients over the long term rather than a single unconnected episode of care	Then long term conditions are better cared for	NHS Policy makers
3	MCP#1 Five Year Forward View, NHS, 2015, p. 16.[4]	If the NHS manages systems – networks of care – not just organisations	Then long term conditions are better cared for	NHS Policy makers
4	MCP#1 Five Year Forward View, NHS, 2015, p. 16.[4]	If out-of-hospital care becomes a much larger part of what the NHS does	Then long term conditions are better cared for	NHS Policy makers
5	MCP#1 Five Year Forward View, NHS, 2015, p. 16.[4]	If services are integrated around the patient	Then long term conditions are better cared for	NHS Policy makers
6	MCP#1 Five Year Forward View, NHS, 2015, p. 16.[4]	If general practice operates at scale, such that 20 GPs and 150 staff operate from three modern sites providing many of the tests, investigations, minor injuries and minor surgery usually provided in hospital (e.g. Kent)	Then there are better results, better care, better experience for patients and significant savings	NHS Policy makers
7	MCP#1 Five Year Forward View, NHS, 2015, p. 17.[4]	If nursing and residential homes are linked by secure video to the hospital allowing consultations with nurses and consultants in and out of normal hours (from cuts and	Then emergency admissions and A&E attendances from nursing and residential homes are reduced (Airedale: by 35% and 53%) and residents rate service highly	NHS Policy makers

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
		bumps to diabetes and the management of the onset of confusion) (e.g. Airedale)		
8	MCP#1 Five Year Forward View, NHS, 2015, p. 17.[4]	If trained volunteers and health and social care professionals work side-by-side (e.g. Cornwall)	Then this supports patients with long term conditions to meet their own health and life goals	NHS Policy makers
9	MCP#1 Five Year Forward View, NHS, 2015, p. 17.[4]	If GPs and community matrons work with advisors who know what voluntary services are available for patients with long term conditions (social prescribing service, e.g. Rotherham)	Then the need for visits to A&E, out-patient appointments and hospital admissions is cut	NHS Policy makers
10	MCP#1 Five Year Forward View, NHS, 2015, p. 17.[4]	If integrated care pioneers that combine NHS, GP and social care services are set up (e.g. London)	Then fewer people move permanently in to nursing care homes and emergency admissions are reduced and economic savings are made (e.g. Greenwich saved nearly £1 million and over 5% of community health expenditure)	NHS Policy makers
11	MCP#1 Five Year Forward View, NHS, 2015, p. 19.[4]	If extended group practices form as federations, networks, or single organisations	Then primary care can build on the traditional strengths of 'expert generalists', proactively target services at registered patients with complex needs (e.g. frail elderly or chronic conditions) and work more intensively with these patients, expand the leadership of primary care to include nurses, therapists and other community based professionals, make fuller use of digital technologies, offer greater convenience for patients	NHS Policy makers
12	MCP#1 Five Year Forward View, NHS, 2015, p.19..[4]	If MCPs shift the majority of outpatient consultations and ambulatory care out of hospital settings	Then MCPs will become the focal point for a far wider range of care needed by registered patients	NHS Policy makers
13	MCP#1 Five Year Forward View,	If an MCP is a larger group practice	Then the MCP can employ consultants or take them on as partners, bring in senior nurses,	NHS Policy makers

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
	NHS, 2015, p. 19.[4]		consultant physicians, geriatricians, paediatricians and psychiatrists to work alongside community nurses, therapists, pharmacists, psychologists, social workers and other staff	
14	MCP#1 Five Year Forward View, NHS, 2015, p. 19.[4]	If MCPs take over the running of local community hospitals	Then they can substantially expand their diagnostic services as well as other services such as dialysis and chemotherapy	NHS Policy makers
15	MCP#1 Five Year Forward View, NHS, 2015, p. 19.[4]	If GPs and specialists in the MCP are credentialed in some cases to directly admit patients to acute hospitals, with out-of-hours inpatient care being supervised by a new cadre of 'hospitalists' (e.g. other countries)	Then MCPs will become the focal point for a far wider range of care needed by registered patients	NHS Policy makers
16	MCP#1 Five Year Forward View, NHS, 2015, p. 20.[4]	If MCPs take on the delegated responsibility for managing the health service budget for their registered patients, or where funding is pooled with local authorities, a combined health and social care budget could be delegated to MCPs	Then MCPs will become the focal point for a far wider range of care needed by registered patients	NHS Policy makers
17	MCP#1 Five Year Forward View, NHS, 2015, p. 20.[4]	…	Then MCPs will draw on the 'renewable energy' of carers, volunteers and patients themselves, accessing hard-to-reach groups and taking new approaches to changing health behaviours	NHS Policy makers
18	Email, HL, 19/07/16	If MCPs are created	Then some of the IT and administrative barriers to integration and PCCC will be overcome.	Commissioner
19	Email, HL, 19/07/16	If nurses are integrated with GPs in MCP groups	Then teams can streamline QOF reporting and therefore cut back on admin burden associated	Commissioner

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
			with completion of single practices/orgs.	
20	MCP#2 MCP Care Model, NHS, 2016, p. 4.[12]	If an MCP offers integrated care by dissolving the divides between primary, community, mental health and social care and acute services and involves redesigning care around the health of the population irrespective of existing institutional boundaries	Then care will be joined up, preventative, high quality and efficient	NHS policy makers
21	MCP#2 MCP Care Model, NHS, 2016, p. 4.[12]	If MCPs focus on prevention and redesigning care	Then it is possible to improve health and wellbeing, achieve better quality, reduce hospital admissions and elective activity, and unlock more efficient ways of delivering care	NHS policy makers
22	MCP#2 MCP Care Model, NHS, 2016, p. 4.[12]	If an MCP builds a community network, connects with the voluntary sector and supports patient activation and self-care	Then managing demand on general practice will be improved	NHS policy makers
23	MCP#2 MCP Care Model, NHS, 2016, p. 4.[12]	If federations and super-practices combine with community services	Then a broader, more holistic and resilient form of general practice will be created	NHS policy makers
24	MCP#2 MCP Care Model, NHS, 2016, p. 4.[12]	If an MCP supports practices to work at scale	Then the practices will benefit from working with larger community based teams	NHS policy makers
25	MCP#2 MCP Care Model, NHS, 2016, p. 5.[12]	(when at its most integrated form, an MCP holds a single, whole population budget for all the services it provides, including primary medical services) If an MCP has sufficient decision-making rights to deploy that budget flexibly	Then the MCP can reshape the local care delivery system around what really works best for different groups of patients	NHS policy makers
26	MCP#2 MCP Care Model, NHS, 2016, p. 6.[12]	If institutional forms, contracts, and financial flows are merely rewired	Then there will not be any change	NHS policy makers

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
27	MCP#2 MCP Care Model, NHS, 2016, p. 10.[12]	If an MCP engages and activates patients, their carers, families and communities	Then patients will be able to effectively take control of their own care	NHS policy makers
28	MCP#2 MCP Care Model, NHS, 2016, p. 10.[12]	If an MCP harnesses digital technology	Then it can provide fully interoperable electronic records and real time data and redesign the process of care delivery, including phone and Skype consultations, diagnostics, the use of apps and early adoption of innovative drugs and devices	NHS policy makers
29	MCP#2 MCP Care Model, NHS, 2016, p. 10.[12]	If an MCP creates new multi-disciplinary teams, redesigns jobs so that they are more rewarding, sustainable and efficient, and implements newer professional roles	Then an MCP will empower and engage staff to work in different ways	NHS policy makers
30	MCP#2 MCP Care Model, NHS, 2016, p. 10.[12]	If time and effort is put in to developing a new workforce culture, building skills, and developing roles	Then multi-disciplinary working between health and social teams is supported	NHS policy makers
31	MCP#2 MCP Care Model, NHS, 2016, p. 10.[12]	If there are joined up care records across primary, community and social care and acute services (MCP proposals are extending use of GP record in to community services), real-time data, business and intelligence systems and access to significant analytical capability; and if differential needs, activity and spend are mapped; and if analytical models are used to predict the health interventions that will be required by sub-populations and individual patients; and if it is identified where quality and efficiency improvements can be made to tackle unwarranted	Then an MCP can stratify risk (p.11 four levels of MCP care model pyramid) and segment its population and manage care accordingly and far better align resources to needs	NHS policy makers

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
		variation; and if a whole-population provider budget is held		
32	MCP#2 MCP Care Model, NHS, 2016, p. 11.[12]	If an MCP uses high quality business intelligence systems with data that is real time	Then core aspects of what is currently 'commissioning support', such as business intelligence, will increasingly become 'population health management support'	NHS policy makers
33	MCP#2 MCP Care Model, NHS, 2016, p. 11.[12]	If an MCP adapts or adopts the NHS Rightcare method (www.rightcare.nhs.uk)	Then it will be supported to understand and tackle unwarranted variation in the health outcomes and costs of their population	NHS policy makers
34	MCP#2 MCP Care Model, NHS, 2016, p. 11.[12]	If an MCP uses the four levels of the MCP care model (highest need < ongoing care needs < urgent care needs <whole population; diagram p.11)	Then it can stratify risk and segment the population	NHS policy makers
35	MCP#2 MCP Care Model, NHS, 2016, p. 11.[12]	If MCP works with voluntary sector and social care	Then it can reach out to vulnerable people who find it difficult to access traditional services	NHS policy makers
36	MCP#2 MCP Care Model, NHS, 2016, p. 11.[12]	If an MCP stratifies and identifies risk (using trigger tools and case finding) and segments the population	Then it can provide an extensivist service for the small group of patients with high needs and high costs, a broader range of integrated services in the community for people with ongoing care needs, a more coherent and effective local network of urgent care using enhanced primary care as the core model, and support for the population to stay well, change unhealthy behaviours and manage own health	NHS policy makers
37	MCP#2 MCP Care Model, NHS, 2016, p. 11.[12]	If care is taken to understand specific sub-groups of the population with the greatest needs (e.g. particular housing estates, care homes, remote rural neighbourhoods, toddlers, frail elderly, people who are	Then …	NHS policy makers

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
		homeless or in the lowest quintile of population deprivation)		
38	MCP#2 MCP Care Model, NHS, 2016, p. 12	If (the six principles of engagement) care and support is person-centred (i.e. personalised, coordinated and empowering), services are created in partnership with citizens and communities, focus is on equality and narrowing inequality, carers are identified, supported and involved, voluntary community and social enterprises, and housing sectors are involved as key partners and enablers, and volunteering and social action are key enablers	Then local people and communities are engaged with an MCP	NHS policy makers
39	MCP#2 MCP Care Model, NHS, 2016, p. 12.[12]	If volunteers are engaged as community health champions (e.g. All Together Better Sunderland), large-scale social prescribing schemes are developed and tailored to particular patient groups (e.g. Better Local Care, Southern Hampshire), MCPs look beyond integration with social care and public health to how they can work with schools, housing associations, job centres and youth justice and probation services	Then social capital and community resilience are nurtured	NHS policy makers
40	MCP#2 MCP Care Model, NHS, 2016, p. 13.[12]	If (the eight commissioning standards in local system MCPs will operate as part of) patients can make a single call to get an appointment out of hours, data can be sent between providers, the capacity for NHS 11 and out of hours is jointly planned, the summary care record is available in the	Then urgent care is responsive and accessible	NHS policy makers

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
		clinical hub and elsewhere, care plans and patient notes are shared between providers, the system can make appointments to in-hours general practice, there is joint governance across local urgent and emergency care providers, there is a clinical hub containing (physically or virtually) GPs and other health care professionals		
41	MCP#2 MCP Care Model, NHS, 2016, p. 13.[12]	If more patients are signposted by care navigators (e.g. West Wakefield Health and Wellbeing Ltd MCP: a care navigation framework – a directory of services – is embedded across practices and receptionists use it to signpost patients to cost effective and appropriate services to meet their needs in a timely manner)	Then GP time is released	NHS policy makers
42	MCP#2 MCP Care Model, NHS, 2016, p. 13.[12]	If health apps and telecare are used	Then self-care is supported	NHS policy makers
43	MCP#2 MCP Care Model, NHS, 2016, p. 14.[12]	If alternatives to face-to-face appointments are provided, including video calls, email and telephone consultations (e.g. Modality MCP, Birmingham and Sandwell: developed an app that allows people to book appointments, send messages to clinicians, and receive real-time feedback)	Then the need for surgery visits is reduced, did-not-attends are reduced, and patient experience is improved	NHS policy makers
44	MCP#2 MCP Care Model, NHS, 2016, p. 14.[12]	If there is a fully interoperable clinical record system where all points of care access (e.g. out-of-hours GP, walk-in centre, A&E, ambulance) have access to	Then the admitting clinician has information at the point of access to support management plans or avoid admission and reduce need for conveying patients to hospital	NHS policy makers

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
		view the ten key fields from the GP record, (e.g. Principia Partners in Health, Southern Nottinghamshire), or ambulances can access feedback from their control via these records whilst at patients' homes (e.g. East Midlands Ambulance Service))		
45	MCP#2 MCP Care Model, NHS, 2016, p. 14.[12]	If practices work at scale and pool together their urgent workload into a single service that is operated from a central location and resourced by the practices (e.g. 'same day access' at Better Local Care, Southern Hampshire)	Then demand for face-to-face appointments is reduced (two thirds of people accessing this service had their needs met over the telephone)	NHS policy makers
46	MCP#2 MCP Care Model, NHS, 2016, p. 14.[12]	If paramedics are attached to general practices to act as the first responder to urgent patient calls so that if a home visit is required, the paramedic attends and assesses the patient and has access to the full patient record and to the duty GP for advice (Encompass, Whitstable, Faversham and Canterbury)	Then there is a reduction in conveyancing (e.g. 15%), response times are increased, and patient satisfaction is improved	NHS policy makers
47	MCP#2 MCP Care Model, NHS, 2016, p. 15.[12]	If a wide range of diagnostic tests (such as blood tests, blood gases, urine analysis, pregnancy test, X-ray, ultrasound, bladder scan, ECG) are delivered in the MCP's community-based facilities (e.g. some clinical monitoring regimes have moved in their entirety from hospital to community settings under the supervision of the GP, *context:* with appropriate software support and rapid direct access to specialist advice where required)	Then urgent and routine care are supported and fewer patients are required to attend hospital	NHS policy makers
48	MCP#2 MCP Care Model, NHS, 2016, p. 15.[12]	If diagnostic tests in community-based facilities are coupled with an observations unit so that clinicians can observe the	Then a more complete treatment plan can be developed and implemented which can obviate the need for hospital admission	NHS policy makers

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
		patients for up to 12 hours		
49	MCP#2 MCP Care Model, NHS, 2016, p. 15.[12]	If MCPs follow standardised protocols and integrate primary, community, mental health, social and urgent care	Then the breadth of primary care services delivered is increased	NHS policy makers
50	MCP#2 MCP Care Model, NHS, 2016, p. 15.[12]	If MCPs increasingly provide services that traditionally have been delivered within outpatient settings	Then the depth of intervention delivered within outpatient services is increased	NHS policy makers
51	MCP#2 MCP Care Model, NHS, 2016, p. 15.[12]	If the core component of each hub within an MCP is the integrated community multidisciplinary team (MDT) and MDTs are supported by colleagues from other sectors and by care co-ordinators who provide dedicated support to patients and carers who have multiple interactions with different care settings	Then the MDT provides support to patients at high predicted risk of unplanned hospitalisation and also ensures that responsive care is offered to all individuals who need it	NHS policy makers
52	MCP#2 MCP Care Model, NHS, 2016, p. 15.[12]	If the MDT provides in-reach into hospitals	Then this ensures timely discharge of patients	NHS policy makers
53	MCP#2 MCP Care Model, NHS, 2016, p. 16.[12]	If a series of standardised tools in the EMIS clinical system such as comprehensive health checks for people presenting with a new comorbidity and tools that help clinicians to consider the patient's needs as a while rather than focusing on an individual long-term condition	Then the patient consultation is improved (54% of participating practices rating)	NHS policy makers
54	MCP#2 MCP Care Model, NHS, 2016, p. 17.[12]	If community services are ultimately fully integrated with primary care, including for example, core community care which focuses on the maintenance of health (e.g. falls prevention, administration of	Then…	NHS policy makers

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
		medication, monitoring for deterioration), rehabilitation and reablement which focuses on recovery after a period of ill health and supporting independent living for as long as possible, and specialist care which focuses on a specific aspect of a patient's condition in the community (e.g. wound care, Encompass, Whitstable, Faversham and Canterbury MCP)		
55	MCP#2 MCP Care Model, NHS, 2016, p. 17.[12]	If MCP focuses on rehabilitation and reablement in the community after a period of ill health	Then independent living is supported for as long as possible	NHS policy makers
56	MCP#2 MCP Care Model, NHS, 2016, p. 17.[12]	If a recovery-at-home service has a single point of access to crisis support and intermediate care and reablement services (e.g. All Together Better, Sunderland MCP)	Then this brings together a wide range of health and social care professionals and other local support organisations so that people who need short term, intensive care at home have a service wrapped around them	NHS policy makers
57	MCP#2 MCP Care Model, NHS, 2016, p. 17.[12]	If enhanced health in care homes becomes a core part of all MCPs and PACs	Then ambulance responses to care homes are reduced (e.g. Principia Partners in Health, Southern Nottinghamshire MCP 55/100 beds versus S. Notts 108/100), hospital conveyances are reduced (e.g. 29 vs. 64), there are fewer community acquired pressure sores in older people resident in care homes (e.g. none in last two quarters of 2015/2016, and reduced risk of falls and hip fractures with a nurse led community approach gives financial savings (e.g. of £73000 a year, a return on investment of 52%)	NHS policy makers
58	MCP#2 MCP Care	If personal health budgets are provided to a	Then the influence of personal health budgets'	NHS policy makers

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
	Model, NHS, 2016, p.18.[12]	small but growing proportion of an MCPs population (e.g. those with complex long-term needs)	collective decision making is likely to help improve the quality of mainstream care, and people opting for personalised care tends to reduce total cost of care to public services	
59	MCP#2 MCP Care Model, NHS, 2016, p. 18.[12]	If people opt for more personalised care	Then there tends to be a reduction in the total cost of care to public services	NHS policy makers
60	MCP#2 MCP Care Model, NHS, 2016, p. 18.[12]	If GPs can easily get immediate expert advice from hospital consultants about a patient who has visited their surgery (for example, Consultant Connect Service, Stockport Together MCP) 7 days a week, 24 hours a day	Then this prevents the need for patients to be referred for an outpatient appointment (e.g. in Stockport reduction by 70% of hospital referrals)	NHS policy makers
61	MCP#2 MCP Care Model, NHS, 2016, p. 18.[12]	If an e-referral service is provided for patients with renal problems	Then the number of people who need to attend an outpatient appointment is drastically cut (e.g. Tower Hamlets Together MCP – 50% referrals dealt with without need for hospital visit and advice given in average of 5 days versus 64 for patients attending hospital)	NHS policy makers
62	MCP#3 MCP Vanguard Descriptions, NHS, 2016, p. 6.[12]	If alternative and sustainable models of care are developed alongside interventions and pathways (MCP vanguard: West Wakefield)	Then on-going demand in the future is modified	NHS policy makers
63	MCP#3 MCP Vanguard Descriptions, NHS, 2016, p. 7.[12]	If the care navigation system is improved, with over 100 care navigators (mostly admin staff who generally have first contact with patients) working in practices and trained to direct patients to the most appropriate care (MCP vanguard: West Wakefield)	Then patients are directed to the care they need faster	NHS policy makers

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
64	MCP#3 MCP Vanguard Descriptions, NHS, 2016, p. 7.[12]	If there is a mobile clinic (MCP vanguard: West Wakefield)	Then engagement with hard to reach grounds improved (such as the gypsy/traveller population)	NHS policy makers
65	MCP#3 MCP Vanguard Descriptions, NHS, 2016, p. 7.[12]	If there is continued development of integrated teams (MCP vanguard: West Wakefield)	Then the combined skills of different professionals including physical health, mental health, and social care will redesign the way in which the most vulnerable are cared for in the community	NHS policy makers
66	MCP#3 MCP Vanguard Descriptions, NHS, 2016, p. 7.[12]	If there is 24/7 technological connectivity (MCP vanguard: West Wakefield) and the integrated community teams are all coordinated through a command and control centre approach which can deploy tactical teams (MCP vanguard: West Wakefield)	Then those at risk feel more secure and receive early proactive management and proactive assistance to people to prevent hospital admission and to support earlier discharge from hospital following admission	NHS policy makers
67	MCP#3 MCP Vanguard Descriptions, NHS, 2016, p. 7.[12]	If there are more ways for people to digitally access healthcare (including online directories of local services, and a library of helpful health apps on its website) (MCP vanguard: West Wakefield)	Then	NHS policy makers
68	MCP#3 MCP Vanguard Descriptions, NHS, 2016, p. 8.[12]	If pupils in primary school are entered in to a competition to design health apps that will be developed and launched (MCP vanguard: West Wakefield)	Then primary school children are engaged in healthcare	NHS policy makers
69	MCP#3 MCP Vanguard Descriptions, NHS, 2016, p. 8.[12]	If patients have access to self-service kiosks in practices (MCP vanguard: West Wakefield)	Then patients can be pointed to appropriate care before they enter a clinic room	NHS policy makers
70	MCP#3 MCP Vanguard	If there is integrated care (MCP Better Local Care)	Then patients will not have to remember and repeat their medical history and staff will	NHS policy makers

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
	Descriptions, NHS, 2016, p.14.[12]		understand their needs wherever they go for help	
71	MCP#3 MCP Vanguard Descriptions, NHS, 2016, p.20.[12]	If there is a proactive care plan which is in place and discussed with their local health and care team on a regular basis (MCP Principia Partners in Health)	Then this will build patient confidence and capability for them to make good decisions about what they do to keep themselves fit and well and when they need to escalate the level of support they need irrespective of the time of day or week	NHS policy makers
72	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 3.[12]	If an MCP commissions services differently, moving away from current item-of-service payment mechanisms to commissioning best practice pathways of care and this forms part of a gain sharing agreement between the CCG and the MCP in the future	Then the MCP takes on the demand management of value added treatment services	MCP
73	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 3.[12]	If 'generic' worker use is increased within MDTs	Then links are enhanced to voluntary sector services	MCP
74	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 5.[12]	If there are ongoing public consultations (e.g. on primary care estate), website and literature explaining the MCP, participatory budgeting, staff and patient engagement in pathway design	Then there is a move away from consumerism and towards mutualism with shared ownership and shared responsibility	MCP
75	MCP#6 Dudley MCP description and logic models, Dudley MCP,	If there are more integrated IT supports, such as mobile IT solution holding patient records for community based staff and MDTs, development of interoperable	Then this supports more integrated services (with improved information sharing) increased efficiency, and safer services	MCP

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
	2016, p. 5.[12]	system across all MCP services		
76	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 5.[12]	If there is close and collaborative working within the system, nationally and with expert partners	Then a new form of contract can be developed to commission the MCP, this needs to balance capitated budgets, throughput and outcome measures, gain-sharing and risk management	MCP
77	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 5.[12]	If appropriate governance arrangements are designed, including development of specific workstream drawing on organisations across the system and external experts and implementation of preferred option through procurement of MCP	Then the change in institutional infrastructure needed in order to deliver the MCP contract is supported	MCP
78	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 6.[12]	If an MCP provides an enhanced range of services in primary and community settings	Then it can improve patient experience and outcomes at the same time as reducing costs	MCP
79	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 7.[12]	If there are improved access to care; improved systems and skills in primary care, reduction in back office costs – more efficient use of resources; Improved estates in primary/community care; More proactive, targeted diagnosis and management of higher risk patients, better medicines management	Then there is increased capacity and capability in primary and community care; more services are provided out of hospital (associated savings)	MCP
80	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 7.[12]	If there are improved access to care; improved systems and skills in primary care, reduction in back office costs – more efficient use of resources; Improved estates in primary/community care; Improved and	Then there is reduced (and more appropriate) use of secondary care and improved discharge (associated savings)	MCP

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
		quicker access to information, advice and guidance (patients and staff); they find it easier to do the right thing; Reduced unwarranted variation in pathways and more appropriate referrals; Better care planning, increased patient knowledge of condition(s), increased ability to self-manage		
81	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 7.[12]	If there are improved access to care; Reduced unwarranted variation in pathways and more appropriate referrals; Better care planning, increased patient knowledge of condition(s), increased ability to self-manage; Improved patient access to holistic support services (e.g. voluntary sector)	Then there are improved outcomes for higher risk patients, they are more activated, in control of their care and self-managing, reduction in inequalities (associated savings)	MCP
82	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 7.[12]	If there are improved access to care; Reduced unwarranted variation in pathways and more appropriate referrals; Better care planning, increased patient knowledge of condition(s), increased ability to self-manage; Improved and quicker access to information, advice and guidance (patients and staff); Improved patient access to holistic support services (e.g. voluntary sector); New 'generalist' roles, the workforce is better matched to need	Then there are improved patient experience of care, reduced patient social isolation, better quality of life – including at the end of life (associated savings)	MCP
83	MCP#6 Dudley MCP description and logic models, Dudley MCP,	If there are Improved and quicker access to information, advice and guidance (patients and staff); New 'generalist' roles, the workforce is better matched to need	Then there is increased staff empowerment/engagement (associated savings)	MCP

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
	2016, p. 7.[12]			
84	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 7.[12]	If there are greater insight, more clearly defined needs and better designed services; improved information sharing, increased efficiency; useable and replicable contractual model for MCPs, better system incentives; robust system of governance, best possible option in development of MCP organisation(s); better evidence on outcomes, greater insight	Then the MCP intended outcomes are enabled	MCP
85	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 10.[12]	IF there is engagement with GPs to stimulate demand for advice and guidance (e.g. through training/monitoring non advice and guidance referrals) AND work is done with consultants/Dudley group to stimulate supply of advice and guidance (e.g. use of CQUINS)	THEN there is improved communication, better GP access to consultant advice, and increased use of A&G AND THEN increased capacity and capability in primary and community care, more services provided out of hospital /faster referral back to primary care; AND Reduced (and more appropriate) use of secondary care, improved use of consultant time and system resources	MCP
86	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 10.[12]	IF work is done with consultants/Dudley group to stimulate supply of advice and guidance (e.g. use of CQUINS)	THEN GPs feel empowered / that they have sufficient knowledge to manage more cases in primary care, AND THEN increased capacity and capability in primary and community care, more services provided out of hospital / faster referral back to primary care; AND Reduced (and more appropriate) use of secondary care, improved use of consultant time and system resources; AND Improved patient experience	MCP
87	MCP#6 Dudley MCP description	IF there is engagement with GPs to stimulate demand for advice and guidance	THEN there are reduction in unnecessary referrals to secondary care and reduction in	MCP

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
	and logic models, Dudley MCP, 2016, p. 10.[12]	(e.g. through training/monitoring non advice and guidance referrals) AND work is done with consultants/Dudley group to stimulate supply of advice and guidance (e.g. use of CQUINS) AND clinical groups are used to develop general service specification (for tailoring) to formalise (e.g.) expectations on / payment for follow-ups	unnecessary follow-up appointments, AND THEN Reduced (and more appropriate) use of secondary care, improved use of consultant time and system resources; AND Improved patient experience; AND More optimal and effective pathways, reduced unexplained / unwarranted variation in care	
88	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 10.[12]	IF clinical groups are used to develop general service specification (for tailoring) to formalise (e.g.) expectations on / payment for follow-ups AND scale opportunity for reducing variation (e.g. by reviewing use of follow-up appointment)	THEN there is increased knowledge of current practice, clearer (contractual) expectations for pathways and associated payments; AND THEN Improved patient experience AND more optimal and effective pathways, reduced unexplained / unwarranted variation in care	MCP
89	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 12.[12]	IF outcome targets are reduced in current QoF and a focus put on evidence-based targets for managing long-term conditions	THEN there is an increased focus on patients with long-term conditions AND THEN reductions in administration and changes in skill mix, increased productivity and more efficient use of resources in practices (including change in GP inputs) AND improved outcomes for patients with long-term conditions: they are more activated, in control of their care and self-managing, and there is a reduction in inequalities (associated savings)	MCP
90	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 12.[12]	IF contracts are simplified, bringing in DES / LIS schemes in to a single pot AND outcome targets are reduced in current QoF and a focus put on evidence-based targets for managing long-term conditions AND	THEN there is increased flexibility for GP practices to manage higher risk patients more proactively AND THEN reductions in administration and changes in skill mix, increased productivity and more efficient use	MCP

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
		EMIS templates are simplified to support more holistic assessments, standard advice and better care plans	of resources in practices (including change in GP inputs)	
91	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 12.[12]	IF EMIS templates are simplified to support more holistic assessments, standard advice and better care plans AND practices are trained, schemes piloted and refined and formative evaluation of roll out is used	THEN there is reduced variation in advice given to support self-management and increased patient knowledge of condition(s) AND more consistent care planning and joint goal setting with patients AND THEN there are improved outcomes for patients with long-term conditions: they are more activated, in control of their care and self-managing, and there is a reduction in inequalities (associated savings) AND improved patient experience of care, reduced patient social isolation, better quality of life – including at the end of life (associated savings)	MCP
92	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 14.[12]	IF MDT structure is devised (mental health, social care, VCS, community nursing, pharmacy, etc.) and MDT established in every practice and every locality, and services mapped and joined up	THEN there is increased knowledge of services available for patients AND THEN there is improved patient experience of care (they receive more coordinated care), reduced social isolation and better quality of life (including at the end of life)	MCP
93	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 14.[12]	IF MDT structure is devised (mental health, social care, VCS, community nursing, pharmacy, etc.) and MDT established in every practice and every locality, and services mapped and joined up AND risk stratification is used to identify most at risk of emergency admission (minimum top 2% other cases added in by staff) AND there	THEN there is more proactive identification and management of most at risk in primary care AND THEN reduced use of non-elective secondary care AND improved patient experience of care (they receive more coordinated care), reduced social isolation and better quality of life (including at the end of life)	MCP

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
		are MDT meetings and follow up actions to coordinate care		
94	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 14.[12]	IF risk stratification is used to identify most at risk of emergency admission (minimum top 2% other cases added in by staff) AND there are MDT meetings and follow up actions to coordinate care	THEN duplication of service inputs in reduced, care is more coordinated and teams are working to shared outcomes AND THEN there is more efficient use of system resource, reduced duplication / increased coordination of service inputs AND increased staff empowerment / engagement	MCP
95	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 14.[12]	IF there are MDT meetings and follow up actions to coordinate care	THEN there are increased referrals to community services and activities (VCS) AND THEN there is improved patient experience of care (they receive more coordinated care), reduced social isolation and better quality of life (including at the end of life)AND there is more efficient use of system resource, reduced duplication / increased coordination of service inputs AND increased staff empowerment / engagement	MCP
96	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 14.[12]	IF there are MDT meetings and follow up actions to coordinate care AND OD programmes to support continuous improvement and evolution of MDT model AND formative evaluation of model	THEN there is increased knowledge of effective MDT working AND THEN increased staff empowerment / engagement	MCP
97	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 16.[12]	IF there is increased patient activation and self-care	THEN there will be reduced use of services	MCP
98	MCP#6 Dudley	IF there is empowerment of frontline staff	THEN they are able to resolve patient needs	MCP

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
	MCP description and logic models, Dudley MCP, 2016, p. 16.[12]		sooner	
99	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 16.[12]	IF there is increased upstream and proactive intervention	THEN services used are less expensive / reactive and restorative	MCP
100	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 16.[12]	IF there are improved communications, advice and guidance	THEN staff have access to the right information at the right time to make the right decision	MCP
101	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 16.[12]	IF there is insight from multiple sources of evidence	THEN services are better designed and adapted to meet evolving needs	MCP
102	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 16.[12]	IF there is reduced duplication, waste and failure demand	THEN multiple services will better coordinate inputs, increasing efficiency and resolving needs sooner	MCP
103	MCP#6 Dudley MCP description and logic models, Dudley MCP, 2016, p. 16.[12]	IF there is greater consistency	THEN staff and patients know what to do / what to expect	MCP
104	MCP#5 NHSE	IF the interface between the MCP and	THEN this will reduce inappropriate hospital	MCP

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
	vanguard logic models, 2016, Modality (Birmingham & Sandwell).[12]	secondary care is managed explicitly	utilisation (e.g. diverting admissions, supporting early discharge and preventing re-admissions)	
105	MCP#5 NHSE vanguard logic models, 2016, West Wakefield Health & Wellbeing Ltd.[12]	IF there are integrated teams and call centre access from home	THEN admissions avoidance	MCP
106	MCP#5 NHSE vanguard logic models, 2016, West Wakefield Health & Wellbeing Ltd.[12]	IF there are integrated teams and assistive technology	THEN early supported discharge	MCP
107	MCP#5 NHSE vanguard logic models, 2016, Tower Hamlets Together.[12]	IF an MCP has a good culture [SLB note: or is this a description of what they mean by a good culture?]	THEN staff will be polite and respectful to patients, will respect their confidentiality, will let them know who the MCP is and what the MCP does, will communicate clearly and openly with patients in the way that the patients need them to, will respond to phone calls, emails and letters quickly, will ensure that patients only need to tell their story when they choose, will take in to account patients' mental, physical, and social needs, will be informed and prepared for appointments with patients and have read patients notes, will work with patients as an equal partner, jointly	MCP

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
			agreeing care plans and including patient personal wishes and goals, will support patients to support themselves where possible, will involve and listen to carers involved in a patient's care AND services will provide good value and high quality care and support, be locally based and accessible, be sensitive to the needs of the diverse community they serve	
108	MCP#5 NHSE vanguard logic models, 2016, Tower Hamlets Together.[12]	IF there is frailty assessment	THEN this supports care coordination	MCP
109	NHS managers think tank Oct16 if thens	IF there is a high level of ownership of the budget	THEN the buy-in of partners will be higher	NHS managers
110	NHS managers think tank Oct16 if thens	IF MCPs are effective in bringing about systemic change	THEN they should result in GPs, health and social services having a shared budget and long-term contracts THEN GPs will be integrated with community services and providing for one population including prevention work	NHS managers
111	NHS managers think tank Oct16 if thens	IF organisational forms are changed AND there are operational changes	THEN care will be taken closer to home	NHS managers
112	NHS managers think tank Oct16 if thens	IF there is more joined up working, with people talking more to each other in joined up way with positive relationships AND there is a supporting system	THEN there will be more coordinated care AND reduced inefficiencies AND this will be better for the patient because everyone involved in their care will be 'on message'	NHS managers
113	NHS managers	IF there is patient activation AND	THEN there will be better support for patients	NHS managers

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
	think tank Oct16 if thens	communication between engaged health and social care providers who take a holistic view using a more social model	to take responsibility for their own health AND there will be more health behaviour change in community AND THEN there will be less demand on health services	
114	NHS managers think tank Oct16 if thens	IF there is empowerment, shared decision making, planning, an emphasis on what matters to patients	THEN …	NHS managers
115	NHS managers think tank Oct16 if thens	IF there is education and staff	THEN this helps to overcome the fact that some patients don't want change in the way they interact with their health services	NHS managers
116	NHS managers think tank Oct16 if thens	IF patients don't know about something (e.g. community staff visits to home)	THEN they won't engage with it	NHS managers
117	NHS managers think tank Oct16 if thens	IF there is a move from a model of illness to a model of wellbeing AND patient empowerment	THEN responsibility for health moves to the patient AND supports culture change in the way the population understand and use health services	NHS managers
118	NHS managers think tank Oct16 if thens	IF physical health services learn from mental health services in terms of patient-centred care and a holistic philosophy	THEN physical health services can be improved	NHS managers
119	NHS managers think tank Oct16 if thens	IF there is culture change such that a strengths-based approach is used to look at a person in a positive way in terms of their goals and community involvement etc. AND staff are also treated in this way	THEN this is a starting point for (improved?) care planning	NHS managers
120	NHS managers think tank Oct16 if thens	IF GPs become more involved in managing risk in the community by being more involved in complex cases in the community	THEN complex cases are cheaper to manage in the community (reduced cost of care for complex cases) BUT GPs may not want to take on that risk if things can go wrong AND IF GPs are not aware of the rest of the pathway	NHS managers

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
			THEN it is difficult for them to take on risk [minute 25:50 in first policy think tank recording]	
121	NHS managers think tank Oct16 if thens	IF more people are supported not to be admitted or to be discharged from the hospital	THEN there will be added pressure in the community for services and carers and the voluntary sector	NHS managers
122	NHS managers think tank Oct16 if thens	IF carers are not supported	THEN carer could also become ill and then have two rather than one patient in need of health services	NHS managers
123	NHS managers think tank Oct16 if thens	IF there is a shift in the model and culture	THEN the full workforce can be skilled and working in a different way (including health, social and voluntary)	NHS managers
124	NHS managers think tank Oct16 if thens	IF there is the capacity and skills in the voluntary sector	THEN the 'logic model' of MCPs can be brought to life	NHS managers
125	NHS managers think tank Oct16 if thens	IF services are tight/protective/inflexible about their role boundaries THEN there will not be joined up care BUT IF the boundaries are merged or blurred too much	THEN there is the risk that roles will not be delivered and responsibility for care diffused (tension between inter-disciplinary working and flexible roles)	NHS managers
126	NHS managers think tank Oct16 if thens	IF staff work across disciplinary boundaries	THEN they will pick up new skills	NHS managers
127	NHS managers think tank Oct16 if thens	IF GPs feel challenged by a lack of boundaries around roles	THEN …	NHS managers
128	NHS managers think tank Oct16 if thens	IF GPs see that they are losing admin jobs because of lack of boundaries around roles and are more able to use their key skills	THEN … (more likely to engage with new ways of working?)	NHS managers
129	NHS managers think tank Oct16 if	IF MCPs are starting from a different place	THEN they will take different length of time and different route on the pathway to their	NHS managers

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
	thens		outcomes (e.g. come may start from a not working well place, others may start from a place in which many MCP-type things are in place and can be re-branded)	
130	NHS managers think tank Oct16 if thens	IF there is engagement	THEN this will drive down system costs	NHS managers
131	NHS managers think tank Oct16 if thens	BUT IF the workers believe that the only way that system costs can be reduced is by losing people	THEN they will be mistrustful of any new model of care or way of working coming from above, especially if it involves merging of roles, as they will expect that it is a hidden way of reducing costs (workers may believe that role change is about cost cutting, not about quality improvement)	NHS managers
132	NHS managers think tank Oct16 if thens	IF staff and patients believe that change is about bringing in something cheaper and less good	THEN they will be cynical about change AND THEN it will be difficult to convince them to do something better from both a clinical and a financial angle	NHS managers
133	NHS managers think tank Oct16 if thens	IF the view is taken (by change agents) that cost savings will be made simply by less people being in hospitals	THEN this cost is just transferred elsewhere in the system	NHS managers
134	NHS managers think tank Oct16 if thens	IF the view is taken (by change agents) that it is about doing more across the system with what we've got	THEN there may be efficiency savings rather than simply moving cost from one part of system to another	NHS managers
136	NHS managers think tank Oct16 if thens	IF trust and supportive relationships between providers take up to ten years to build	THEN outcomes in MCPs will take many years to show as this is the foundation of the type of change the system is trying to make	NHS managers
137	NHS managers think tank Oct16 if thens	IF deficits are not simply shifted around the system AND there is the financial mechanism of fixed price contracts AND	THEN this supports boundaries between organisations to be informally reduced	NHS managers

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
		people's minds and cultures are supported to change in the right direction		
138	NHS managers think tank Oct16 if thens	IF there is the financial mechanism of fixed price contracts	THEN this avoids the perverse incentives of the payment by results system	NHS managers
139	NHS managers think tank Oct16 if thens	IF there is a strong focus on outcomes (in distal sense)	THEN this can distract from more important outcomes in the model (e.g. intermediate outcomes)	NHS managers
140	NHS managers think tank Oct16 if thens	IF an MCP is in a rural location with a limited service provision	THEN changes might be easier and more acceptable than in a large urban area (e.g. London)	NHS managers
141	NHS managers think tank Oct16 if thens	Incentives / payments: IF change is asked for and proof given for change before payment structure to support it is changed	THEN it will be difficult to get change financed BUT IF say are going to put savings back in to primary care THEN this would be more acceptable and engaging	NHS managers
142	NHS managers think tank Oct16 if thens	IF awareness of voluntary sector is raised so that GPs have improved knowledge of the voluntary sector and what is available locally and how to engage with them	THEN they will use these resources more	NHS managers
143	NHS managers think tank Oct16 if thens	IF voluntary sector organisation engagement with MCPs is formal AND voluntary sector workers incentives and motivations come from working for voluntary sector	THEN voluntary sector workers may feel that they are becoming too incorporated in to 'the system' AND THEN energy and resource of voluntary sector may be reduced	NHS managers
144	NHS managers think tank Oct16 if thens	IF resource is put in to galvanising the voluntary sector AND GPs know what the state and structure of the voluntary sector is locally	THEN this is a cheap but effective way of building resource locally for patients in community	NHS managers
145	NHS managers think tank Oct16 if	IF the social services are locally not in a good state because of lack of funding	THEN the voluntary sector tends to pick up the slack	NHS managers

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
	thens			
146	NHS managers think tank Oct16 if thens	IF there is data sharing and information governance between health, social and voluntary sector	THEN MCP is supported BUT different teams will interpret things in different ways	NHS managers
147	NHS managers think tank Oct16 if thens	IF the voluntary sector are focusing on different things to the NHS local need identification results AND there is the assumption that the voluntary sector is available	THEN this may reduce MCP chances of engaging them	NHS managers
148	NHS managers think tank Oct16 if thens	Important local contexts for MCPs discussed (but not linked explicitly to M or O): • financial situation • focus of leadership locally • knowledge and attitude to health of MCP population • how population engage or don't engage, engagement • view of people not patients (what will become your patient population is the well people in the local area) • how organisations relate to each other to support change to happen, local relationships before you start attempting change	THEN...	NHS managers
149	NHS managers think tank Oct16 if thens	IF MCPs start with a GP-centric focus	THEN over time relationships can be built between community organisations AND THEN the central focus of MCPs on GPs can change over time	NHS managers
150	NHS managers	IF MCPs form AND more patients are	THEN there will be a tension between what is	NHS managers

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
	think tank Oct16 if thens	taken off the GP AND/OR more services are pulled in to GPs to support them (the shift of focus and power here will be different in different localities)	the best model clinically and what is the best model financially	
151	NHS managers think tank Oct16 if thens	IF outcomes include patient experience such as social inclusion	THEN this can look 'small' in metrics	NHS managers
152	NHS managers think tank Oct16 if thens	IF MCPs change GP usage, delivery and model	THEN there is an implementation challenge in terms of the moving of the pressure on the system to other parts of the system and getting rid of some roles etc.	NHS managers
153	NHS managers think tank Oct16 if thens	IF people don't want change in health service provision or change is experienced as challenging by population or don't want to take more responsibility for their own health	THEN patient experience may dip initially for a few years AND THEN improve	NHS managers
154	NHS managers think tank Oct16 if thens	IF MCPs make people more attuned to what is available	THEN demand on the system may increase (initially – how long is this and is there a payback down the line?)	NHS managers
155	NHS managers think tank Oct16 if thens	IF there is the assumption that information that is collected will magically filter in to effective action and be used effectively by system	THEN knowledge will not be (effectively/appropriately?) used within the system	NHS managers
156	NHS managers think tank Oct16 if thens	IF there is a change in culture to be more analytical and use data to feed its working AND increased skills in system to analyse data collected	THEN this supports the shift towards prevention and identifying users and forecasting local needs etc.	NHS managers
157	NHS managers think tank Oct16 if thens	IF an integrated IT system is not simply seen as an easy solution to integration of organisations AND it is seen that MCPs can	THEN this supports other types of integration to be actioned locally (i.e. resources put in to other mechanisms to increase integration – like	NHS managers

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
		be robust without integrated IT system	roles/interaction/space/organised/managed - without assuming IT will do the work for them)	
158	NHS managers think tank Oct16 if thens	IF health service staff feel like they have seen schemes come and go and that MCPs are just another way for them to tick boxes to get money	THEN there will be complacency, lack of signing up to vision, and lack of engagement AND money will be got and then syphoned off locally to elsewhere in local system that is seen as a local priority	NHS managers
159	GP think tank Oct16 if thens	IF building an MCP involves local context-driven innovation rather than top-down imposition of a strict framework of how to do it	THEN local resources can be creatively adapted to local context and local need AND THEN staff wellbeing is supported (because staff are able to get rid of barriers to working in the ways they want to work and this reduces their frustration and stress)	GPs
160	GP think tank Oct16 if thens	IF the CCG in the local area that the MCP is commissioned by is effective and open to being creative and not risk-averse	THEN the MCP is more likely to be able work in the way it wants to	GPs
161	GP think tank Oct16 if thens	IF local GPs or other staff are willing to put in extra effort and time and thinking space outside their own hours	THEN there will be more innovation and creativity locally AND the local MCP will be more likely to work	GPs
162	GP think tank Oct16 if thens	IF the ability of an MCP to get started relies on the will to push at the local individual level (i.e. GPs putting in large amount of effort and time unpaid)	THEN this will/resource is not sustainable BUT IF this time and money were actually funded through the CCG commissioning for the MCP, THEN the MCP outcome of cost reduction would be undermined (because it would take a huge amount of resource if these hours were actually paid for)	GPs
163	GP think tank Oct16 if thens	IF there are commissioning barriers to innovation (i.e. CCG risk-averse)	THEN there will be no change. [RS: << This is a 'context' (because external condition) in RE terms.]	GPs

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
164	GP think tank Oct16 if thens	IF there is top-down policy informed change, and bottom-up clinician led change	THEN the barrier is at the middle management level, where they have to abide by organisational rules and cannot be creative and flexible.	GPs
165	GP think tank Oct16 if thens	IF an MCP starts collaborating first and begins to get results from their own creativity	THEN commissioners find it easier to fund the innovation (can see it in action already, less risk if already shown to be operating [RS: << Feedback loop into external environment (context)]	GPs
166	GP think tank Oct16 if thens	IF an MCP sets up as a community interest group	THEN all the partner services will be more committed to and engaged with the MCPs ongoing development and plans	GPs
167	GP think tank Oct16 if thens	IF the risk of procurement were removed (i.e. have to start procurement process and begin it without knowing whether will actually get the money)	THEN more GP practices would be likely to procure for MCP	GPs
168	GP think tank Oct16 if thens	IF a GP practice or group of GPs are too small (i.e. serve too small a population) and therefore cannot be individually commissioned as an MCP	THEN they can become a group or Federation of GPs to be commissioned to be an MCP, BUT IF they need to spread across an area that spans more than one CCG to serve a large enough population, THEN they will not be able to be commissioned as an MCP together or alone.	GPs
169	GP think tank Oct16 if thens	IF an MCP supports staff wellbeing	THEN the MCP will get more from its resources	GPs
170	GP think tank Oct16 if thens	IF an MCP supports staff to overcome organisational and other barriers to working in the way that they believe would be sensible to work	THEN staff frustration will decrease, AND THEN staff wellbeing and productivity will increase	GPs
171	GP think tank	IF financial constraints are increased on a	THEN barriers to GPs working in the way they	GPs

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
	Oct16 if thens	CCG	would like to are increased	
172	GP think tank Oct16 if thens			GPs
173	GP think tank Oct16 if thens	IF an MCP supports staff to focus care around patients, rather than on process (or ???)	THEN staff can work in ways that align with their own intrinsic motivation to look after patients, AND THEN staff wellbeing and productivity is supported	GPs
174	GP think tank Oct16 if thens	IF barriers between services are opened up and worked across in an MCP	THEN there is improved patient access to services they need/want	GPs
175	GP think tank Oct16 if thens	IF there is joined up IT and shared records	THEN an MCP is possible (not possible to work in this way without these things)	GPs
176	GP think tank Oct16 if thens	IF data collection and tools are used to understand your local population and the spread of their needs	THEN you can better manage demand, prevent need for care, and more effectively use your resources	GPs
177	GP think tank Oct16 if thens	IF an MCP can shift the default position of patients and the system (biomedical model) of going to the GP in the first instance	THEN the full range of resources will be better spread across the system and diverted away from primary care AND the dependency on GPs will be cut	GPs
178	GP think tank Oct16 if thens	IF GPs will not or cannot take responsibility for financial risk	THEN this financial risk needs to be held higher up in the system (as part of a joint venture?), for example at the level of network management (commissioning at this level)	GPs
179	GP think tank Oct16 if thens	IF an MCP is small enough	THEN it is more able to explore, understand and respond to local need with local resource (reason to keep MCPs small enough to relate to a local context), BUT if an MCP is large enough, THEN it will have enough patients to be able to fight more effectively for funds from commissioners.	GPs
180	GP think tank	IF there is targeting of services to patients	THEN there is better use of local resources and	GPs

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
	Oct16 if thens	at all levels of need (not just complex needs)	better local demand management	
181	GP think tank Oct16 if thens	IF an MCP thinks of partners in terms of how they can help the MCP to do what	THEN this focuses the MCP on collaboration as opposed to 'bringing in'	GPs
182	GP think tank Oct16 if thens	IF an MCP gets stuck in a transactional reactive loop	THEN staff will be stressed, BUT IF an MCP can be more proactive THEN the MCP will not spend all of its time fighting fires, but preventing them	GPs
183	GP think tank Oct16 if thens	IF MCPs are small enough to be responsive to local needs (and collect data on local need across the spectrum of high to low need)	THEN they can respond proactively to these local needs	GPs
184	GP think tank Oct16 if thens	IF local social services are not sufficient to support people locally to be cared for at home or in the community	THEN an MCP will not be able to reduce readmission to hospital	GPs
185	GP think tank Oct16 if thens	IF an MCP cannot affect the quality of social care and cannot affect social care commissioning locally (SB: which they can't?)	THEN an MCP will not be able to reduce hospital readmission by having patients cared for by social services in the community	GPs
186	GP think tank Oct16 if thens	IF adult social care is not a part of an MCP	THEN the MCP will not be able to remove a major barrier to improving hospital readmission [RS: Context]	GPs
187	GP think tank Oct16 if thens	IF a local group of practices are preparing to become an MCP	THEN the groundwork they are doing will prepare them for other future eventualities also (e.g. if NHS fails and go private then will need to have larger patient lists to compete for funding on open market and be able to show data collection and local need etc.)	GPs
188	GP think tank Oct16 if thens	IF practitioners from other services that are part of the MDT are referred to throughout	THEN the patient will not see them as a substitute for the GP or feel shunted off, but	GPs

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
		a patients care pathway as part of the same team or closely related to the GP	will be happier with perceived expertise of their care (e.g. from US model)	
189	GP think tank Oct16 if thens	IF an MCP operates at scale	THEN it is more likely that partners and people lower in the decision-making hierarchy will not be interested in understanding the decision-making process and may be less engaged	GPs
190	GP think tank Oct16 if thens	IF an MCP uses 'admission avoidance' as a way to engage, sell to and interest commissioners	THEN this will also deliver them the ability to offer person-centred care to a person in the way and place that they need it AND to 'do the right thing' (which is what clinicians want to do) with resources available	GPs
191	GP think tank Oct16 if thens	IF an MCP focuses on workload, satisfaction, and sustainability	THEN partner services will be more engaged	GPs
192	PPI think tank Oct16 if thens	IF new model of care needs patients to change how they interact with their GP and/or other practitioners	THEN there are some sections of the community that will be adverse to these changes (especially elderly who don't deal well with change, or who are not good at using modern technology)	PPI
193	PPI think tank Oct16 if thens	IF care for vulnerable elderly is integrated in to their lives AND is user-friendly	THEN this can help them to work with services in new ways even though change is difficult for them	PPI
194	PPI think tank Oct16 if thens	IF MCPs want to increase access to the right point in the health care system	THEN they need to offer a variety of opportunities to engage in new ways that suit all generations, especially the elderly and the young	PPI
195	PPI think tank Oct16 if thens	IF a patient has complex needs but wants to stay in the community and not be in a care home BUT the community care available does not offer the level of intensity of care	THEN the patient will have to go to a care home / secondary care	PPI

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
		required		
196	PPI think tank Oct16 if thens	IF there is not any social care support for the elderly with complex needs	THEN they cannot leave their beds when they are hospitalised	PPI
197	PPI think tank Oct16 if thens	IF a care coordinator or GP acts as a gate keeper	THEN some patients will feel that they cannot get past the gate keeper to get the care that they would like (e.g. if GP or care coordinator has a different opinion to patient in regards to the best or most appropriate care)	PPI
198	PPI think tank Oct16 if thens	IF there is a multi-disciplinary health team in an MCP	THEN the GP is not the only gate keeper	PPI
199	PPI think tank Oct16 if thens	IF patients have complex health needs	THEN their care should be co-ordinated by a 'community matron' figure	PPI
200	PPI think tank Oct16 if thens	IF a patient is allocated a health and social carer	THEN patients will feel more comfortable	PPI
201	PPI think tank Oct16 if thens	IF a patient is allocated a health and social carer	THEN this health professional can be present at GPs appointment and advocate for the patient	PPI
202	PPI think tank Oct16 if thens	IF MCPs include new job roles, for example care coordinators	THEN…	PPI
203	PPI think tank Oct16 if thens	IF MCPs include new job roles, for example care co-ordinators	THEN these people should be trained in a holistic approach, which encompasses mental health	PPI
204	PPI think tank Oct16 if thens	IF it is not clear who takes responsibility for a patients care (e.g. GP)	THEN…	PPI
205	PPI think tank Oct16 if thens	IF a care coordinator or advocate can support a patient to meet their immediate needs	THEN hospital admission can be avoided	PPI
206	PPI think tank Oct16 if thens	IF multi-disciplinary health teams in MCPs can deal with complex health needs	THEN patient waiting lists get shorter	PPI
207	PPI think tank	IF support for management of long-term	THEN patients are supported to self-care, take	PPI

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
	Oct16 if thens	illnesses in responsive, flexible and available at all hours (e.g. for COPD)	control of management of their own illness (e.g. monitor own symptoms and respond with anti-biotics immediately without waiting for a GP prescription which might be too late and therefore result in hospital admission), AND to avoid being admitted to secondary care (e.g. hospital)	
208	PPI think tank Oct16 if thens	IF knowledge and information and education around illnesses and illness management and self-care and about the treatments/services/support that are available locally AND patients know how to find this information	THEN patients can access appropriate services themselves in a timely fashion AND THEN demand for primary care is reduced AND cost savings made AND patient experience of healthcare improved	PPI
209	PPI think tank Oct16 if thens	IF there is an information hub as part of an MCP	THEN patient self-care is supported and enabled THEN demand for primary and/or secondary care is reduced and managed in community services instead	PPI
210	PPI think tank Oct16 if thens	IF patients know what is available locally and how to refer themselves to these services	THEN the patient will not go to the GP AND the demand for primary care is reduced AND THEN patients are supported to have control over their own care AND THEN will have better quality experiences of health services	PPI
211	PPI think tank Oct16 if thens	IF MCPs become social hubs where patients can informally discuss their health issues	THEN patients will feel more comfortable to see their GPs	PPI
212	PPI think tank Oct16 if thens	IF MCPs become social hubs	THEN they will speed up the recovery of patients with complex needs	PPI
213	PPI think tank Oct16 if thens	IF the voluntary sector gets involved	THEN MCP can become social hubs	PPI
214	PPI think tank	IF MCPs become social hubs	THEN patients have to be prepared to	PPI

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
	Oct16 if thens		contribute financially	
215	PPI think tank Oct16 if thens	IF care has to change	THEN it has to be user friendly	PPI
216	PPI think tank Oct16 if thens	IF hospitals are integrated in the community	THEN they maximise their resources	PPI
217	PPI think tank Oct16 if thens	IF local hospitals are used to their full potential	THEN they can stay open	PPI
218	PPI think tank Oct16 if thens	IF there are hubs that offer services specialised around particular illnesses (such as MS)	THEN there will be better patient experience of care	PPI
219	PPI think tank Oct16 if thens	IF there are crisis centres that patients know about	THEN the demand for A&E will be reduced	PPI
220	PPI think tank Oct16 if thens	IF care is proactive and takes primary care services to communities that are at risk	THEN this will support prevention and admission avoidance	PPI
221	PPI think tank Oct16 if thens	IF care is proactive and takes a mobile service to the community which makes the service more accessible locally (such as the See Hear bus in North Devon provided by Living Options) THEN this will improve patient experience of care AND will support prevention and reduce demand for primary care	THEN this will improve patient experience of care AND will support prevention and reduce demand for primary care	PPI
222	PPI think tank Oct16 if thens	IF vulnerable or isolated communities have mobile services visit them and provide basic health care (such as farming or rural communities)	THEN community illness prevention is supported	PPI
223	PPI think tank Oct16 if thens	IF elderly patients are given education around the benefits of changes to healthcare provision	THEN this helps to overcome their fears about and resistance to change and to using health services in a different way	PPI
224	PPI think tank	IF MCPs focus on prevention	THEN this will reduce costs to NHS of	PPI

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
	Oct16 if thens		illnesses such as diabetes	
225	PPI think tank Oct16 if thens	IF MCPs offer teleconferences for house-bound people to talk to each other or to healthcare professionals	THEN this is a cheap way to deliver emotional support that can greatly improve quality of life and mental health AND THEN improve health outcomes AND experience of services	PPI
226	PPI think tank Oct16 if thens	IF MCPs enable/support people to take control of their own health IF MCPs provide an advocate or person who can guide you through your care decisions and support you to navigate the health system	THEN patient experience will improved THEN patient experience is improved (these two if-thens are opposites and reflect that different people are on different points in terms of wanting autonomy or control over their health care and wanting to be supported and guided through health system – both of these need to be available to patients depending on their individual needs)	PPI
227	PPI think tank Oct16 if thens	IF MCPs include knowledge for patients about illnesses and services, education around public health issues (weight and diet/exercise), and work to overcome the default of the GP as the point of contact for any medical issue for a patient	THEN patients are enabled to take control of their own health (“integrated self-care”)	PPI
228	PPI think tank Oct16 if thens	IF MCPs provide flexible and responsive access to ‘your’ healthcare professional (whether this is a GP or care coordinator), such as by text, phone, appointment, video consultation, AND/OR this person acts as an advocate for you (e.g. with GP who doesn’t want to listen to your needs)	THEN patient experience will be improved (except for older people who want a face-to-face consultation only and do not use digital technology – so the choice of either is important to cater for all generations)	PPI
229	PPI think tank Oct16 if thens	IF there is responsive email or online support available 24 hours for all levels of issues	THEN needs that can be met elsewhere are diverted away from primary care and GP time demand reduced	PPI

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
230	PPI think tank Oct16 if thens	IF there is a 'virtual doctor'	THEN...	PPI
231	PPI think tank Oct16 if thens	IF people with complex needs have access to people with specialised knowledge without having to find these people themselves (e.g. specialist MS physiotherapist)	THEN patient experience of care will be improved	PPI
232	PPI think tank Oct16 if thens	IF a patient being treated for a complex condition that is known to be co-morbid with other conditions AND treatment for these other potential conditions or prevention of them (e.g. depression with MS) is included in the care plan or discussion of care options with patient	THEN patient access to appropriate care will be improved AND patient experience of care will be improved	PPI
233	PPI think tank Oct16 if thens	IF knowledge and access to services in community is improved for an individual patient, THEN their experience of health care system will be better	THEN that patient is supported to take self-care and take control of their own care	PPI
234	PPI think tank Oct16 if thens	IF a GP listens to a patient	THEN experience of health services is improved	PPI
235	PPI think tank Oct16 if thens	IF GPs all work in a way in which they make shared decisions with the patient	THEN patient experience of care is improved	PPI
236	PPI think tank Oct16 if thens	IF a patient feels they have an advocate in the healthcare system who is on their side and can support them to make choices related to their medical/social care	THEN the patient will have a better experience of the health system	PPI
237	PPI think tank Oct16 if thens	IF a GP considers the whole range of services as opposed to just medical services and can refer or inform patients about these (e.g. non-medical and green prescriptions	THEN patients will have access to a wider range of potentially useful services for social/medical problems AND patient experience of care will be improved	PPI

IPT ID	Source	If (C-M)	Then (O)	Whose CMO
		and osteopaths)		
238	PPI think tank Oct16 if thens	IF patients had access to a community information hub	THEN they would go there first to find out available services or solutions to an issue they are not sure is appropriate to take to the GP IF this hub is not available, THEN the patient feels they have no choice but to go to GP	PPI
239	PPI think tank Oct16 if thens	IF an MCP includes education, e.g. obesity in schools, or for parents of kids at risk of diabetes	THEN prevention is supported	PPI
240	PPI think tank Oct16 if thens	IF an MCP supports patients to get better in the way that they want to (e.g. swimming lessons rather than anti-depressants)	THEN patient experience of care is improved	PPI
241	PPI think tank Oct16 if thens	IF you can persuade GPs to stay in their practices	THEN GP practises can be kept	PPI
242	PPI think tank Oct16 if thens	IF GPs listen to their patients	THEN patients won't book GPs appointment so often	PPI

APPENDIX 5. SEARCH STRATEGY AND HITS

Search strategies for identifying evidence

Database: MEDLINE
Host: Ovid
Data Parameters: 1946 to November Week 4 2016
Date Searched: 5/12/2016
Searcher: SB
Hits: 676
Strategy:

("Australian Better Health Initiative" or "Enhanced Primary Care" or "More Allied Health Services" or "National Primary Care Collaborative*" or "Team Care Arrangement" or "Patient cent* medical home*").tw.
((SIPA or PRISMA) and australia*).tw.
("Health and Social Services Cent*" or "Program of Research to Integrate the Services for the Maintenance of Autonomy" or "System of Integrated Care for Older Persons" or "Family Health Team*" or "Health and Social Services Cent*" or "Local Health Integration Network*").tw.
("acute room*" or "geriatric team*" or medcom).tw.
"Municipal health cent*".tw.
("health network*" and (france or french)).tw.
("reseau* de sante" or "Quality and Coordination of Care Fund*").tw.
"Alzira model".tw.
("Kinzigtal care network*" or "Gesundes Kinzigtal" or "Wiesbaden Geriatric Rehabilitation Network*" or "Medizinisches Versorgungszentrum" or polikum).tw.
"Working Unit for Continuous Care".tw.
(Buurt?org or "One Window Model" or "shared care arrangement*" or "Transmural Care").tw.
HealthOne.tw.
(canterbury adj2 "health board").tw.
AFAIR.tw.
"System of Integrated Services for the Frail Elderly".tw.
(("Primary Health Care Cent*" or "chains of care" or SIPA) and (sweden* or swedish)).tw.
("Primary Care Medical home" or "Accountable Care Organi?ation*" or "Program of All-inclusive Care for the Elderly").tw.
(PACE adj5 (US or USA or "united states" or medicare or medicaid)).tw.
*Accountable Care Organizations/
("Symphony South Somerset Program Somerset" or "Long Term Conditions Shared Management Project" or "Community Assessment and Rehabilitation Team*" or "The Chronic Care Model" or "Rapid Response Team*" or "Hospital at Home" or "Single Assessment Process*" or "primary care hub*" or "Patient medical home" or "Sustainability and Transformation fund*").tw.
("multispecialty community provider*" or "multi specialty community provider*").tw.
((MCP or MSCP or PACS) and (NHS or "national health service*" or UK or "united kingdom*" or england* or wales* or scotland* or ireland*)).tw.
"primary and acute care system*".tw.
polyclinic*.tw.
("Integrated Service Improvement Programme*" or "Realising the Value Programme*" or "House of Care" or "Better Care Fund*" or "Year of Care" or

"integrated personal commissioning programme*" or "Integrated care pioneer*").tw.
("Delivering Quality in Primary Care" or "Living Well in Communities" or "Long Term Conditions Collaborative" or "Managed Clinical Network*" or "Prescription for Excellence" or "Integrated Care Fund").tw.
(("Reshaping Care for Older People" or RCOP) adj1 Change Fund).tw.
("Better Health" adj2 "Better Care").tw.
("National vision for chronic disease control" or "Rainbow Model of Integrated Care").tw.
(vanguard and ("integrated primary and acute care" or "enhanced health in care homes" or "urgent and emergency care" or "acute care collaboration*")).tw.
or/1-30
(("general practi*" or "general physician*" or "general doctor*" or "general medicine" or "family practi*" or "family physician*" or "family doctor*" or "family medicine" or "primary care" or "primary healthcare" or "primary service*" or "primary physician*") adj5 ("at scale" or extension* or extend* or expand* or integrat* or network* or combin* or "multi disciplin*" or multidisciplin*)).tw.
(("general practi*" or "general physician*" or "general doctor*" or "general medicine" or "family practi*" or "family physician*" or "family doctor*" or "family medicine" or "primary care" or "primary healthcare" or "primary service*" or "primary physician*") adj8 ("group practice*" or "community team*" or "community health" or "community based")).tw.
(("gp surger*" or "gp service*" or "gp practice*") adj5 ("at scale" or extension* or extend* or expand* or integrat* or federat* or network* or combin* or "multi disciplin*" or multidisciplin*)).tw.
(("gp surger*" or "gp service*" or "gp practice*") adj8 ("group practice*" or "community team*" or "community health" or "community based")).tw.
(("health budget*" or "health service* budget*") and (ownership or delegate* or responsib* or shared)).tw.
(care adj1 (coordinat* or integrat* or continuity or navigat*)).tw.
((collaborat* or "bring* in" or employ* or recruit* or commit* or engag* or "work* alongside") adj3 (consultant* or nurse* or physician* or geriatrician* or p?ediatrician* or psychiatrist* or therapist* or pharmacist* or psychologist* or "social worker*" or partner*)).tw.
((integrat* or federat* or network* or combin* or "multi disciplin*" or multidisciplin*) and ((manag* or reduce or control* or inappropriate or avoid*) adj3 (refer* or transfer* or admission* or admit*))).tw.
((substitut* or replac* or transfer*) adj4 (hospital* or "secondary care" or inpatient*)).tw.
or/32-40
*"Delivery of Health Care, Integrated"/
("general practi*" or "general physician*" or "general doctor*" or "general medicine" or "family practi*" or "family physician*" or "family doctor*" or "family medicine" or "primary care" or "primary healthcare" or "primary service*" or "primary physician*" or "gp surger*" or "gp service*" or "gp practice*").tw.
("group practice*" or "community team*" or "community health" or "community based").tw.
42 and (43 or 44)
31 and (41 or 45)

Database: MEDLINE in-process and other non-indexed citations
Host: Ovid
Data Parameters: December 02, 2016
Date Searched: 5/12/2016

Searcher: SB
Hits: 162
Strategy:

("Australian Better Health Initiative" or "Enhanced Primary Care" or "More Allied Health Services" or "National Primary Care Collaborative*" or "Team Care Arrangement" or "Patient cent* medical home*").tw.
((SIPA or PRISMA) and australia*).tw.
("Health and Social Services Cent*" or "Program of Research to Integrate the Services for the Maintenance of Autonomy" or "System of Integrated Care for Older Persons" or "Family Health Team*" or "Health and Social Services Cent*" or "Local Health Integration Network*").tw.
("acute room*" or "geriatric team*" or medcom).tw.
"Municipal health cent*".tw.
("health network*" and (france or french)).tw.
("reseau* de sante" or "Quality and Coordination of Care Fund*").tw.
"Alzira model".tw.
("Kinzigtal care network*" or "Gesundes Kinzigtal" or "Wiesbaden Geriatric Rehabilitation Network*" or "Medizinisches Versorgungszentrum" or polikum).tw.
"Working Unit for Continuous Care".tw.
(Buurt?org or "One Window Model" or "shared care arrangement*" or "Transmural Care").tw.
HealthOne.tw.
(canterbury adj2 "health board").tw.
AFAIR.tw.
"System of Integrated Services for the Frail Elderly".tw.
(("Primary Health Care Cent*" or "chains of care" or SIPA) and (sweden* or swedish)).tw.
("Primary Care Medical home" or "Accountable Care Organi?ation*" or "Program of All-inclusive Care for the Elderly").tw.
(PACE adj5 (US or USA or "united states" or medicare or medicaid)).tw.
("Symphony South Somerset Program Somerset" or "Long Term Conditions Shared Management Project" or "Community Assessment and Rehabilitation Team*" or "The Chronic Care Model" or "Rapid Response Team*" or "Hospital at Home" or "Single Assessment Process*" or "primary care hub*" or "Patient medical home" or "Sustainability and Transformation fund*").tw.
("multispecialty community provider*" or "multi specialty community provider*").tw.
((MCP or MSCP or PACS) and (NHS or "national health service*" or UK or "united kingdom*" or england* or wales* or scotland* or ireland*)).tw.
"primary and acute care system*".tw.
polyclinic*.tw.
("Integrated Service Improvement Programme*" or "Realising the Value Programme*" or "House of Care" or "Better Care Fund*" or "Year of Care" or "integrated personal commissioning programme*" or "Integrated care pioneer*").tw.
("Delivering Quality in Primary Care" or "Living Well in Communities" or "Long Term Conditions Collaborative" or "Managed Clinical Network*" or "Prescription for Excellence" or "Integrated Care Fund").tw.
(("Reshaping Care for Older People" or RCOP) adj1 Change Fund).tw.
("Better Health" adj2 "Better Care").tw.
("National vision for chronic disease control" or "Rainbow Model of Integrated Care").tw.
(vanguard and ("integrated primary and acute care" or "enhanced health in care homes" or "urgent and emergency care" or "acute care collaboration*")).tw.

or/1-29
(("general practi*" or "general physician*" or "general doctor*" or "general medicine" or "family practi*" or "family physician*" or "family doctor*" or "family medicine" or "primary care" or "primary healthcare" or "primary service*" or "primary physician*") adj5 ("at scale" or extension* or extend* or expand* or integrat* or network* or combin* or "multi disciplin*" or multidisciplin*)).tw.
(("general practi*" or "general physician*" or "general doctor*" or "general medicine" or "family practi*" or "family physician*" or "family doctor*" or "family medicine" or "primary care" or "primary healthcare" or "primary service*" or "primary physician*") adj8 ("group practice*" or "community team*" or "community health" or "community based")).tw.
(("gp surger*" or "gp service*" or "gp practice*") adj5 ("at scale" or extension* or extend* or expand* or integrat* or federat* or network* or combin* or "multi disciplin*" or multidisciplin*)).tw.
(("gp surger*" or "gp service*" or "gp practice*") adj8 ("group practice*" or "community team*" or "community health" or "community based")).tw.
(("health budget*" or "health service* budget*") and (ownership or delegate* or responsib* or shared)).tw.
(care adj1 (coordinat* or integrat* or continuity or navigat*)).tw.
((collaborat* or "bring* in" or employ* or recruit* or commit* or engag* or "work* alongside") adj3 (consultant* or nurse* or physician* or geriatrician* or p?ediatrician* or psychiatrist* or therapist* or pharmacist* or psychologist* or "social worker*" or partner*)).tw.
((integrat* or federat* or network* or combin* or "multi disciplin*" or multidisciplin*) and ((manag* or reduce or control* or inappropriate or avoid*) adj3 (refer* or transfer* or admission* or admit*))).tw.
((substitut* or replac* or transfer*) adj4 (hospital* or "secondary care" or inpatient*)).tw.
or/31-39
30 and 40

Database: PsycINFO
Host: Ovid
Data Parameters: 1806 to November Week 4 2016
Date Searched: 5/12/2016
Searcher: SB
Hits: 265
Strategy: see MEDLINE in-process search strategy

Database: CINAHL
Host: EBSCO
Data Parameters: n/a
Date Searched: 5/12/2016
Searcher: SB
Hits: 756
Strategy:

TI ("Australian Better Health Initiative" or "Enhanced Primary Care" or "More Allied Health Services" or "National Primary Care Collaborative*" or "Team Care Arrangement" or "Patient cent* medical home*") OR AB ("Australian Better Health

Initiative" or "Enhanced Primary Care" or "More Allied Health Services" or "National Primary Care Collaborative*" or "Team Care Arrangement" or "Patient cent* medical home*")
TI ((SIPA or PRISMA) and australia*) OR AB ((SIPA or PRISMA) and australia*)
TI ("Health and Social Services Cent*" or "Program of Research to Integrate the Services for the Maintenance of Autonomy" or "System of Integrated Care for Older Persons" or "Family Health Team*" or "Health and Social Services Cent*" or "Local Health Integration Network*") OR AB ("Health and Social Services Cent*" or "Program of Research to Integrate the Services for the Maintenance of Autonomy" or "System of Integrated Care for Older Persons" or "Family Health Team*" or "Health and Social Services Cent*" or "Local Health Integration Network*")
TI ("acute room*" or "geriatric team*" or medcom) OR AB ("acute room*" or "geriatric team*" or medcom)
TI "Municipal health cent*" OR AB "Municipal health cent*"
TI ("health network*" and (france or french)) OR AB ("health network*" and (france or french))
TI ("reseau* de sante" or "Quality and Coordination of Care Fund*") OR AB ("reseau* de sante" or "Quality and Coordination of Care Fund*")
TI "Alzira model" OR AB "Alzira model"
TI ("Kinzigtal care network*" or "Gesundes Kinzigtal" or "Wiesbaden Geriatric Rehabilitation Network*" or "Medizinisches Versorgungszentrum" or polikum) OR AB ("Kinzigtal care network*" or "Gesundes Kinzigtal" or "Wiesbaden Geriatric Rehabilitation Network*" or "Medizinisches Versorgungszentrum" or polikum)
TI "Working Unit for Continuous Care" OR AB "Working Unit for Continuous Care"
TI (Buurt?org or "One Window Model" or "shared care arrangement*" or "Transmural Care") OR AB (Buurt?org or "One Window Model" or "shared care arrangement*" or "Transmural Care")
TI HealthOne OR AB HealthOne
TI (canterbury N1 "health board") OR AB (canterbury N1 "health board")
TI AFAIR OR AB AFAIR
TI "System of Integrated Services for the Frail Elderly" OR AB "System of Integrated Services for the Frail Elderly"
TI (("Primary Health Care Cent*" or "chains of care" or SIPA) and (sweden* or swedish)) OR AB (("Primary Health Care Cent*" or "chains of care" or SIPA) and (sweden* or swedish))
TI ("Primary Care Medical home" or "Accountable Care Organi?ation*" or "Program of All-inclusive Care for the Elderly") OR AB ("Primary Care Medical home" or "Accountable Care Organi?ation*" or "Program of All-inclusive Care for the Elderly")
TI (PACE N4 (US or USA or "united states" or medicare or medicaid)) OR AB (PACE N4 (US or USA or "united states" or medicare or medicaid))
(MM "Accountable Care Organizations")
TI ("Symphony South Somerset Program Somerset" or "Long Term Conditions Shared Management Project" or "Community Assessment and Rehabilitation Team*" or "The Chronic Care Model" or "Rapid Response Team*" or "Hospital at Home" or "Single Assessment Process*" or "primary care hub*" or "Patient medical home" or "Sustainability and Transformation fund*") OR AB ("Symphony South Somerset

Program Somerset" or "Long Term Conditions Shared Management Project" or "Community Assessment and Rehabilitation Team*" or "The Chronic Care Model" or "Rapid Response Team*" or "Hospital at Home" or "Single Assessment Process*" or "primary care hub*" or "Patient medical home" or "Sustainability and Transformation fund*")

TI ("multispecialty community provider*" or "multi specialty community provider*") OR AB ("multispecialty community provider*" or "multi specialty community provider*")

TI ((MCP or MSCP or PACS) and (NHS or "national health service*" or UK or "united kingdom*" or england* or wales* or scotland* or ireland*)) OR AB ((MCP or MSCP or PACS) and (NHS or "national health service*" or UK or "united kingdom*" or england* or wales* or scotland* or ireland*))

TI ("primary and acute care system*") OR AB ("primary and acute care system*")

TI polyclinic* OR AB polyclinic*

TI ("Integrated Service Improvement Programme*" or "Realising the Value Programme*" or "House of Care" or "Better Care Fund*" or "Year of Care" or "integrated personal commissioning programme*" or "Integrated care pioneer*") OR AB ("Integrated Service Improvement Programme*" or "Realising the Value Programme*" or "House of Care" or "Better Care Fund*" or "Year of Care" or "integrated personal commissioning programme*" or "Integrated care pioneer*")

TI ("Delivering Quality in Primary Care" or "Living Well in Communities" or "Long Term Conditions Collaborative" or "Managed Clinical Network*" or "Prescription for Excellence" or "Integrated Care Fund") OR AB ("Delivering Quality in Primary Care" or "Living Well in Communities" or "Long Term Conditions Collaborative" or "Managed Clinical Network*" or "Prescription for Excellence" or "Integrated Care Fund")

TI (("Reshaping Care for Older People" or RCOP) N0 “Change Fund”) OR AB (("Reshaping Care for Older People" or RCOP) adj1 “C("Reshaping Care for Older People" or RCOP) N0 “Change Fund”hange Fund”)

TI "Better Health" N1 "Better Care" OR AB "Better Health" N1 "Better Care"

TI ("National vision for chronic disease control" or "Rainbow Model of Integrated Care") OR AB ("National vision for chronic disease control" or "Rainbow Model of Integrated Care")

TI (vanguard and ("integrated primary and acute care" or "enhanced health in care homes" or "urgent and emergency care" or "acute care collaboration*")) OR AB (vanguard and ("integrated primary and acute care" or "enhanced health in care homes" or "urgent and emergency care" or "acute care collaboration*"))

S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22 OR S23 OR S24 OR S25 OR S26 OR S27 OR S28 OR S29 OR S30

TI (("general practi*" or "general physician*" or "general doctor*" or "general medicine" or "family practi*" or "family physician*" or "family doctor*" or "family medicine" or "primary care" or "primary healthcare" or "primary service*" or "primary physician*") N4 ("at scale" or extension* or extend* or expand* or integrat* or network* or combin* or "multi disciplin*" or multidisciplin*)) OR AB (("general practi*" or "general physician*" or "general doctor*" or "general medicine" or "family

practi*" or "family physician*" or "family doctor*" or "family medicine" or "primary care" or "primary healthcare" or "primary service*" or "primary physician*") N4 ("at scale" or extension* or extend* or expand* or integrat* or network* or combin* or "multi disciplin*" or multidisciplin*))
TI (("general practi*" or "general physician*" or "general doctor*" or "general medicine" or "family practi*" or "family physician*" or "family doctor*" or "family medicine" or "primary care" or "primary healthcare" or "primary service*" or "primary physician*") N7 ("group practice*" or "community team*" or "community health" or "community based")) OR AB (("general practi*" or "general physician*" or "general doctor*" or "general medicine" or "family practi*" or "family physician*" or "family doctor*" or "family medicine" or "primary care" or "primary healthcare" or "primary service*" or "primary physician*") N7 ("group practice*" or "community team*" or "community health" or "community based"))
TI (("gp surger*" or "gp service*" or "gp practice*") N4 ("at scale" or extension* or extend* or expand* or integrat* or federat* or network* or combin* or "multi disciplin*" or multidisciplin*)) OR AB (("gp surger*" or "gp service*" or "gp practice*") N4 ("at scale" or extension* or extend* or expand* or integrat* or federat* or network* or combin* or "multi disciplin*" or multidisciplin*))
TI (("gp surger*" or "gp service*" or "gp practice*") N7 ("group practice*" or "community team*" or "community health" or "community based")) OR AB (("gp surger*" or "gp service*" or "gp practice*") N7 ("group practice*" or "community team*" or "community health" or "community based"))
TI (("health budget*" or "health service* budget*") and (ownership or delegate* or responsib* or shared)) OR AB (("health budget*" or "health service* budget*") and (ownership or delegate* or responsib* or shared))
TI (care N0 (coordinat* or integrat* or continuity or navigat*)) OR AB (care N0 (coordinat* or integrat* or continuity or navigat*))
TI (("general practi*" or "general physician*" or "general doctor*" or "general medicine" or "family practi*" or "family physician*" or "family doctor*" or "family medicine" or "primary care" or "primary healthcare" or "primary service*" or "primary physician*") N7 ("group practice*" or "community team*" or "community health" or "community based")) OR AB (("general practi*" or "general physician*" or "general doctor*" or "general medicine" or "family practi*" or "family physician*" or "family doctor*" or "family medicine" or "primary care" or "primary healthcare" or "primary service*" or "primary physician*") N7 ("group practice*" or "community team*" or "community health" or "community based"))
TI ((integrat* or federat* or network* or combin* or "multi disciplin*" or multidisciplin*) and ((manag* or reduce or control* or inappropriate or avoid*) N2 (refer* or transfer* or admission* or admit*))) OR AB ((integrat* or federat* or network* or combin* or "multi disciplin*" or multidisciplin*) and ((manag* or reduce or control* or inappropriate or avoid*) N2 (refer* or transfer* or admission* or admit*)))
TI ((substitut* or replac* or transfer*) N3 (hospital* or "secondary care" or inpatient*)) OR AB ((substitut* or replac* or transfer*) N3 (hospital* or "secondary care" or inpatient*)))
S32 OR S33 OR S34 OR S35 OR S36 OR S37 OR S38 OR S39 OR S40

(MM "Health Care Delivery, Integrated")
TI ("general practi*" or "general physician*" or "general doctor*" or "general medicine" or "family practi*" or "family physician*" or "family doctor*" or "family medicine" or "primary care" or "primary healthcare" or "primary service*" or "primary physician*" or "gp surger*" or "gp service*" or "gp practice*") OR AB ("general practi*" or "general physician*" or "general doctor*" or "general medicine" or "family practi*" or "family physician*" or "family doctor*" or "family medicine" or "primary care" or "primary healthcare" or "primary service*" or "primary physician*" or "gp surger*" or "gp service*" or "gp practice*")
TI ("group practice*" or "community team*" or "community health" or "community based") OR AB ("group practice*" or "community team*" or "community health" or "community based")
S42 AND (S43 OR S44)
S31 AND (S41 OR S45)

Database: ASSIA
Host: ProQuest
Data Parameters: n/a
Date Searched: 5/12/2016
Searcher: SB
Hits: 44
Strategy:

(TI,AB("Australian Better Health Initiative" or "Enhanced Primary Care" or "More Allied Health Services" or "National Primary Care Collaborative*" or "Team Care Arrangement" or "Patient cent* medical home*" or ((SIPA or PRISMA) and australia*) or "Health and Social Services Cent*" or "Program of Research to Integrate the Services for the Maintenance of Autonomy" or "System of Integrated Care for Older Persons" or "Family Health Team*" or "Health and Social Services Cent*" or "Local Health Integration Network*" or "acute room*" or "geriatric team*" or medcom or "Municipal health cent*" or ("health network*" and (france or french)) or "reseau* de sante" or "Quality and Coordination of Care Fund*" or "Alzira model" or "Kinzigtal care network*" or "Gesundes Kinzigtal" or "Wiesbaden Geriatric Rehabilitation Network*" or "Medizinisches Versorgungszentrum" or polikum or "Working Unit for Continuous Care" or Buurt?org or "One Window Model" or "shared care arrangement*" or "Transmural Care" or HealthOne or (canterbury n/1 “health board”) or AFAIR or "System of Integrated Services for the Frail Elderly" or (("Primary Health Care Cent*" or "chains of care" or SIPA) and (sweden* or swedish)) or "Primary Care Medical home" or "Accountable Care Organi?ation*" or "Program of All-inclusive Care for the Elderly" or (PACE n/4 (US or USA or "united states" or medicare or medicaid)) or "Symphony South Somerset Program Somerset" or "Long Term Conditions Shared Management Project" or "Community Assessment and Rehabilitation Team*" or "The Chronic Care Model" or "Rapid Response Team*" or "Hospital at Home" or "Single Assessment Process*" or "primary care hub*" or "Patient medical home" or "Sustainability and Transformation fund*" or "multispecialty community provider*" or "multi specialty community provider*" or ((MCP or MSCP or PACS) and (NHS or "national health service*" or UK or "united kingdom*" or england* or wales* or scotland* or ireland*)) or "primary and acute care system*" or polyclinic* or "Integrated Service Improvement Programme*" or "Realising the Value Programme*" or "House of Care" or "Better Care Fund*" or "Year of Care" or "integrated personal commissioning programme*" or "Integrated care pioneer*" or "Delivering Quality in Primary Care" or "Living Well in Communities" or "Long Term Conditions Collaborative" or "Managed Clinical Network*" or "Prescription for Excellence"

or "Integrated Care Fund" or (("Reshaping Care for Older People" or RCOP) n/0 “Change Fund”) or ("Better Health" n/1 "Better Care") or ("National vision for chronic disease control" or "Rainbow Model of Integrated Care") or (vanguard and ("integrated primary and acute care" or "enhanced health in care homes" or "urgent and emergency care" or "acute care collaboration*")))) AND (TI,AB((("general practi*" or "general physician*" or "general doctor*" or "general medicine" or "family practi*" or "family physician*" or "family doctor*" or "family medicine" or "primary care" or "primary healthcare" or "primary service*" or "primary physician*") n/4 ("at scale" or extension* or extend* or expand* or integrat* or network* or combin* or "multi disciplin*" or multidisciplin*)) or (("general practi*" or "general physician*" or "general doctor*" or "general medicine" or "family practi*" or "family physician*" or "family doctor*" or "family medicine" or "primary care" or "primary healthcare" or "primary service*" or "primary physician*") n/7 ("group practice*" or "community team*" or "community health" or "community based")) or (("gp surger*" or "gp service*" or "gp practice*") n/4 ("at scale" or extension* or extend* or expand* or integrat* or federat* or network* or combin* or "multi disciplin*" or multidisciplin*)) or (("gp surger*" or "gp service*" or "gp practice*") n/7 ("group practice*" or "community team*" or "community health" or "community based"))) OR TI,AB(("health budget*" or "health service* budget*") and (ownership or delegate* or responsib* or shared)) OR TI,AB(care n/0 (coordinat* or integrat* or continuity or navigat*)) OR TI,AB((collaborat* or "bring* in" or employ* or recruit* or commit* or engag* or "work* alongside") n/2 (consultant* or nurse* or physician* or geriatrician* or p?ediatrician* or psychiatrist* or therapist* or pharmacist* or psychologist* or "social worker*" or partner*)) OR TI,AB((integrat* or federat* or network* or combin* or "multi disciplin*" or multidisciplin*) and ((manag* or reduce or control* or inappropriate or avoid*) n/2 (refer* or transfer* or admission* or admit*))) OR TI,AB((substitut* or replac* or transfer*) n/3 (hospital* or "secondary care" or inpatient*)))

Table 24: Number of records retrieved per database and in total

Database	**Records**
MEDLINE	676
MEDLINE In-process	162
PsycINFO	265
CINAHL	756
ASSIA	44
Total number of records	**1903**
Duplicate records	**584**
Unique records	**1319**

APPENDIX 6. SCREENING TOOL 1

Table 25: Screening tool 1

Endnote: database name / article ID number				
Activity	**Sub-section**	**Description**	**Code**	
Reviewer ID		Who is screening?	AbSLB	
			AbMF	
			AbRS	
			AbMP	
			AbAW	
			AbHL	
How source was located		Stakeholders	AbSH	
		Handsearching	AbHS	
		Website	AbWeb	
		Citation chasing	AbCC	
		Table of contents alerts	AbToC	
		Browsing	AbBrws	
		Database search	AbDS	
ON BASIS OF ABSTRACTS				
Does the source contain or test programme theories about any of the components in the initial theoretical MCP model?				
Inclusion / exclusion criteria	Empirical?	*Include* E.g. comparative effectiveness study (RCT etc.), process evaluation, review of primary research (if method is stated), qualitative research, surveys, history, descriptions of models of care, uncontrolled before and after, cohort, re-analysis of routine data. *Exclude* editorials, opinion pieces, advertorials	AbEmpYes AbEmpNo	
	Relevant? ~~(i.e.~~ to horizontal inter-organisational linkages in primary care~~)?~~	*Include*: inter-organisational links in any combination of: primary medical care, CHS, ambulance, community mental health, residential care, therapies, phc dentistry, phc pharmacy. *Exclude* Purely hospital studies, single-organisation studies.	AbRelYes AbRelNo	
Classification	1. Field of practice to which source predominantly refers (code all that apply)	MCP Context	AbContext	
		MCP Created	AbCreated	
		Network Management	AbNW	
		MDT	AbMDT	
		Culture Change	AbCulture	
		Third Sector	Ab3S	
		Care Coordination – IT	AbCCIT	
		Care Planning – Organisational Level	AbCarePlanOrg	
		Demand Management	AbDmgt	
		Prevention	AbPrev	
		Diversion Patient level	AbDivPt	
		Care Planning – Patient Level	AbPtCarePlan	
		Cost	AbCost	
		Patient experience/care	AbCare	
	2. Type of source (code one only)	Policy document	AbPD	
		Viewpoint/editorial	AbVE	
		Grey documents (from MCP sites)	AbLM	
		Primary research	AbPR	
		Rapportage	AbRap	
DECISION				
Inc./Exc. Decision		Include	IncAb	
		Exclude	ExcAb	

APPENDIX 7. SCREENING TOOL 2

Table 26: Screening tool 2

Endnote: database name / article ID number				
Activity	**Sub-section**	**Description**	**Code**	
Reviewer ID		Who is screening?	Ab2SLB	
			Ab2MF	
			Ab2RS	
			Ab2MP	
			Ab2AW	
			Ab2HL	
Screening round	Which round of screening?	First round (empirical and relevance to 14 components)		
		Second round (major or minor decision on papers <3 years old)	Screen#2	
Decision				
Inclusion / exclusion criteria	**Major** relevance?	Study mostly reports the working of established MCP-like structures in an OECD* country.	AbMajor	
	Minor relevance?	Studies which concern mostly: generalities (e.g. training) which may apply to, but are not specific to, MCP-like structures. 'vertical' (primary-secondary) not 'horizontal' service coordination. micro-techniques e.g. medical record design, apps. initial set-up, not MCP-like mechanisms or their effects once established. Non-OECD* countries.	AbMinor	

*OECD countries:
Australia, Austria,
Belgium,
Canada, Chile, Czech Republic,
Denmark,
Estonia,
Finland, France,
Germany, Greece,
Hungary,
Iceland, Ireland, Israel, Italy,
Japan,
South Korea,

Latvia, Luxembourg,
Mexico,
Netherlands, New Zealand, Norway,
Poland, Portugal,
Slovakia, Slovenia, Spain, Sweden, Switzerland,
Turkey,
United Kingdom, United States

APPENDIX 8. DATA EXTRACTION TOOL

Table 27: Data extraction tool

MCP-like model of care	
Name of MCP-like model of care	
Country/Area	
Study	
Authors (year)	
Study type	
Aim of study	
Quality appraisal MMAT scoring metric or AMSTAR score	**MMAT Scoring metrics**: For each retained study, an overall quality score may be not informative (in comparison to a descriptive summary using MMAT criteria), but might be calculated using the MMAT. Since there are only a few criteria for each domain, the score can be presented using descriptors such as *, **, ***, and ****. For qualitative and quantitative studies, this score can be the number of criteria met divided by four (scores varying from 25% (*) -one criterion met- to 100% (****) -all criteria met-). For mixed methods research studies, the premise is that the overall quality of a combination cannot exceed the quality of its weakest component. Thus, the overall quality score is the lowest score of the study components. The score is 25% (*) when *QUAL=1 or QUAN=1 or MM=0*; it is 50% (**) when *QUAL=2 or QUAN=2 or MM=1*; it is 75% (***) when *QUAL=3 or QUAN=3 or MM=2*; and it is 100% (****) when *QUAL=4 and QUAN=4 and MM=3* (QUAL being the score of the qualitative component; QUAN the score of the quantitative component; and MM the score of the mixed methods component). **AMSTAR** rating (/11) where each tick box counts for 1.

Quality appraisal narrative summary	
Year(s) MCP-like model of care operating	
Year(s) study carried out	
Research Methods	
Theoretical approach (if stated)	
Sample method	
Participants (characteristics/no.)	
Data collection (include no. ppts per data collection method if appropriate)	
Analysis	
Time of follow-up	
Evidence about assumption#	For each assumption below think about: Evidence for the assumption Evidence against Missing evidence Qualifications or limitations

1 MCP Context	**(AbContext RS)**
1a	Context produces inter-organisational network management
1b	Context produces organisational-level care planning
2 Inter-organisational network management	**(AbNW and AbCreated RS)**
2a	Inter-organisational network management produces care coordination
2b	Inter-organisational network management produces multi-disciplinary team working
3 Multi-disciplinary team working	**(AbMDT SLB)**
3a	Multi-disciplinary team working produces organisational-level care planning
3b	Multi-disciplinary team working produces preventive care
4 Culture change	**(AbCulture SLB)**
4a	Culture change produces multi-disciplinary team working

4b	Culture change produces demand management
4c	Culture change produces preventive care
5 Third sector	**(Ab3S SLB)**
5a	Third sector involvement produces demand management
5b	Third sector involvement produces preventive care
6 Care coordination via IT – informational continuity of care	**(AbCCIT AW)**
6a	Care coordination is produced by informational continuity of care
6b	Informational continuity of care supports diversion at the patient level
6c	Informational continuity of care supports care planning at the patient level
7 Care planning at organisational level	**(AbCarePlanOrg SLB)**
7a	Care planning at organisational level produces patient diversion

7b	Care Planning at organisational level produces care planning at patient level
7c	Care Planning at organisational level produces demand management
8 Demand Management	**(AbDMgt MP)**
8a	Demand management produces patient diversion
8b	Demand management produces care planning at patient level
8c	Demand management produces preventive care, and vice-versa
9 Preventive care	**(AbPrev MP)**
9a	Preventive care produces patient diversion
10 Care planning at patient level	**(AbPtCarePlan HL)**
10a	Care planning at patient level produces patient diversion
10b	Care planning at patient level improves patient experience

11 Patient Diversion	**(AbDivPt MP)**
11a	Patient diversion reduces costs
11b	Patient diversion improves patient experience
12 Other minor connections	**(AbDMgt MP, AbDivPt MP)**
12a	General practice will benefit from patient diversion
12b	Care coordination and Demand management will together produce more responsive urgent care
ADDITIONAL NOTES	

APPENDIX 9. POLICY SOURCES

Core Policy Documents Analysed

Department of Health. *Equity and excellence: Liberating the NHS*. London: Department of Health, 2011.

Department of Health. *The Government's mandate to NHS England for 2016-17*. London: Department of Health, 2017.

Grant S. *Multispecialty Community Providers development (MCP) – Vanguard South Hampshire.* London: Southern Health, 2016.

House of Commons Health Committee. *Primary Care: Fourth Report of Session 2015-16.* London: House of Commons, 2016.

NHS Confederation, the Local Government Assocation, NHS Clinical Commissioners and NHS Providers *Factsheets Understanding the Vanguards* London: NHS Confederation, N.D. [2016]

NHS England *Multispecialty community providers vanguard sites* London: NHS England, 2016. https://www.england.nhs.uk/ourwork/futurenhs.

NHS England *Multispecialty community provider vanguards*, London: NHS England <https://www.england.nhs.uk/ourwork/new-care-models/vanguards/care-models/community-sites/>

NHS England. *The forward view into action: planning for 2015/16*. London: NHS England, 2014.

NHS England. *The multispecialty community provider (MCP) emerging care model and contract framework.* London: NHS England, 2016.

NHS England *The Multi-Speciality Community Provider (MCP) emerging care model and contract framework* NHS England Board paper PB.28.07.2016/04, London: NHS England, 2016.

NHS England *What makes a good Multispecialty Community Provider?* London: NHS England, ND [2016]

Stevens S. *Five Year Forward View*. London: NHS England, 2014.

APPENDIX 10. MAIN TOPICS IN MCP POLICY DOCUMENTS ANALYSED

Table 28: Main topics in MCP documents

Topic	Frequency of mention
Better patient experience	27
Workforce engagement, training (in context of MDT)	26
Exploiting data access and use through IT	23
Cost / 'efficiency' savings	19
Reduce A&E admissions	18
Better care for long-term conditions	17
Single point of access to services	14
Patient self-activation	14
(Better) care coordination	13
Managing networks ('systems') of organisations	12
MDTs care for patients	12
Patient education /information	12
General practice demand management systems	11
Wider range of services (than existing general practice)	10
Preventive care	10
Standardised protocols, models of care	10
Involve volunteers, voluntary organisations	10
Surmount organisational boundaries	9
Patients' knowledge, attitudes, beliefs	9
Gate-keeping on basis of need, risk	9

APPENDIX 11. THE 13 COMPONENTS OF THE INITIAL PROGRAMME THEORY OF MCPS

Table 29: Components of Initial Programme Theory of MCPs

MCP component	Description
NHS managers set up MCPs	Implicitly, MCP are set up by NHS managers using existing organisational and network structures, budgets, contractual rights and existing relationships with non-NHS bodies.
Network management	An MCP would be, above all, the coordinating body of a network of (at least) general practices and CHS, often also including social services and mental health services. MCPs will coordinate a wide range of health professions and take responsibility for managing budgets across this ensemble of services. This activity takes place at the level of whole care groups and at inter-organisational level, not patient by individual patient (on that, see below). An MCP will • Manage such a network ('system') of organisations, not just single organisations through ◦ information sharing; more analytical use of data about local population needs ◦ guidance (e.g. through training/monitoring, knowledge of best current practice) ◦ clinical groups developing service specification to formalise (e.g.) expectations about payment for follow-ups ◦ systems for supporting more joined up working, with positive relationships between organisations. • Connect with the voluntary sector and support patient activation and self-care through ◦ ◦ advice and guidance to patients ◦ increasing patient knowledge of their condition(s) and ability to self-manage them ◦ building relationships between voluntary organisations • Engage with GPs to stimulate their demand for (the MCP's) advice; but also change general practice delivery models.
MDTs	What multidisciplinary teams are is already widely, and comparatively clearly, defined and understood in clinical and managerial practice, policy statements and research studies. The policy statements emphasised that MDTs will: • Focus on patient care (as opposed to, say, training or research). • Bring together GP and 'nursing' care, taking 'nursing care' to mean community nurses since practice nurses are already organisationally integrated into general practices. Additionally they would 'bring in' other doctors (e.g. consultants) as partners, employees or out-posted staff, therapists, pharmacists, psychologists, social workers, mental health workers, and ' incorporating non-health specialists that can assist with social problems, and medical assistants to relieve GPs of some administrative tasks.' [36] • 'allow GPs to concentrate on those aspects of care that only they can provide' • Produce 'Joined-up' working, collaborative relationships between MDT members across organisational and professional boundaries.

	• Promote workforce development, engagement and wellbeing.
Culture change	Implicitly, the relevant culture change was in the organisations, professions and care teams involved in MCPs. The most explicitly defined 'culture change in health service understanding and use', and 'shifts in the models of care and culture of care delivery' in the policy statements that we analysed was a 'Strengths-based approach', which we interpret as identifying, promulgating and elaborating existing successes in care coordination.
Voluntary sector involvement	Voluntary sector involvement in MCPs meant involving both individuals (carers, volunteers) and whole organisations in MCP activities, harnessing the volunteers' special capacities and skills such as knowledge of gaps in the local health care and engaging volunteers and voluntary organisations as a 'resource'.
Care coordination through health information technology (HIT)	Care coordination through HIT was assumed to involve greater informational continuity of care i.e. that a patient's care plan be decided on the basis of all the available relevant information about her history, current condition, circumstances and care needs. [40-43] That, policy documents assumed, requires patient records to be directly accessible by all the health professionals seeing patients registered with any practice within a GP federation, network or out-of-hours service [36]; and more skilled, intelligent data analysis and use.
Planned referral networks	Once established, MCPs will use their networks of local healthcare providers to coordinate patient flows between the different services, often in separate organisations, relevant to each care group. That is, as referral networks.[38] Through its referral network an MCP would: • Design and implement specific work-streams (models of care, interventions, pathways) across local provider organisations, different professions and sectors (NHS, social care etc.) by means of: ◦ Clear definitions of the healthcare needs to be addressed. ◦ Re-designing services to expedite and manage referral flows between them (e.g. by diverting admissions, supporting early discharge, preventing re-admissions, reviewing use of follow-up appointments), coordinating inputs to increase the efficiency and speed of work. Standardised protocols are to 'integrate' primary, community, mental health, social and urgent care. The interface between the MCP and secondary care is managed explicitly. ◦ Application of evidence-based targets for managing long-term conditions ◦ Improved primary care infrastructure, such as'[36]; and 'care hubs' where secondary care staff advise and train, give e-mail support, to GP management of (e.g.) children otherwise needing in-patient care.[36] Care hubs might also include a psychiatrist, mental health worker, CPN for (groups of) general practice patients to access [36]. Primary care providers might *inter alia* act as an informal social hub where patients could interact with each other. ◦ Greater staff access to information needed for making referral decisions. • Increasingly focus on patients with long-term conditions and preventive care.
Demand management systems	Demand management systems were assumed include gate-keeping, need- and risk-stratification, targeting services upon patients with complex needs, having a single point of access for all services in a locality, and being

	information hubs.
Preventive health care	'Prevention' meant [in the policy documents we examined, but not necessarily more widely] long-term patient self-care, 'activation' and 'empowerment', engagement in caring for others, giving patients access to knowledge access to information provided about their own health problems (e.g. on possible co-morbidities with new diagnosis), and patient education to address 'barriers to patients engaging with change in health services delivery'. Intersectoral activity for illness-prevention and health-equalisation was mentioned but less prominent.
Care planning at the patient level	Care Planning at Patient Level was assumed to involve a personal care plan and care coordination (hence a care coordinator) for each patient with complex care needs ('care designed around diagnosis'). Patient-level care planning also involved care closer to home, advocacy for patients and 'patient-centred care' oriented towards patients' personal goals' through shared decision making.
Diversion	Patient diversion was assumed to mean hospital admission avoidance and/or support for timely discharge, covering both planned admissions (from OPDs) and unplanned (from A&E), and from any source including admissions from and discharges to nursing homes and residential care. Concomitantly GPs would increasingly manage (clinical) risks in the community, OPD care would become more intense, primary would substitute increasingly for hospital care, diagnostic services and observation units would be combined, and MCPs would provide a wider range of services than existing general practices, combining NHS, GP and social care services. In short, MCPs would divert patients *from* in-patient care *to* enhanced primary care services.
12: Improved patient care	Better patient experience and care (especially for long-term conditions) was taken to mean personalised care (see above), with older patients being less isolated, better quality of life, living independently, having recovery and/or rehabilitation and/or emotional and mental health support 'in the community' i.e. at the patient's own home or care home.
13: Reduced NHS cost	'Efficiency savings' meant cost reduction not cost-shifting between providers.

APPENDIX 12. STUDIES EXCLUDED AT SYNTHESIS: DETAILS

Table 30: Studies excluded at synthesis

Authors (date / country))	Population	Model of care	Data collection	Participants	Evidence for Causal link/s
Biernacki et al. (2015).[168]	Diabetic patients enrolled in a PCMH	PCMH	Pre-post design including EMR data and satisfaction surveys	937	10:11 10:12
Broffman et al. (2016).[169]	Regional collaboratives: 'Coordinated care organisations', Oregon	Global budget for organisations within regional collaboratives	Case studies: interviews and grey documentation.	Two collaborative care organisations	1:2
Cook et al. (2015).[170]	Patients from five Health Center PCMHs in south Florida	Health Centre PCMH	Face-to-face survey	488	10:12
Cook et al. (2016).[171]	Racially and ethnically diverse patients of 4 primary care safety net organisations	PCMH	Survey	351	10:12
Farrell et al. (2015).[172]	University of Utah's Community Care patients (excluding ED, paediatric, psychiatric, labour and delivery, neonatal ICU, newborn nursery, maternal newborn care) who had been admitted to University Hospital June 2010-May 2011, who had a subsequent admission to that hospital June 2011-Sept 2013, and who came under Primary Care and Transition Management programme.	Care by Design (University of Utah's Community Clinics version of PCMH)	Routine data	118	2:7
Geltman et al. (2015).[173]	Paediatric patients with ADHD.	Planned Care System	Pilot project data	321 (250 pre-existing diagnoses, 71	6:7

				newly diagnosed)	
King et al. (2016).[115]	Non-federal office-based physicians	PCMHs/ACOs.	Survey	8198	6:10
Knapp et al. (2014).[174]	Paediatric practice staff	PCMH	Survey compared against practice data and data from the core project.	20 practice, 170 staff	3:7
Lemmens et al (2015).[175]	Literature reporting interventions that used at least 2 of the 6 CCM components and concerned psychological comorbidity.	Integrated care programmes for patients with psychological comorbidity with somatic morbidity.	Literature review	15 includes	8:10 10:11 10:12 11:12 11:13
Lewin et al. (2016).[176]	Teenage mothers and their children.	PCMH ('Generations') at Academic Medical Centre.	Structured interview	150 mother/child pairs	2 :8 11:12
Liem et al. (2014).[177]	Parents/guardians of children with sickle cell disease.	PCMH	Survey	200	10:12
Lubetkin et al. (2014).[178]	English/Spanish/Haitian-Creole speaking patients at one inner-city hospital ambulatory care practice	PCMH	Survey	461	4:9
Miller-Metero et al. (2016).[179]	Senior staff physicians. Residents in PCMH.	PCMH with psychologist addition	Survey	19 staff; 91 residents	3:9
Philpot et al. (2016).[180]	Medicare enrolees 65 and over, with a usual source of care other than ED and with one of the five most prevalent chronic conditions within Medicare population	PCMH	Survey	2153 patients	8 :13
Rosenthal et al. (2016).[181]	Practices piloting the PCMH programme; patients with multiple or complex needs.	PCMH	Census of data on quality of care	30,000 patients (11	11:13

				practices, 37 physicians)	
Stock et al. (2016).[182]	Physicians with previous experience caring for Medicaid patients.	Coordinated Care Organisation/ACO	Semi-structured interviews	22	3:7
van der Kluit, Ros & Schrijvers (2014).[183]	Nurses working in nurse-led clinics transmural clinics for heart failure, rheumatoid arthritis, Parkinson's disease and multiple sclerosis; patients who had received a consultation.	Transmural care organisation for specialised nurses	Interviews; patient records	218 patients; 7 nurses	10:12
van Leeuwen et al. (2015).[184]	'Frail' community-dwelling older adults.	Geriatric Care Model (GCM) based on Chronic Care Model	Questionnaires; interviews; carer diaries; surveys; physical and mental health data.	1,147	3:9 11:13

APPENDIX 13. INCLUDED STUDIES: DETAILS

Table 31: Included studies

Authors (date)	Population	Model of care	Data collection	Participants	Evidence for Causal link/s
Alidina et al. [64] (2016)	Physicians from 13 PCMH 'practices' (practice lead + coordinated care lead)	PCMH – 'medical neighbourhoods'	Interviews Survey	40	1:2 1:7 2:7 4:3 6:7 7:10
Aliu et al. [123] (2014)	All new visits to specialists (non-federal, employed, office-based physicians engaged in direct patient care) 2000-2009 in: neurology, otolaryngology, dermatology, orthopaedics, urology, general surgery, ophthalmology, cardiology, obstetrics/gynaecology, psychiatry) n=32784	ACO	Survey	32,784 patient visits to physicians (generalist and specialist)	7:10
Anderson et al. [94] (2015)	Programs that a literature review identified as being successful on at least one of their triple aims (spending, satisfaction, clinical outcomes) in treating adults with high costs or high needs in the United States.	Types of programs included in review: accountable care organizations, readmission initiatives, special needs plans, care transition programs, and patient-centered medical homes	Semi-structured interviews	45	3:7 3:10 6:7 10:12
Annis et al.	Research studies (not policy or opinion) published	PCMH	Systematic review	42 includes	3:9

95 (2016)	between 2007–2014 (Aug). Studies that were within USA, were about PCMH and had outcome measures of access to care and/or care coordination.				7:8 7:9
Batalden et 98 al. (2015)	Patients and health workers participating in self-management schemes in Scotland and USA.	Self-management initiative, NHS Scotland with shared medical appointments	Participant observation	NHS: 600 patients, 900 health professionals USA: network of 71 organisations	3:9
Bauer et al. 115 (2014)	Papers on how health information technology and collaborative care can support one another	Collaborative care	Literature review	n/a	6:7 6:10 6:11
Bergman et 90 al. (2016)	Clinical pharmacists and primary care physicians from seven Midwestern federally funded medical centers and associated primary care clinics.	PCMH and team-based care models	Semi-structured interviews	42	3:9 3:10 4:3 4:9 4:10 6:7 6:10
Besser 130 (2016)	Adolescents aged 13-18y seen in an army health care facility and who were examined for depression	Army PCMH	Census data	196,536 unique individuals, of which 11,704 seen for depression	8:10 8:11
Billings & de Weger	n/a	Four models of contracting for integrated care:	Literature review	n/a	1:2 1:7 2:7

11 (2015)		ACOs, the Alliance Model, the Lead Provider/Prime Contractor Model, and Outcomes-based Commissioning and Contracting.			11:12 11:13
Bleser et al. 68 (2014)	small- to mid-sized medical practices in Pennsylvania during the first regional rollout of a statewide PCMH initiative	PCMH	Semi-structured interviews, focus groups	20 small/medium medical practices, 136 persons, 7 focus groups.	1:2 1:7
Briot et al. 62 (2015)	A healthcare system in Utah that integrated mental health specialists into primary care practices.	Integrated care delivery system	Literature review and analysis of reports, communications, and published literature about the healthcare system being studied.	n/a	1:2 2:7 3:7 3:9 5:9 6:10 7:11 7:13 10:11 10:12 11:13
Busetto et al. 111 (2016a)	integrated care interventions for Type 2 diabetes that include at least two of the four Chronic Care Model components	Integrated care	Systematic review	32 includes	3:9 4:3 4:5 4:9 4:12 6:7 6:10

					7:11 11:13
Busetto et al. 110 (2016b)	integrated care interventions for Type 2 diabetes that include at least two of the four Chronic Care Model components	Integrated care	Systematic review	42 includes	3:9 4:3 4:5 4:9 6:7 6:10 7:11 11:13
Busse & Stahl 60 (2014)	Purpose sample of most-developed projects in 3 countries	Gesundes Kinzigtal, English Integrated Care Pilots, NL bundled payment model.	Routine administrative data + surveys + interviews (NL only).	1 local German scheme; Netherlands-wide programme (one care group); 16 English pilot schemes.	1:2 1:7 2:7 5:9 6:7 7:10 8:11
Canali et al. 70 (2016)	GPs near Grand Versailles, participating in EPSILON during the year 2013.	EPSILON geriatrics network	Medical records of patients over 75 in one health system. Questionnaires (given to GPs).	9 GPs and 15 monitored patients	2:7 3:9 4:5 5:9 6:7 10:12 11:12
Cantor et al. 67 (2014)	Purposive selection of ACOs in New Jersey	ACO	Patient records	380,000 patient records	1:2 7:8 7:11 8:11 11:13

Carroll et al. (part 1, 116 2016a)	Patients, administrators, and Interprofessional family health teams (FHTs) or academic Family Health teams (aFHTs) across 6 sites in Toronto	ACO	Questionnaire	1200 patients; 6 administrators.	3:9 6:10 7:11
Carroll et al. (part 2, 96 2016b)	Patients, administrators, and Interprofessional family health teams (FHTs) or academic Family Health teams (aFHTs) across 6 sites in Toronto	ACO	Questionnaire	1200 patients; 6 administrators.	10:12 11:13
Clarke et al. 137 (2015)	Embedded 1 Comprehensive Care Coordinator (CCC) per practice in 14 of the 28 primary care sites within UCLA Health. The control sites were the remaining 14 practices, which did not receive a CCC.	PCMH	Administrative data analysis	14 CCCs	10:11 10:12
Colla et al. 69 (2016)	ACO organisations	ACO	Questionnaire	269	1:2 1:7 2:7 2:8 3:7 4:3 4:5 4:9 5:9 6:3 6:7 6:10 6:11 7:10 10:12 11:12

					11:13
Collinsworth et al. [78] (2014)	Patients, CHWs, and primary care providers (PCP), 5 community clinics. Focus on Hispanic patients.	CCM	Structured interview and administrative data	12 patients; 6 physicians; 1 nurse practitioner; 5 community health workers	2:7 3:7 3:9 3:10 4:3 4:9 6:7 10:12
Cueller et al. (2016) [66]	Adults aged 18–64 years, residing in Maryland, Virginia, and the District of Columbia, and insured by CareFirst for at least 3 consecutive months between 2010 and 2013	PCMH	Administrative data	1,433,297	1:2 1:7 2:7 10:11 11:13
Damery et al. [101] (2016)	Adult patients, 1 or more chronic conditions, except those receiving palliative, complementary & alternative', and 'purely psychosocial' interventions.	'Integrated care', i.e. at least two of: primary care, community care (taken to include social care), secondary care.	Earlier systematic reviews	50 includes	1:2 3:9 7:8 11:13
D'Aunno et al. [52] (2015)	Substance Abuse Treatment organisations' directors and clinicians	Substance Abuse Treatment Organisations + ACOs.	Census; telephone interviews	635	1:2 2:7
David et al. [139] (2015)	Patients from 280 PCMH practices	PCMH	Census	460,000	2:7
Demiris & Kneale	Literature on information technology patient-centred medical homes/coordinated care contexts	PCMH	Literature review	50 includes	1:7 2:7

83 (2015)					4:9 4:10 6:7 6:10 6:11 8:10
Desmedt et al. 124 (2016)	Literature on integrated care models for chronic diseases	Integrated care	Systematic review	26 includes	7:11 10:12 11:12 11:13
Evans et al. 57 (2014)	Leaders and providers from Health Links and Local Health Integration Networks (LHINs).	Health Links – the Health Links bring together multiple clinical and social service providers on a voluntary basis, including a minimum of 65% of primary care providers in each region.	Interviews	No number stated	1:2 1:7 2:7 6:10
Fix et al. 152 (2014)	HIV providers (clinicians and other staff) and patients.	Patient Aligned Care Teams (PCMH principles)	Interviews	41 HIV providers 20 patients	4:3 10:12
Friedman et al. (2016) 85	Those identifying as performing care coordination in primary care (regardless of job title).	PCMH	Private online discussion forum used to gather perceptions and experiences.	25 (17 completed full study).	3:7 3:9 6:7 6:10
Gehlert et	Social workers employed by ACOs.	ACO	Survey	395	3:7

al. (2015)[72]					3:9
Grace et al. (2014)[91]	Primary care personnel.	PCMH	Semi-structured interviews and survey	Interviews: 22; physician survey: 71; staff survey: 329	3:7
Greene et al. (2016)[87]	Mental health providers, primary care providers, staff.	PCMH-N (Patient-centred medical home – neighbourhood)	Qualitative surveys and interviews	Surveys: 6 mental health care providers; 7 primary care providers. Interviews: 12 mental health care providers; 10 primary care providers and staff.	3:7 4:3 4:7 6:10
Hibbard et al. (2015)[127]	Primary care providers	ACO.	2 surveys and interviews	Survey 1: 157; Survey 2: 150; Interviews: pre implementation: 48; 6 month follow up: 18; 1 year	8:10

				follow up; 30.	
Hildebrandt et al. 77 (2015)	AOK and LKK (sick-funds) subscribers in the Kingzigtal region.	Integrated Care Healthy Kinzigtal (IVGK): combined care.	Census from relevant databases	33000	1:2 1:7 5:8 6:7 6:10 7:10 8:9 11:12 11:13
Hitchcock Noël et al. 75 (2014)	Autonomous primary care clinics in South Texas.	Practice facilitation. External facilitators guide clinical audit in PHC general practices and activities corresponding for 4 CCM components.	Practice environment checklist. Data collection during facilitation fieldwork: baseline, 12 and 24 month follow up. Semi-structured interviews at baseline.	40	1:7 2:7 7:10 7:12 10:12
Hong, Siegel & Ferris 84 (2014)	ACO sites and staff delivering successful complex care management systems.	ACOs.	Semi-structured interviews. Review of manuscripts and programme materials. Measurements of outcomes from each site.	18 sites – 3 key informants per site for interviews.	3:7 3:9 3:10 6:10 10:11 10:12
Huber et al. 126 (2016)	Patients registered with Helsana (health insurer), Switzerland.	Network of general practitioners, with structured care guidelines and referral network to other	Analysis of routine administrative data.	12,526 patients with diabetes, 71,778 with cardiovas-	7:11 11:13

		clinicians.		cular diseases, 17,498 with respiratory illnesses	
Janiszewski, O'Brian & Lipman 153 (2015)	Diabetes patients	Diabetes self-management education (DSME) delivered in a PCMH	Focus groups	37. 6 groups, 4-10 participants per group.	10:12
Johnson et al. 124 (2015)	Low-income and poverty-level patients, Denver, USA.	PCMH with CCM. Network of health centres, school clinics, out-patients, hospital and substance abuse services.	Participant observation	Health professionals (number unstated) producing risk stratification system	6:9
Kash et al. 47 (2014)	Literature on the evolution and implementation of perioperative systems.	Perioperative surgical home (PSH)	Literature review	152 includes	2:7 3:7 3:9 6:10 7:11 8:9 8:10 10:11 10:12 11:12 11:13
Kaushal,	Patient records in PCPs with more than 200	PCMH	Census	Patients:	6:7

Edwards & Kern [119] (2015)	patients.			230593; PCPs; 275	
Kennedy et al. [76] (2015)	PHC practices.	PCMHs and ACOs which involve pharmacists.	Unclear	7 practices, 8 pharmacists	3:7 3:9 6:10 6:11 10:12 11:12 11:13
Kinjo et al. [107] (2017)	Terminally ill patients, Japan.	Zaitaku model: End-of-life care at home	Cross sectional survey, analysis of routine administrative data.	106 terminal care patients	3:11
Lafortune et al. [105] (2015)	Clients, informal care givers, and health care providers.	Community-based primary health care.	Focus groups	28 clients and informal care givers; 20 health care providers.	3:9 5:8 5:9 6:7 6:10 10:12 11:12 11:13
Lewis, Colla, Schoenherr et al. [54] (2014a)	ACOs.	ACO with 'safety net' community health centre.	Survey – census of ACOs. Oversample of ACOs containing a community health centre.	156 ACOs. 36 interviews.	1:2 1:7 2:7 3:7 3:9 4:3 6:11

Lewis, Colla, Tierney et al. 51 (2014b)	ACOs.	ACO: Medicare's Shared Savings Program, Pioneers ACOs, Medicaid ACOs, and commercial-payer ACOs.	Survey – census of ACOs. Interviews.	156 ACOS. 16 interviews.	1:2 1:7 2:7 3:7 3:9 4:5 10:11
Liss et al. 125 (2014)	Adults with hypertension	PCMH	Census of data on patient observation	36,805	7:11 7:12
Matiz et al. 92 (2014)	Providers in 5 PCMHs	PCMH	Survey Review of referral numbers	Unknown	3:7 3:9
McConaha et al. 97 (2015)	Patients with concomitant diabetes and hypertension not currently treated with ACEI or ARB attending 16 of the 19 PCP offices in one PHC practice.	PHC medical practice	Census of patient data	954	3:7 3:9 4:3 6:7
McGough et al. 118 (2016)	Patients with moderate to serious mental health diagnoses and needs, 70% of which with insurance	Neighbourhood Clinic Network	Census of relevant patients on registry	1256	1:2 1:7 3:7 3:9 6:7 6:10 6:11 10:12 11:12 11:13
McNab &	Older Aboriginal people with chronic complex	Community based co-	Patient survey	125	1:2

Gillespie (2015) [58]	illness	location of services with virtual hub	Census of health provider data		1:7 2:7 3:7 3:9 4:5 6:7 6:10 6:11 7:11 7:10 10:11
McNab et al. (2016) [88]	Members of the HealthOne Mt Druid care model steering committee (policy and decision makers, GPs, carers and patients	Chronic aged and complex care service model	Semi-structured interviews Focus group	32 interviewed 1 focus group with 9 members	3:7 3:9 4:3 4:7
Mead, Andres & Regenstein (2014) [89]	a) Patients who have used safety net health services b) Patients who have suffered with heart failure or acute myocardial infarction	PCMH	Focus groups	387 in 33 focus groups of 8-12.	3:9 3:10 5:8 8:9 8:11 9:11 10:12
Merrill et al. (2015) [120]	Adults with an ICD-9 diagnosis code 428.0-428.9 (heart failure/disease) who had a least one outpatient visit between July 2011-2012	PCMH/ACOs/Patient Centred Speciality Program	Census of routine data	4803	6:7
Morton et al. (2015) [117]	Clinicians	PCMH	Questionnaires	275 CHCs; 284 health system owned practices; 247	6:10

				small physician owned practices; 191 large physician owned practices.	
Nandram & Koster 19 (2014)	Staff, founder, co-founders, coaches, nurses, clients and trainer at the Buurtzorg.	Buurtzorg	Interviews	38	2:7 3:7 3:9 4:3 4:9 6:7 6:10
Nelson, Sun et al. 106 (2014a)	Veterans Health Administration patients with more than 2 primary care visits.	PCMH	Census	2630171 patients	3:9
Nelson, Helfrich et al. (2014b)[102]	All Veterans Health Administration patients. All VHA primary care staff.	PCMH	Census	5653616 patients; 5404 primary care staff.	3:9
O'Malley et al. 113 (2015)	Physicians/practice team members at PCMHs. National experts on primary care teamwork.	PCMH	Interviews	60 physicians/practice team members; 3 experts.	6:10
Peterson et	Medicaid-covered child special care need practice	PCMH for children	Semi-structured	11	1:2

al. (2016) [55]	before 2011.	with special care needs	interviews	paediatricians ; 9 family physicians	2:7 4:3 6:7
Pineault et al. (2014) [56]	Administrators of FMG study organisations	PCMH-like Family Medicine Groups (FMGs)	Survey	376 organisations	1:2 1:7 2:7
Pourat, Charles & Snyder (2016) [136]	Adults over 17 who received usual care and had been diagnosed with asthma, diabetes, or chronic heart disease.	Usual care that has 3 of the PCMH characteristics	Survey	10,990	10:9 10:11 10:12
Pyne et al. (2015) [122]	Middle-aged, low-income, Caucasian women with moderate depression who are unemployed and uninsured	Collaborative care	Census of depression-free days data	364 patients in 5 FQHCs	6:10
Rajala (2015) [86]	Medical and behavioural health providers.	PCMH	Semi-structured interviews	12	3:7 3:10 4:9 4:7 6:10
Raphael et al. (2015) [128]	Parents of children with a diagnosis of either haemoglobin SS disease or sickle beta zero thalassemia.	PCMH	Questionnaires	150	8:11
Richardson et al.	PCMH representatives, EHR vendors and associated stakeholders.	PCMH	Semi-structured telephone interviews.	28	6:10

114 (2015)					
Salako et al. 53 (2015)	Rural ACOs	ACOs	Census	118	1:2 1:7 2:7 4:3
Shaw et al. 138 (2014)	Patients with a diagnosis of heart failure	Two components of the Chronic Care Model	Questionnaire at discharge	40	9:11 10:9 10:11
Shortell et al. 100 (2015)	ACOs	ACOs	Survey; Interviews; data from site visits	Survey: 101 ACOs; interviews: 11 ACOs; site visits: 2 ACOs.	3:7 3:9 3:11 6:9 6:10 7:10 9:12 9:13 10:12
Smith, Cannon-Breland & Spiggle 93 (2014)	Primary care physicians and consumers (focus groups); public and private payers (semi-structured discussions)	Medical homes, health homes, community-based care transition teams, medical neighbourhoods, ACOs	Focus groups; semi-structured discussions	4 focus groups of 17; 3 discussions	3:7 3:9
Treadwell & Giardino	Staff at five medical home practices.	PCMH	Survey	Not stated	10:11 10:12

135 (2014)					
Verhaegh et al. 102 (2014)	Randomised control trials of interventions aiming to improve transitions from hospital to home and reduce readmissions for chronically ill patients.	Transitional care interventions	Literature review	26 includes	3:8 7:8 10:11
Viron et al. 50 (2014)	MMHC patients who lacked primary care or were interested in switching providers.	Behavioural health homes	Census of patient data	Not stated	2:7 3:4 6:10
Weldon et al. 109 (2015)	GP receptionists, nurses, ICP members, psychiatrists, pharmacists, lay partners, patients and carers (60-68% receptionists).	North West London Whole Systems Integrated Care programme	Questionnaires; field notes; video recordings of events; workshops.	Not detailed. Each workshop 40-47 participants.	4:3
Wholey et al. (2014) 63	NA	Care management teams	Secondary research texts	NA	1:2 2:7 3:7 4:3 6:7
Woodman et al. 74 (2016)	Clinicians involved in joint working initiatives.	Four different services designed to bring paediatric expertise into primary care and/or improve joint working	Presentation/meetings; interviews, email follow-up.	5 paediatricians, 1 community matron, 1 GP	1:2 2:7 3:7 3:9 7:11 11:13
Xenakis	Mount Sinai Health System	ACO/Medicare Shared Savings Programme	Participant observation	280 doctors, 26 PHC practices, 1	2:7 3:7 6:7

73 (2015)				hospital	6:10 7:10 11:12
Yoon et al. 129 (2015)	Patients with at least 2 primary care visits in FY 2009 and used outpatient care in FY 2011.	PCMH – patient aligned care teams (PACTs)	Pre-existing survey data	2,607,902 patients from 796 VA primary care clinics	3:11

APPENDIX 14. FULL TABLE OF CAUSAL LINKAGES (INITIAL PROGRAMME THEORY AND REVISED LOGIC MODEL)

Table 32: Revised logic model, showing which causal links were in the initial programme theory (IPT) but had no evidential support, which were supported by evidence (IPT+E), and which came from the evidence review but were not in the initial programme theory (E)

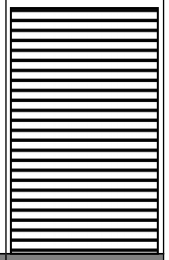
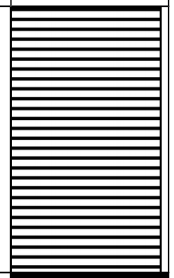
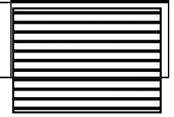
MCP component (1-13) IF	**Contexts** **in the CONTEXT that**	**MCP component (1-13)** **THEN**	**Causal link**	**Programme theory from:**			**Strength of evidence**
				IPT	**IPT + E**	**E**	
1: NHS managers establish MCPs	The member-organisations have already made progress towards new ways of working Local commissioners' have already agreed funding for the MCP. Existing 'partners' such as voluntary and community sector organisations, and 'communities' are supportively engaged with the MCP. Joining endorses general practices' existing activities (e.g. in care coordination) The network seems relevant to the providers' care group(s) and clinical tasks. GPs (or the equivalent) are in partnerships rather than single-handed. The network seems offer its member-organisations external resources and/or money. Similar organisations which they admire as prototypes join the network. External controls are permissive and light, and the	2: Network management will develop	1:2				
		7: Planned referral networks will develop	1:7				

	network has local champions Staff are professionally qualified Joining the network seems likely to reduce risks for its member-organisations, for instance the risks of competition. The referral network includes all services required to maintain patients out of hospital. The population are in large, non-isolated communities Payment systems are aligned (do not penalise collaboration) The time that network participation requires of general practices is not prohibitive First-cohort MCPs have: a vision of a model of care effective managerial and clinical leadership standardised data to enable real-time monitoring and evaluation of quality outcomes, costs and benefits plans for how to provide care for people with long term conditions in primary care settings and in their own homes, with a focus on prevention						
2: Network management activities developed by: Producing and using the necessary boundary objects Promoting boundary-spanning activities 'Embedding' or colocating staff to allow informal and meeting-based care coordination, and improved mutual understanding Providing HIT training and	The lead (network-coordinating) organisation has credibility and a good 'track record' There are good relationships between the member-organisations It bears repeating that when different professions work for different organisations, multi-disciplinary teams are also inter-organisational teams.	3: MDTs will develop	2:3				
		6: Care coordination through IT use will develop	2:6				
		7: Care planning at organisational and inter-organisational	2:7				

software development for sharing EHRs		level develops					
3: MCPs establish multi-disciplinary teams (MDTs), in particular by giving their members boundary-spanning roles	Status differences and deference between professions are weak or absent MDT roles are clearly defined MDT members are familiar with other professions' contributions Boundary-spanning roles develop, especially when patients are of high complexity and staff have low knowledge about these individual patients. Boundary-spanning staff have seniority, assertiveness and relational skills Doctors do not resist the boundary-spanning activities MDT members trust each other, and the team coordinator; and have confidence about their own skills MDT members do not feel liable for outcomes beyond their personal control. The MDT has clearly structured communication and common training. MDT members have shared group goals. Staff are employment by same organisation Staff are familiar with other professions' roles and contribution to care Staff have time to participate. Staff communicate face-to-face as well as by HIT. Patients : • trust care coordinators and understand that role. • Coordinate their care via the coordinator, not contact providers directly.	4: Culture change will be promoted in the participating organisations	3:4				
		5: Voluntary sector involvement will increase	3:5				
		6: Informational continuity of care and care coordination using HIT will develop	3:6				
		7: Planned referral networks will develop	3:7				
		8: Demand management systems will develop	3:8				
		9: Preventive health care will develop	3:9				
		10: Care planning at the	3:10				

	• Do not find MDT care worrying. • Have suitable language skills and acculturation. • Actually adopt healthier behaviour.	patient level will develop					
		11: Patients will more often be diverted from hospital	3:11				
		12: Patient experience of care will improve	3:12				
4: Culture changes occur in the participating organisations that increase healthworkers' knowledge of, and favourable attitude towards, other professions' contribution to care A climate of psychological safety Focus on tasks of practical use to MDT members Shared expectations and values develop in the participating organisations Staff learn to communicate safety-critical informations in ways that cannot be ignored but still maintain good informal relationships	Different professions trust and respect each other there is common training across organisations and professions Other 'resources' for culture change are brought to bear Patients: • Trust care coordinators and understand that role. • Coordinate their care via the coordinator, not contact providers directly. • Do not find MDT care worrying. • Have suitable language skills and acculturation. • Actually adopt healthier behaviour.	3: MDTs will develop	4:3				
		7: Planned referral networks will develop	4:7				
		8:Ddemand management systems will develop	4:8				
		9: Preventive health care will develop	4:9				
		10: Care planning at the patient level will become more prevalent	4:10				
		12: Patient experience of	4:12				

		care will improve					
5: Voluntary sector becomes involved in MCPs	Patients: • Trust care coordinators and understand that role. • Coordinate their care via the coordinator, not contact providers directly. • Do not find MDT care worrying. • Have suitable language skills and acculturation. • Actually adopt healthier behaviour.	8:Demand management systems will develop	5:8				
		9: Preventive health care will develop	5:9				
		12: Improved patient outcomes and experience of care	5:12				
6: Health information technologies (HIT) are used to strengthen informational continuity of care	Such HITs exist at all The HITs are well-designed for their uses and users. HITs are implemented in tandem with the corresponding care management practices including elimination of parallel (e.g. paper-based) systems. Health organisations can invest large sums in data analytics.	3: MDTs will develop	6:3				
		7: Planned referral networks will develop	6:7				
		8: Demand management systems will develop	6:8				
		9: Preventive care will develop	6:9				
		10: Care planning for individual patients will become more	6:10				

		prevalent and systematic					
		11: More patients will be diverted from in-patient to primary care services	6:11				
		13: NHS cost-saving	6:13				
7: Care planning occurs at organisational and inter-organisational level, is applied to a suitable case-mix of patients i.e: high users of acute care (e. those with 5 or more hospitalisations per year), low and medium morbidity patients.	Payment models do not penalise inter-organisational care coordination. MCP-like networks include health centres (or the equivalents), hence less commonly-used services. No contractual hangover prevents collaboration Doctors are responsive to incentives to implement the resulting care plans The necessary preventive care, primary care, social work services and social care support services are available, hence financially viable. Patients: • Trust care coordinators and understand that role. • Coordinate their care via the coordinator, not contact providers directly. • Do not find MDT care worrying. • Have suitable language skills and acculturation. • Actually adopt healthier behaviour.	8: Demand management systems will develop	7:8				
		10: Care planning for individual patients will become more prevalent and systematic	7:10				
		11: More patients will be diverted from in-patient to primary care services	7:11				
8: Demand management systems are used to screen referrals	The necessary preventive care, primary care, social work services and social care support services are	9: Preventive health care	8:9				

	available, hence financially viable. Hospitals do not face contrary ('perverse') incentives such as tariff payments	will develop					
		10: Care planning for individual patients will become more prevalent and systematic	8:10				
		11: More patients will be diverted from in-patient to primary care services (through admission avoidance/discharge support)	8:11				
9: Preventive health care develops		11: More patients will be diverted from in-patient to primary care services	9:11				
10: Care plans for individual patients are more widely used, and apply the mechanisms of: • Advocacy • Care coordination by staff in boundary-	The necessary preventive care, primary care, social work services and social care support services are available, hence financially viable. MDTs have the time to discuss the care plan with patients before implementing it.	9: Preventive health care will develop	10:9				
		11: More patients will be diverted	10: 11				

spanning roles • ncreasing the continuities of care • Making care more person-centred • Shared decision making		from in-patient to primary care services					
		12: Improved patient outcomes and experience of care	10:12				
11: More patients are diverted from in-patient to primary care services	The necessary preventive care, primary care, social work services and social care support services are available, hence financially viable. Hospital care remains available for the most complex cases Referrals decrease so much that in hospitals whole clinics or wards can close Unblocking beds does not increase the average intensity, hence cost, of in-patient care.	12: Improved patient outcomes and experience of care	11:12				
		13: NHS costs will reduce	11:13				
		General practice will benefit	11:other				
Other: Care coordination and Demand management systems develop		Urgent care become more responsive	Other				

~~Appendix 15. Data sharing statement~~

~~Most of the data used in this report came from published papers which are therefore already available to all, subject to the usual copyright and in some cases paywall restrictions. Requests for access to other data (e.g. about the stakeholder meetings) should be addressed to the corresponding author (Rod Sheaff). These data will be made available in anonymised form provided that the applicant agrees to meet any reasonable transcription and redaction costs.~~