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**Financial Mechanisms for Integrating Funds for
Health and Social Care: An Evidence Review**

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Financial mechanisms for integrating funds for health and social care: an evidence review

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Glossary

ACT	Australian Capital Territory
ADL	Activities of daily living, an instrument to measure functional status
CCG	Clinical Commissioning Group
CCT1, CCT2	Co-ordinated Care Trials [Australia]; two sets of integrated care experiments undertaken in the 1990s and 2000s
CHC	Coordinated Health Care [Australia]; one of the CCT2 trials
CHCPs	Community health and care partnerships [Scotland]
CHPs	Community Health Partnerships [Scotland]
CMA	Community Medical Alliance [US]
CMHT	Community Mental Health Team
CMS	Centers for Medicare and Medicaid Services [US]
CT+	Care Trust Plus
DiD	difference-in-difference
DVA	Department of Veterans' Affairs [US]
FFS	Fee-for-service
GP	general practitioner
H&SC	Health and social care
HA	Health Authority
HACC	Home and Community Care [Australia]
HEDIS	Healthcare Effectiveness Data and Information Set [US]; national process measures of care quality, used for performance assessment
HMO	Health Maintenance Organization [US]
[HR]QoL	[health-related] quality of life
HSS	Health and social services [Northern Ireland]
ICES	integrated community equipment services
ICP	Integrated Care Pilot
IRM	Integrated resource mechanism
IT	information technology
MBS	Medicare Benefits Schedule [Australia]
MH	mental health
MSHO	Minnesota Senior Health Options
NH	Nursing home
NICE	National Institute for Health and Care Excellence
OLS	Ordinary least squares
PACE	Program of All-Inclusive Care for the elderly [US]
PBS	Pharmaceutical Benefits Scheme [Australia]
POPPs	Partnerships for Older People Projects
PREM	Patient-reported experience measure
PROM	Patient-reported outcome measure
PRISMA	Programme of Research to Integrate Services for the Maintenance of Autonomy [Canada]
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses (reporting guidelines)
QALY	Quality Adjusted Life Year
RCT	Randomised controlled trial
RDNS	Royal District Nursing Service [Australia]
Regression to the mean	A phenomenon whereby a subset of extreme results is followed by results that are less extreme on average
S/HMO	Social Health Maintenance Organization [US]

Selection bias	A systematic distortion of the data resulting from the fact that individuals included in the study are not representative of the population from which they were selected
SF-36	Short-form (36 items), a quality of life instrument
SIPA	Système de services intégrés pour personnes âgées en perte d'autonomie (system of integrated care for older persons with disabilities) [Canada]
TCHII	Team Care Health II [Australia]; one of the CCT2 trials
VHA	Veterans Health Administration [US]
VISN	Veterans Integrated Service Networks [US]
WPP	Wisconsin Partnership Program [US]

Executive summary

Introduction

Integrated care is often perceived as a solution for some of the major challenges faced by health and social care systems. In these systems, 20% of the population accounts for 80% of the expenditure on care [1]. These 'high users' are typically people with one or more long-term conditions and who have complex needs that straddle health and social care boundaries; the population includes, but is not limited to, older people. By coordinating care at the level of the individual, decision makers should in theory identify problems earlier in the care pathway and shift care closer to home, improve the patient experience, prevent or reduce avoidable hospital admissions and delayed discharges, improve health outcomes and reduce unnecessary duplication of care. However, empirical studies of integrated care systems suggest that the reality falls far short of these high expectations. While some evaluations have identified cost savings or improved outcomes, most find no significant benefits, and in those that do identify improvements, the effects are small.

One factor often cited as a reason for these disappointing findings is that financial barriers thwart the efforts of clinicians and social care workers to integrate care for their patients or clients. However, there has been little systematic attempt to investigate this perceived barrier and whether the attempts to address it have been effective or cost-effective. This review focuses on the role of integrated financial mechanisms in supporting and incentivising integrated care.

Aims

To systematically review the international evidence on:

- The types of integrated resource mechanisms (IRM) available
- The costs and effects of these mechanisms, including unintended consequences
- The barriers to implementation and the factors critical to success.

Methods

We searched eight electronic databases. We also searched relevant websites, and checked reference lists of literature reviews and empirical studies. Records identified from the searches were screened for eligibility by two members of the research team using a pre-specified set of inclusion and exclusion criteria. Any differences in eligibility decisions were resolved by discussion. Data from the included studies were extracted into a template and findings were summarised narratively.

Results

The searches identified around 3,500 records. After screening for eligibility, 92 schemes were identified. Fifty-four schemes were excluded from the review. Reasons for exclusion varied, but included an absence of financial integration (35%) or integration across health care only (57%). We did not exclude schemes on the basis of study design, but did exclude schemes for which we found no relevant evidence of any type. Thirty-eight schemes, reported in 122 articles, met the inclusion criteria.

The included schemes were set in eight countries. With the exception of one Canadian trial, all the randomised evidence came from Australia, with quasi-experimental studies used in Australia, Canada, England, Sweden and the US. Evaluations in England and the US included analyses of routine data, but the predominant approach in England was the use of qualitative studies and other types of uncontrolled evaluations.

Most studies were not designed to investigate the ‘added effect’ of an IRM; thus, with few exceptions, we cannot disentangle effects of integrated financing from integrated care. Therefore, the current evidence base principally addresses the question of whether an IRM plus integrated care is more beneficial and/or has lower costs or utilisation relative to ‘usual care’.

Health outcomes

Health outcomes were evaluated in 23 (60%) of the 38 schemes included in the review. The evaluations assessed a variety of health outcomes, including measures of health-related quality of life [2-6], physical functioning [3, 5, 7-10], depression and anxiety [2, 6], morale [6], mortality [3, 10-14], and carer burden [6, 9, 11]. Various measures of user and carer satisfaction were also reported [2, 6, 9, 15]. Most schemes (13/23) found no evidence of an impact on individuals’ health, and findings for the remaining schemes were mixed (n=5), better in the integrated scheme (n=4) or better in the control group (n=1). Three of the 13 English schemes in our review reported improvements in health.

Service use and costs

Most (34/38) schemes assessed the impact of IRMs on secondary care costs or utilisation. In 11 schemes, the integrated scheme had no significant effect on hospital costs, although this did not preclude a change in the care pathway or a substitution of services across settings. Three schemes reported reductions in secondary care use, but admissions were significantly higher in the integration group in one scheme. However, for most schemes the evidence was mixed (n=14) or unclear (n=5). There was some evidence that IRMs were associated with reductions in delayed discharges, either through cross charging or by integrated management and pooled funds. It was less clear if these effects were causal, or whether reductions were sustained in the longer term. Evidence for reductions in unplanned admissions was equivocal, but there was tentative evidence for a mitigating effect in subgroups of individuals at high risk of hospital admission. Evidence that IRMs supported a reduction in the risk of institutionalization was even more ambivalent.

Other effects

Unintended consequences of the schemes were not routinely reported, but several were highlighted. Evaluations of Program of All-Inclusive Care for the Elderly (PACE) found evidence of ‘cream skimming’, with schemes excluding those with psychiatric disorders or substance abuse problems [16]. Clients in the first wave of Social Health Maintenance Organization (S/HMO I) evaluations who were deemed to be ‘nursing home certifiable’ were, on closer inspection, found to be less frail and complex than expected – which may have been due to the higher fee paid for this client group (‘upcoding’). In the evaluation of cross-charging in England, there was anecdotal evidence that the scheme led to poor outcomes for patients in terms of “overly hasty” discharge and increased risk of readmission [17].

Conclusions

Compared with ‘usual care’, schemes that integrated funds and resources to support integrated care seldom led to improved health outcomes. Although some schemes succeeded in shifting care closer to home, and some achieved short term reductions in acute care utilisation, no scheme demonstrated a sustained and long term reduction in hospital use.

Moreover, if schemes improve co-ordination and focus greater attention on patient needs, there is a good chance that co-ordinated care “reveals rather than resolves” unmet need [84, 85]. Overall, although this may be a beneficial outcome for society, it may increase, rather than reduce, total costs. Therefore, decision makers would need to recognise that there may be trade-offs between different objectives, both in the short and longer term.

In England, new schemes were often introduced in the context of a raft of existing and evolving policy initiatives, which makes the evaluation of their effects methodologically challenging. For this reason, new schemes need to be rolled out cautiously and their evaluation should strive to incorporate appropriate controls. Evaluations should seek to consistently measure a range of effects and costs, including the routine assessment of unintended consequences and barriers to implementation, as well as patient-reported measures of outcomes (PROMs) and experience (PREMs).

Key words

Payment systems, pooled budgets, joint commissioning, integrated care, systematic review

Introduction

In England, the sharp demarcation of health care and social care systems has been described as a “Berlin Wall” [18]. The care system has evolved on the assumption that people who are ‘sick’, and people who are ‘frail’ or ‘disabled’ can be easily distinguished [19]. This system may be appropriate and adequate for individuals with uncomplicated needs – needs that can be easily categorized either as wholly medical, or as wholly functional and social. But the reality is that an increasing proportion of the population has complex needs. This includes the older population with chronic diseases and multiple morbidities [20, 21], children born with complex conditions who are now living to adulthood, and people with learning disabilities whose care needs may be lifelong [22]. For these people, care delivery systems that are predominantly designed for acute illness [23] may be both inappropriate and inadequate. In the words of Glasby and colleagues (2011): “put simply, people do not live their lives according to the categories we create in our welfare services” [19].

Policy response

The common sense response to this ‘Berlin wall’ is to dismantle it by integrating care across health and social care boundaries. In the 2013 framework document “Integrated Care: Our Shared Commitment”, twelve national partners set out the case for change:

“We need major change and we are determined to act. That means building a system of integrated care for every person in England. It means care and support built around the needs of the individual, their carers and family and that gets the most out of every penny we spend. If the illness is prevented, the condition properly managed, the fall avoided, not only is that better care for the individual but it also means less pressure on the system ... Integrated care and support isn’t the end. It is the means to the end of achieving high quality, compassionate care resulting in better health and wellbeing and a better experience for patients and service users, their carers and families” [22].

This type of integrated care for individuals cannot be achieved without regulatory and legislative support. In England, the Health and Social Care Act (2012) contains several provisions to encourage more effective coordinated working where this is beneficial for patients [24]. The Act places a duty on Monitor (the healthcare regulator with responsibility for price setting) to ‘enable’ integrated care, and a duty on NHS England (the organization responsible for improving outcomes) to secure the provision of health services integrated with social services. Health and Wellbeing Boards, charged with improving the health of the local population and reducing inequalities, must encourage providers of health and social care to work in an integrated manner. They are also responsible for promoting local use of the ‘flexibilities’, the statutory options for joint financing or sharing of resources which are set out in the National Health Service Act 2006 (s.75) [25]. This is important because funding methods for health and social care are different: health care is largely funded by tax with patients mostly shielded from the financial consequences of their care; whereas social care is characterised by means-testing, co-payments and devolvement of budgets to individual service users [21]. Commissioners, who are responsible for planning and purchasing care, therefore hold separate budgets for health and social care. The flexibilities in the NHS Act enable NHS bodies and local authorities to delegate functions to one another and create joint funding arrangements [26]. The overall aims of these reforms are to improve quality, and to reduce inefficiency and inequalities. Greater integration is supported by additional government investment in joint funding between the NHS and social care [27], and by new quality standards from the National Institute for Health and Care Excellence (NICE) [28].

Why focus on integrated resource mechanisms?

There is an extensive national and international literature covering the definition, organisation, experience and impact of integrated care in a wide variety of contexts. The evidence base on integrated care consistently identifies financial factors as a major barrier to successful delivery [7, 29-35]. However, the specific role played by mechanisms to integrate resources is rarely evaluated [36]. In principle, mechanisms that achieve financial integration across health and social care boundaries should align provider objectives, support coordinated care, reduce incentives to cost-shift, and encourage efficiency [37, 38]. In short, these 'integrated resource mechanisms' (IRMs) should support 'effective commissioning':

"Effective commissioning is a precondition to the successful delivery of the requirement for the NHS to achieve an efficiency gain of 4% per annum over the four years from 2011-12 ("the Nicholson Challenge") [39].

In their June 2013 Spending Review, the government announced that £3.8 billion will be put into a pooled budget for health and social care services to work more closely together in local areas, a large increase from the £1bn originally planned in the 2010 Spending Review. The rationale is to deliver "better, more joined-up services to older and disabled people, to keep them out of hospital and to avoid long hospital stays" [40](p 22), and to support and reward integrated working in 2015/16. To "accelerate this transformation", the NHS will make £200 million available to local authorities in 2014/15 for investment in new systems and ways of working. The pooled budget, or 'Integration Transformation Fund' [41](and then renamed as the 'Better Care Fund'), includes IT funds to facilitate secure data sharing across NHS and local authorities, and further funds for carers and for the 'reablement' of people discharged from hospital (ibid, p 35). About £1 billion of the pooled budget will depend on performance against outcome targets [42]. However, there have already been calls for "flexibility" so that some of the fund can be used to protect adult social care services that are jeopardised by cuts in overall funding [41] bringing with it the possibility that these funds will not be used for integrating health and social care services.

A review of the evidence on the effectiveness and cost-effectiveness of such mechanisms therefore provides a timely addition to inform the development and implementation of policy in England.

What do we expect to find? An economics perspective

For integrated resource mechanisms, such as pooled budgets, to support effective integrated care, it is not sufficient that they merely exist. Competent commissioning or purchasing is necessary to ensure the supply of health and social care services is sufficient to meet demand; and the health and social care staff who provide care 'at the coal face' need the requisite authority, information and skill to integrate resources: that is, to provide, or co-ordinate the provision, of tailored, joined-up care services. Using a simple conceptual framework in which there are two types of provider, two types of care and in which people with complex needs are cared for by an integrated care team, we consider how IRMs can support and incentivise integrated care.

Conceptual framework

The problem is described in two stages: first, we set out the theoretical effects of integrated care on an individual's health status; second, we consider how IRMs could influence this process.

Theoretical effects of integrated care

Imagine a world where there are people with complex needs. For simplicity, we assume these individuals require packages of care that comprise two types of service: health care (H) and social

care (S). The two types of service are supplied by two providers who hold separate budgets. At any one point in time (t), individuals can be in one of 5 health¹ states where the person’s health condition in state 1 is of mild severity (in social care terminology, they have ‘low need’ [43]) and their health in state 5 is very severe (‘critical need’). In each health state, people need a basic minimum level of health and social care to be kept alive: Hb_t and Sb_t . We assume that individuals move (transition) between health states over time. Thus, in time period t an individual may be in health state 2, but in period t+1 he may stay in the same state, or transition to a better or worse health state. We also assume that the transition probability (i.e. the likelihood of moving between states) for each pathway depends on how much additional care (‘discretionary’, over and above the basic level) the person receives in time, denoted as Hd_t and Sd_t . We further assume that the quality of care is fixed, that health state 4 is associated with admission to long-term care and state 5 with admission to hospital (Figure 1).

The principal-agent relationship is “a pervasive fact of economic life” [44] and the markets for health and social care are no exception. In our model, each individual with complex needs (principal) has an integrated care team (agent) who assesses the individual’s needs and plans a package of care on his behalf. The team co-ordinates provision of his health and social care and may also purchase this care. In this instance, the providers are therefore acting as agents for the team - the team is their principal.

Figure 1 sets out the case for one individual. He begins in time 0 with a basic minimum package of care (care package 0, made up of Hb_0 and Sb_0); he receives no discretionary care, so Hd_0 and Sd_0 are both set at zero. This meets his essential needs (keeps him alive), but no more. Unless he receives some additional discretionary care in time 1, his health status will worsen and he will be hospitalised in time 2 – this is shown in the diagram by the move from health state 2 in time 1 to health state 5 in time 2 (i.e. he receives care package 0 in both time 0 and time 1). Once in hospital, he will receive only health care and on discharge he needs care package 4 (the most resource intensive care package).

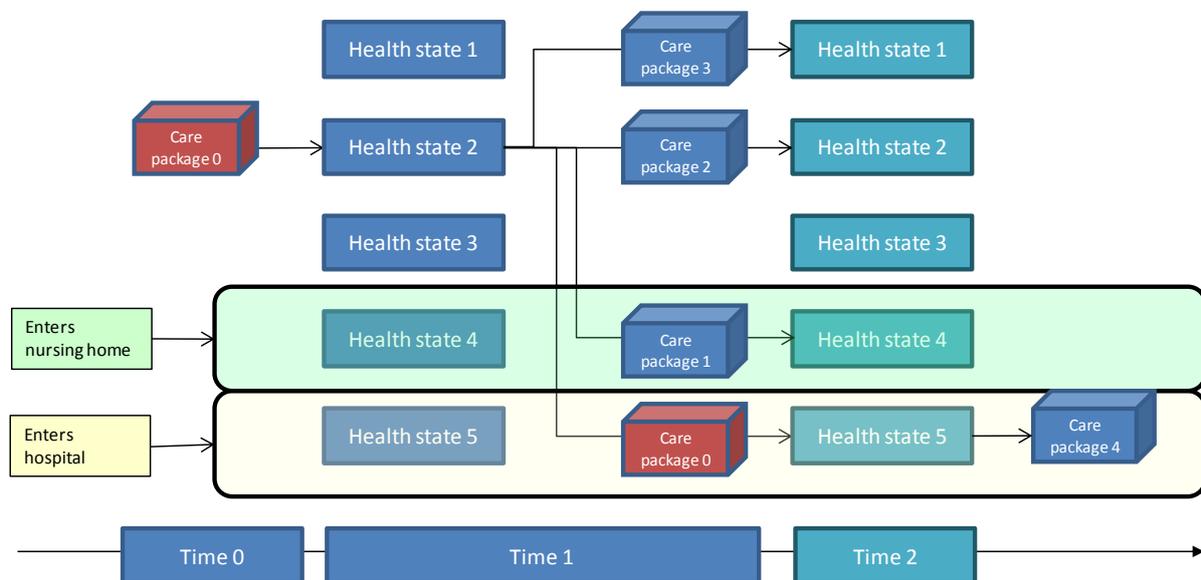


Figure 1: Model of care pathways for an individual with complex needs

Note: health status ranges from 1 (best) to 5 (worst); the care packages range in resource intensity from 0 (lowest) to 4 (highest)

¹ We use ‘health’ as shorthand to refer to wellbeing in a broad sense, encompassing physical and mental or emotional health as well as functional status.

Suppose there are several alternative care packages available to the individual at time 1, each containing different combinations of discretionary health (Hd_1) and social (Sd_1) care. With care package 3, the most highly resourced community package in time 1, the individual's health will improve, moving to state 1 in time 2. Care package 2 maintains his health at level 2, and package 1 is enough to avert hospital admission but does not prevent the need for long term institutional care. Table 1 summarises these potential effects of integrated care with reference to Figure 1.

This simple model also helps illustrate why it may be difficult to prevent admissions if budgets are constrained. If current health and social care budgets are fully devoted to treating patients in acute settings and supporting discharge packages such as care package 4, there is little scope to divert resources into care packages 2 and 3 to support those whose health has not yet deteriorated. Therefore, we would expect that higher levels of initial funding are needed to move the system away from 'crisis management' and towards prevention.

Table 1: The potential impacts of integrated care

Potential Impact	Comment
Improve access to care	The integrated care team knows which additional services the user needs – the levels of Hd_1 and Sd_1 – to maintain or improve his health status. They also know how to access these services and can advise on or facilitate his access to services.
Reduce unplanned admissions and readmissions	If additional discretionary care is given early enough in the disease pathway, the individual's health status is maintained above level 4 and hospitalization is avoided. Although the model does not show this, elective hospital care could also help reduce the risk of avoidable unplanned admissions.
Increase community care (health and social care)	To avoid admission to hospital, the individual needs more care than he is currently receiving from care package 0. Thus, preventative community health and social care may be required.
Reduce total costs	Higher costs at time 1, caused by the utilization of Hd_1 and Sd_1 , may lead to lower total costs in time 2 if subsequent hospital and residential care use is reduced or averted.
Improve outcomes	Better resourced packages of care such as packages 1 and 2 can maintain or even improve health status.
Improve the quality of care	The quality of care services is static in this simple model. However, earlier intervention could be conceived as better quality care <i>per se</i> .
Reduce length of stay	The team can ensure that appropriate levels of discretionary social care (Sd_3) services are available to support timely discharge.
Reduce residential care	Higher use of community services (Hd_1 and Sd_1) may delay or avert the individual's need for long term residential care.
Improve patient and user experience of care	Intervention to reduce morbidity may improve the individual's experience of care. However, this depends how patients/users are involved in care decisions, and delivery process. Aggressive interventions to avert hospitalisation for individuals who are frail and vulnerable may be inappropriate.

The influence of IRMs

The model hints at the interdependence of the different parts of the system and why only one part needs to malfunction for integrated care to 'fail'.

The team's ability to put together a package of care that includes discretionary services depends on several factors. The team needs the right mix and number of staff, and expertise to assess need and identify effective or cost-effective packages of care. The team needs access to services, and this is determined by decisions taken by purchasers or commissioners, and is also influenced by competing demands for the services from the local population and by local and national policies on eligibility. Provider autonomy can also be a barrier to access: for instance, if the team identifies that an individual needs a package of community health and social care services to reduce the risk of falling,

they cannot arrange provision if providers restrict access to those whose health status is severe. In England, access to social care services is mainly restricted to those whose needs are 'critical' or 'substantial' and user charges often apply [43, 45]. As health and social care are typically provided by different organisations, the team may be unable to deliver the care package if one part is unavailable (e.g. the discretionary social care, Sd_i). If the two services are complements rather than substitutes, then the individual's health will deteriorate.

If separate budgets are held by separate health and social care commissioners, capacity to spread risk across the pool of individuals for whom each is financially responsible, i.e. the local populations, is relatively large. However, health services and social care services may be substitutes or complements (depending on setting and user group) and the separation of budgets, even where there are joint agreements or joint working, may distort the allocation of resources. Those responsible for the separate budgets have an incentive to shift costs to the other services to protect their own resource. As commissioners do not share the risks of higher initial costs nor share future potential 'cost savings' across the sectors, this can inhibit decisions to substitute cheaper care where appropriate. The team may therefore identify an individual's needs, but be unable to access care. An obvious solution is to align or pool the budgets to mitigate these effects, but who should then hold or control the budget? There are several options.

The integrated care team holds a budget and can purchase a more highly resourced package of care (e.g. package 1) and so spend less on other individuals in time 1. The team's decision to buy this package depends on the size of the risk pool, the size of the budget, service prices, the potential to reduce unnecessary duplication of services, and the potential for economies of scale or scope. If preventative action reduces future total costs, cost savings can be returned to the team budget. The scope of the budget also impacts the team's decision: for example, if the budget excludes acute care, the costs of inpatient care will be incurred by a different budget holder (e.g. the local healthcare commissioning body). Thus, the incentive to cost-shift remains, and what changes is the setting to which costs will be shifted. However, if the budget is intended to cover all acute care, teams may be unwilling to take financial responsibility because demand for inpatient services is only partly under the influence of the team and the risks of overspending may be too high.

The budget is held jointly (or pooled) by health and social care commissioners. The risk pool for the joint budget will be similar to that of the team (or teams, if several teams operate within a local area), but the incentives for commissioners to cost-shift are reduced if the budget also covers acute and long-term care. As commissioning is undertaken jointly, this enables better co-ordination of service provision and commissioners can formally agree to purchase more discretionary preventative health (Hd_i) and social (Sd_i) care (e.g. care packages 1 and 2 in Figure 1). They need to negotiate suitable contracts with providers to ensure the team has access to services that go into these care packages: if providers retain their autonomy over eligibility decisions, the team may remain unable to arrange the care needed to avert admissions, despite having pooled resources. However, commissioners have imperfect information about the costs and benefits of services. This uncertainty partly reflects the lack of robust evidence for many interventions, but also an asymmetry of information between commissioners and providers (the 'hidden information' problem [44]). In particular, providers are likely to have better information about the marginal costs of provision. This makes it more likely that commissioners face information asymmetries and are price-takers rather than price-setters and this can lead to inefficiencies. As uncertainty affects the performance of the provider's task (costs, process of care, outcomes of care), commissioners may choose to condition payment upon resolution of that uncertainty [44]. One option is to require outcome measurement as part of the contract; for instance, commissioners may choose to use incentive compatible contracts to disincentivise quality skimming [46].

The budget is held jointly (or pooled) by a health and social care body with purchaser and provider functions. For the team to assemble an appropriate package of care, it relies on commissioners' ability to plan and purchase appropriate levels of both types of care for the population, and to negotiate appropriate contracts with providers. If the commissioning and provider functions are held within the same body, this helps to overcome some of the informational deficits noted above. However, it is unlikely that a single organisation will be wholly responsible for all aspects of care for this client group. In particular, specialised services, acute care and long-term nursing care may be provided elsewhere. This means that the incentives to cost-shift are (again) not removed but refocused onto other parts of the system, and that the need for careful contracting remains.

In reality, this simple conceptual framework is complicated by a number of factors. Some, such as the existence of eligibility criteria and user charges for social care, and of provider autonomy for health care, have already been discussed. The framework assumes that services are homogenous, but in reality there would be different types of care, with different quality attributes: care such as informal care, provided by friends and family (typically provided free of charge), and care provided by the voluntary (or private) sector (which is usually subject to charges). The existence of these additional components for the care package adds complexity to the team's decisions – these types of care may be substitutes for social or health care, and may help to overcome barriers to access for some. However as only some individuals can afford private care, its use may exacerbate health inequalities. If the quality of care is also taken into account, then the informational requirements for an efficient purchasing decision are further increased.

We have set out the principles of the way in which IRMs may support integrated care, which in turn can enhance health status. We now consider the evidence from the literature about the nature of IRMs and their impact.

Aims

To systematically review the international evidence on:

- The types of integrated resource mechanisms available
- The costs and effects of these mechanisms, including unintended consequences
- The barriers to implementation and the factors critical to success.

Overall policy questions

- What mechanisms are available for integrating resource use across health and social care?
- What evidence is there that these are effective or cost-effective, and what are the barriers to their use?

Methods

The review builds on previous work undertaken to inform the Scottish Government's Integrated Resource Framework [47]. This updated review has been extended and modified as follows:

1. The overall aim is to interpret the evidence in the context of the restructured NHS, including the new commissioning arrangements.
2. The review has been updated to include evidence from the international literature published since October 2009.
3. The focus is on financial integration across health and social care (previously, financial integration across different healthcare settings was included).

4. The scope of the work has been widened to include evidence from Scotland (previously excluded)
5. Descriptive accounts that do not provide any type of evidence are excluded.

We searched eight bibliographic databases.² To ensure results were relevant for current health and social care systems in England, we restricted the searches to articles published in English in or after 1999, and excluded articles on systems in developing countries. The Medline strategy is in Appendix 1, and full details of the searches are available on request from the authors. In addition, we checked bibliographies of articles meeting the inclusion criteria, and searched relevant web sites (e.g. the King's Fund). In complex interventions where the use of integrated financial mechanisms was unclear, we contacted authors to seek clarification. Each record was screened independently by two reviewers, and assessed for eligibility, and disagreements resolved by discussion. A full set of inclusion and exclusion criteria for the review is provided in Table 2.

Table 2: Inclusion and exclusion criteria for the review

INCLUSION CRITERIA
1. Case studies / reviews of schemes that integrate financial or resource flows across health and social care <ol style="list-style-type: none"> a. with or without evaluations / evidence / theoretical analysis b. services for adults
2. Mechanisms for allowing resources to follow patients between health and social care organisations
3. Published in or after 1999
4. English language
EXCLUSION CRITERIA
1. Reports of systems from developing countries
2. Clinician/dentists/patient payment reimbursement mechanisms
3. Personalised budgets
4. Integrated systems for children's services
5. Financial integration across different healthcare settings only (not including social care)
6. Financial integration across different social care settings only (not including health care)
7. Articles with insufficient detail to judge inclusion criteria
8. Commentary, opinion pieces and descriptive articles that provided no relevant empirical evidence

Results

Findings from the searches

The searches identified around 3,500 records (Figure 2). After screening and checking individual records for eligibility, 122 full text articles were included in the review; many were excluded because they were commentaries or discussion pieces rather than evaluations. There was rarely a simple one-to-one correspondence between the published articles and the schemes. Some articles reported information about multiple schemes; and in general, each scheme was referenced by more than one paper – we only included papers if they added new information on the scheme. The schemes themselves were also complex: for instance, the English 'Partnerships for Older People Projects'

² Medline, ASSIA, HMIC, EconLit, Social Services Abstracts, Conference proceedings Citation index, Zetoc, Index to Theses

(POPP) programme encompassed 146 interventions based in 29 local authorities. Only a small fraction of these projects also integrated funding streams, but we could not identify the results for these projects separately. Therefore, our review reports only aggregated findings for the POPP programme and for similar complex programmes.

The 122 published articles included in the review covered 38 individual schemes, set in 8 countries. The data extracted from these 38 schemes are tabulated in Appendix 2, together with ‘overviews’ of the two sets of Australian Coordinated Care Trials. We excluded 54 schemes because they did not meet one or more of the inclusion criteria – for instance, there was no financial integration (35%), or the IRM covered health care only (57%) (for details, see Appendix 3).

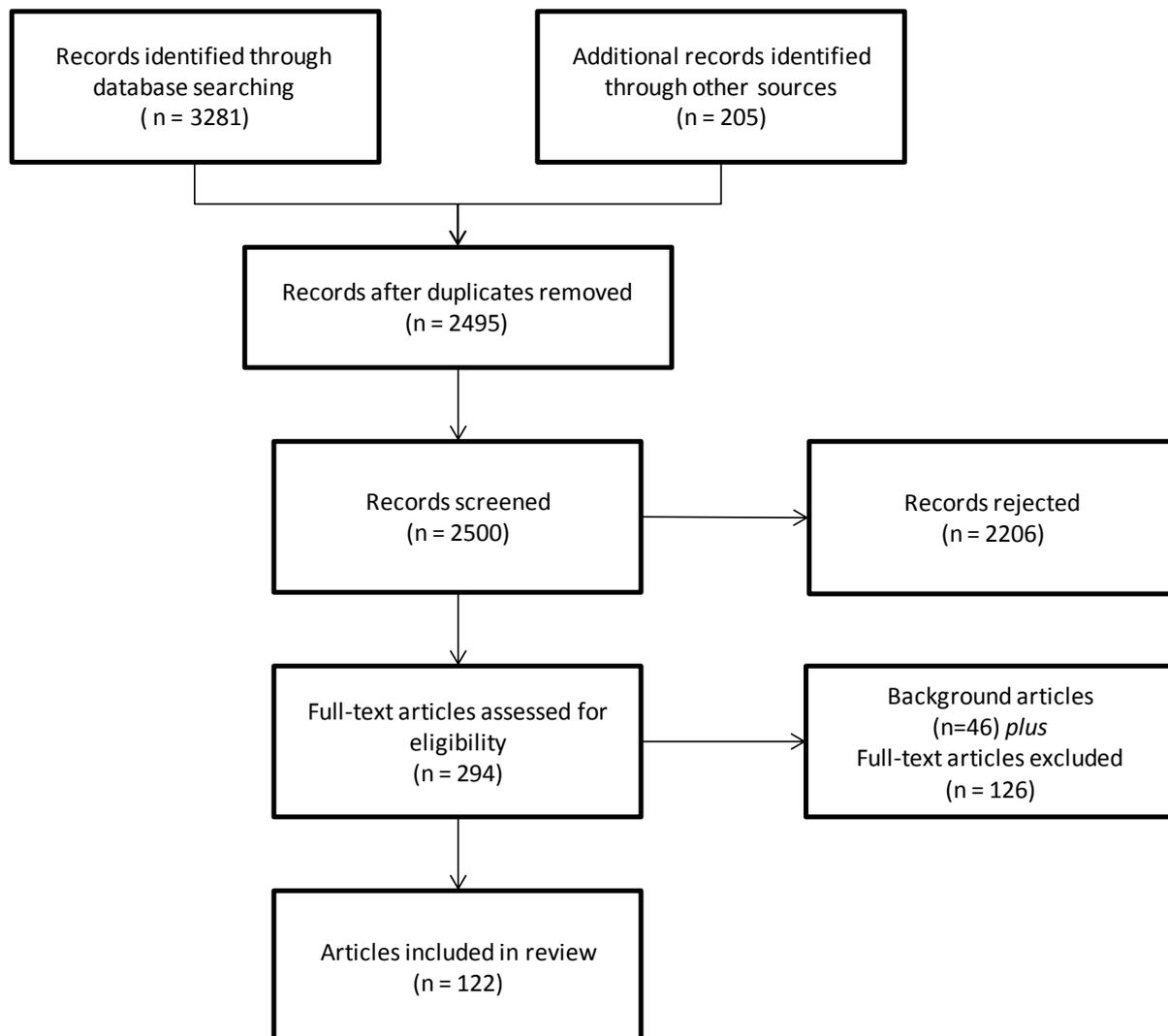


Figure 2: PRISMA diagram showing results of the literature searches

Notes: the 122 included articles covered 38 individual schemes (Appendix 2). A list of the excluded schemes and the reasons for exclusion are provided in Appendix 3.

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

Study designs underpinning the evidence base

The evaluative evidence employed a range of different study designs (Figure 3). Almost 45% of the evaluations included qualitative methods such as semi-structured interviews or focus groups. About 26% of the evaluations used mixed methods to purposively investigate different aspects of the schemes, typically combining a data analysis (e.g. either drawing on routine administrative data, or

on data collected as part of a prospective study) with qualitative methods. For other schemes, we identified separate evaluations that used different methods – these are not classified as ‘mixed methods’ because the evaluations were conducted independently. One in four schemes was evaluated using data from uncontrolled studies, and 26% drew on analyses of administrative data. Some of these ‘uncontrolled’ studies used a before and after design and so simply compared outcomes (e.g. admission rates) after the introduction of the intervention against a pre-intervention baseline. It is very difficult to draw any firm conclusions from these types of study, because they typically do not take account of other factors that may influence the observed changes and this makes attribution problematic. Randomized controlled trials (RCTs) were used to investigate 16% of the schemes, and a further 32% employed quasi-experimental designs. The latter are a type of interventional study that uses a matched control group; in the case of IRM studies, these control groups are typically drawn from another geographical area (or areas). Also known as ‘non-equivalent group’ studies, this design seeks to adjust for known confounding factors, but, unlike a randomized trial, it cannot eliminate unknown (unobserved) biases. For all types of study design, findings may not be readily transferable to other settings because, unlike pharmaceutical interventions, the effects of the care delivery and financial or resource models are likely to be context dependent.

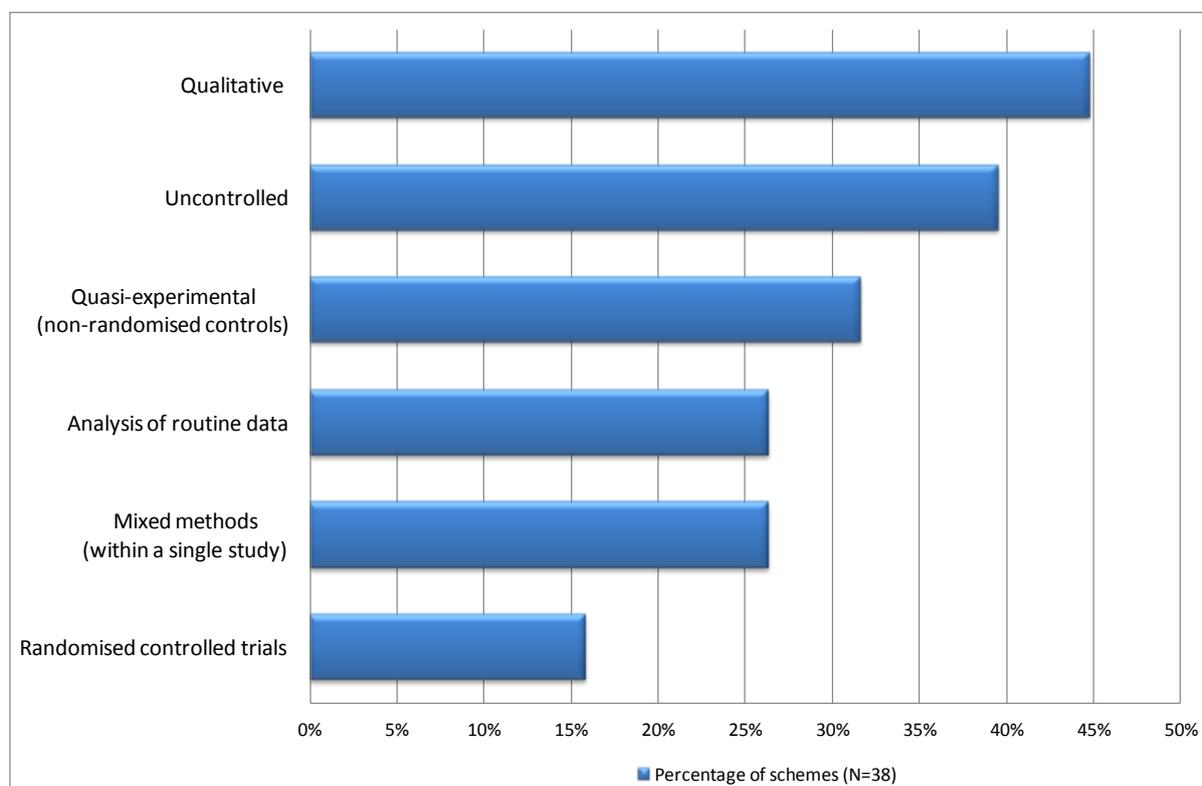


Figure 3: Study designs applied to evaluate the integrated schemes

Table 3 shows that the methodology used to investigate IRMs varied markedly by country. With the exception of one Canadian trial, all the randomised evidence came from Australia, with quasi-experimental studies used in Australia, Canada, England, Sweden and the US. England and the US had studies that undertook analyses of routine data, but the predominant approach in England was the use of qualitative and/or uncontrolled evaluations. This pattern was also evident in the other UK countries. In contrast, Australia, Canada and the US invested large sums of money in prospective controlled trials to rigorously investigate the effects of integration on health and costs. Moreover, Australia and the US invested in a second round of evaluations after disappointing findings from the first round prompted careful refinements to the care and funding models. This underscores the

importance of looking beyond the national evidence base when seeking to inform English policy, although transferability of the results from outside the UK is obviously less straightforward.

Table 3: Study design used in different countries

Country	Qualitative	Uncontrolled	Quasi-experimental	Analysis of routine data	Mixed methods	RCT
Australia	0	0	3	0	0	5
Canada	0	0	1	0	0	1
England	10	8	3	4	8	0
N. Ireland	1	1	0	0	0	0
Scotland	2	2	0	0	1	0
Sweden	2	1	1	0	1	0
USA	1	2	4	6	0	0
Wales	1	1	0	0	0	0

Description of IRM categories

Different ‘mechanisms’ can be used to integrate resources across health and social care. Table 4 summarises the types of IRM that are available to NHS and social care commissioners in England.

Table 4: Types of integrated resource mechanism available in England

Type of IRM and level of integration	Definition	Statutory provision, England
1: Transfer Payments	Also known as Grant Transfer. Transfer payments respectively allow local authorities to make service revenue or capital contributions to health bodies to support specific additional health services, and vice versa.	NHS Act 2006 (s 76; s 256)
2: Cross charging	Mandatory daily penalties. Compensate for delayed discharges in acute care where social services are solely responsible and unable to provide continuation service.	Community Care (Delayed Discharges etc) Act 2003
3: Aligned budgets	Partners align resources, identifying own contributions but targeted to the same objectives. Joint monitoring of spend and performance. Management and accountability for health and social services funding streams remain separate.	Not applicable
4: Lead commissioning	One partner leads commissioning of services based on jointly agreed set of aims	NHS Act 2006 (s 75)
5: Pooled funds	Each partner makes contributions to a common fund for spending on agreed projects or services	NHS Act 2006 (s 75)
6: Integrated management /provision without pooled funds ^θ	One partner delegates duties to another to jointly manage service provision	NHS Act 2006 (s 75)
7: Integrated management /provision with pooled funds	Partners pool resources, staff, and management structures. One partner acts as host to undertake the other’s functions. Includes (but is not synonymous with) ‘joint commissioning’ across health and social care.	NHS Act 2006 (s 75)
8: Structural integration	Health and social care responsibilities combined within a health body under single management. Finances and resources integrated using the Health Act flexibilities.	Care Trusts (Applications and Consultation) Regulations 2001 NHS Act 2006 (s 75)

^θ we excluded this category from the review because resources are not integrated.

Adapted from: Audit Commission 2009 [37]; Carson 2010 [48]; Department of Health, 2013 [22]; Dickinson 2013 [49].

Most of the schemes (31/38) in our review used pooled funds. Around 70% of these schemes also had integrated management and/or provision and a further 6% put in place 'lead commissioning' arrangements to manage the pooled funds ('joint commissioning' arrangements are subsumed within the 'integrated management' category [49]). Aligned budgets (which do not invoke the need for statutory measures) were used by three (8%) schemes, and two of these adopted a lead commissioning model. Three in ten of the schemes took the form of structural integration, about one-third of which pooled funding streams; one scheme used aligned budgets. Our review identified only one example of cross charging and we did not identify any evaluations of transfer payments.

However, the typology listed in Table 4 is broad: in practice, the integrated resource mechanisms were highly heterogeneous. IRMs were often adapted and tailored to the local situation and some schemes used different types of IRM in combination. The approach to integrating care that the IRM supported also varied across schemes, as did the target clientele. A further complicating factor is that most studies were not designed to investigate the 'added effect' of an IRM; with very few exceptions, we could not disentangle effects of integrated financing from integrated care. Therefore, the evidence principally addresses the question of whether an IRM plus integrated care is more beneficial and/or has lower costs or utilisation relative to 'usual care'. The way that we present the evidence is therefore as follows: we briefly summarise the evidence, explore the findings from England and then discuss international evidence where this illuminates complex issues.

Evidence on integrated resource mechanisms

Outcomes

The evaluations assessed a variety of outcomes, including measures of health-related quality of life [2-6], physical functioning [3, 5, 7-10], depression and anxiety [2, 6], morale [6], mortality [3, 10-14], and carer burden [6, 9, 11]. Satisfaction measures were also assessed [2, 6, 9, 15] and are considered below. Health outcomes were assessed in 60% the schemes (23/38) and in 13 schemes there was no evidence of a significant benefit in favour of the integrated approach. In the remaining schemes, findings were mixed (5 schemes), found health outcomes were better in the integrated scheme (n=4) or worse in the integrated scheme (n=1). All the randomised trials in our review included an assessment of health outcomes, as did six of the 13 English schemes. The most reliable type of evidence available for the English studies was quasi-experimental.

Two of the English schemes in our review reported improved health benefits. Undertaken in the mid-1980s, the Darlington Pilot was one of the earliest attempts to employ integrated funds to support older, 'mentally alert' (cognitively unimpaired) individuals with significant care needs to stay at home. Service managers held a 'virtual' devolved capitation budget equivalent to 67% of the cost of institutional care. The quasi-experimental pilot found significantly greater improvements in morale and depression in the intervention group when compared with long-stay inpatients in another district [6]. The POPP national evaluation used a variety of methods for measuring health related quality of life. Findings were mixed: there were slight improvements for those in the intervention groups, although there was variation by type of programme, with schemes aimed at the higher risk (of hospital admissions) groups showing the most improvement [4]. In all three schemes, the attribution of benefits to the integrated use of resources is uncertain – reasons for this relate to the study design and are explored in Appendix 4. Turning to evidence from outside the UK, two schemes were associated with significant improvements in health outcomes, both of which used integrated management with pooled funds: one of the Australian co-ordinated care trials; and the San Franciscan scheme known as 'On Lok'. These are described below.

In a joint venture between commonwealth, state and territory Australian governments, two rounds of co-ordinated care trials were held in the late 1990s (13 trials) and the mid-2000s (5 trials). Our

review focused on the 'mainstream' (as opposed to 'indigenous'³) trials that had pooled funds across health and social care; therefore, six 'round 1' (CCT1) trials and two 'round 2' (CCT2) trials were included in the review. The trials were intended to be cost neutral [50] and to deliver improved health and wellbeing [2]. All employed integrated management (using one of three different primary care models) with pooled funding, and health benefits were assessed by the SF-36, a quality of life tool that incorporates summary measures of physical and mental health. In six trials, the intervention did not consistently deliver better health benefits than usual care but intervention participants in one of the CCT2 trials, a randomized trial, reported better general health, less depression and better health-related quality of life [2]. In the remaining trial, a quasi-experimental study with geographical controls, there was a significantly greater deterioration in physical functioning in the intervention group [8].

'On Lok' was developed in response to a shortage of skilled nursing beds for the local community in Chinatown, San Francisco [16]. Using adult day care as the base for provision of health and social care services, On Lok utilised case management by a multi-disciplinary team. Funded by capitated Medicare and Medicaid payments, the team took financial responsibility for all acute and long term care, including primary care. A two-year quasi-experimental study found significant benefits in physical functioning for On Lok clients [7], and the scheme became a prototype for the more-widespread Program of All-Inclusive Care for the elderly (PACE). However, the health benefits achieved by PACE were ambiguous [3] and uptake of the programme was poor: in 2008, PACE enrolment equated to less than a quarter of one percent of the 9 million eligible individuals [33].

Service use and costs

In four of the 38 schemes we reviewed, there was no evidence on the impact of integration on secondary care costs or utilisation. Of the remaining 34 schemes for which there was evidence on costs and/or utilisation, 11 schemes had no significant effect on hospital costs, although this did not preclude a change in the care pathway or a substitution of services across settings. For example, both the second phase (CCT2) Australian RCTs reported a non-significant trend towards lower hospital costs in the intervention (co-ordinated care) group which was due to lower rates of hospital admission. The trialists concluded that the intervention was likely to be cost-neutral in the longer term, absorbing the care co-ordination costs [2], although this was not demonstrated within the 3 year time-frame of the study.

Three schemes found a significant reduction in utilisation or costs, and one scheme found a significantly higher rate of admissions in the intervention group [8]. Evaluations of Torbay Care Trust have consistently reported reduced secondary care utilisation, although none of the evaluations was methodologically rigorous. For instance, when Torbay was evaluated as part of the ICP pilot schemes, its performance was assessed relative to another geographical area. It is therefore not possible to be sure that all confounding factors have been accounted for and that the comparison is like-for-like [51]. In Wye Valley, annual cost savings of £440,000 (due to 1,100 bed days saved) were reported for the year 2010/11 but there was no detail available about the basis for these estimates [52] and whether funds were subsequently transferred away from the hospital setting. The final scheme for which there was evidence of reduced secondary care use was the VHA. After restructuring, the rate of hospital admissions fell, bed days were reduced and per-patient expenditure fell by 25% [53].

The remaining evidence was mixed (14/34 schemes) or unclear (5/34 schemes). An evaluation of England's cross charging policy, in which councils were fined a daily charge if they were solely responsible for a case of inpatient 'bed blocking' [37], identified that the downward trend in delayed

³ The indigenous trials targeted aboriginal and Torre Strait Islander populations, whereas the study population in the mainstream trials was mixed (including indigenous people).

discharges accelerated after the legislation's introduction [17]. We found an anecdotal report of success in reducing delayed discharges by one council that had set up a pooled fund with the local hospital to reduce hospitalizations and bed-blocking [54]. There was evidence of lower rates of delayed discharge in the Canadian model SIPA (*Système de services intégrés pour personnes âgées en perte d'autonomie*)⁴ [7, 11, 34, 55-58]. An RCT that compared SIPA's approach (integrated management and pooled funds) with usual care found no difference in overall costs, but the delivery of care in SIPA shifted away from institutional settings and into the community. This was in part driven by a 50% drop in the incidence of delayed discharges. In the Oxfordshire pooled budgets / lead commissioning model [21, 86], initial reductions in delayed transfers of care were not sustained. In Wye Valley NHS Trust, an organisation that uses Health Act flexibilities to support integrated hospital, community and social care, cost savings of almost half a million pounds and reductions in delayed discharges were reported at the end of its first year of operation [52]. The interpretation of these findings is uncertain, because they were based on an uncontrolled before-and-after comparison that neither adjusted for underlying trends, nor identified a counterfactual. It is possible that the observed changes would have happened without an intervention, especially if the study group of individuals are selected for evaluation on the basis of their above-average utilisation ('regression to the mean' – see Appendix 4) [14].

A difference-in-difference analysis of 15 of the 16 English Integrated Care Pilots (ICPs) found that integrated care was associated with significantly higher emergency admission rates, but rates of elective admissions and outpatient visits were significantly lower. There was no significant difference in the use of accident and emergency services [15]. A subgroup analysis of six ICPs that used case management to target people deemed to be at high risk of admission found the same direction of effects, but the magnitudes were greater [15], p19. However, an inspection of mortality data over the six months following the evaluation suggested that the integrated care group were 'sicker' than the matched controls, a confounding factor that could not be modelled from routinely available data [59]. Two of the ICP pilots, Cumbria PCT and Torbay, used IRMs across health and social care, but the evaluation did not attempt to isolate the effect of the funding approach.⁵ Owing to its different enrolment method, the Torbay pilot was excluded from the national evaluation, and so the authors conducted a local evaluation of Torbay's ICP [51]. When compared against a neighbouring area over a 3-year period, the rate of increase in Torbay's emergency admissions was lower, and reductions in mean length of stay for older people were larger. The evaluators concluded that Torbay had successfully reduced secondary care utilisation.

In another scheme targeting this client group, findings for an impact on resource use were mixed. Funded at a cost of £60 million, the Pilot of Partnerships for Older People Projects (POPP) employed earlier, targeted interventions within community settings to promote health, well-being, and independence and to prevent or delay the need for hospital or institutional care [14]. The national evaluation compared POPP sites using difference-in-difference with geographical controls (usual care) and found a significantly greater reduction in emergency bed days; the authors concluded that POPP was likely to be cost-effective overall. However, a more detailed analysis using a more sophisticated methodology suggested the picture was more equivocal [60]. This evaluation focused on a sub-set of eight interventions with the potential to avoid unplanned hospitalisation, and used a control group of prognostically matched individuals. The evaluation found no evidence of a reduction in emergency admissions and in some instances there were more admissions in the intervention group than in the control group.

⁴ A system of integrated care for older persons with disabilities

⁵ It is unclear whether the integrated resource mechanism was actually implemented in Cumbria [personal communication with evaluators, 06/05/13].

“Overall we found that the POPP interventions we studied did not appear to have reduced use of acute hospitals. However, there were signs that one of the interventions reduced emergency hospital admissions for a high-risk subgroup” [60] (p. 30).

This sub-group effect was found in only one of the eight interventions analysed. In this county-wide intervention, 23 integrated health and social care teams supported people with one or more long-term conditions [14, 60]. When the data were analysed for 2,500 individuals who had received the intervention, emergency admissions were significantly lower only in the small subgroup (n=179) of individuals with high predictive risk scores [60](p26). As explained in the methods section, data on the use of IRMs in individual POPP schemes was not available and so it is not possible to link the positive outcome in this particular intervention to a specific IRM.⁶

Similarly, an analysis of a S/HMO II (Social Health Maintenance Organization, wave 2) identified reduced hospital admissions for a subgroup of people with two or more hospitalizations in the previous 12 months [61] (p64). In both this case and the case of the POPP scheme evaluation [60], the inverse relationship between integrated care and hospital admission may not imply causation; rather, the findings may reflect a phenomenon known as ‘regression to the mean’ (see Appendix 4).

The impact of integration on use of institutional (residential) care was evaluated in 11 schemes. Overall, findings were ambiguous: in four schemes, there was no significant impact, and in the remaining schemes the impact was positive (1/11), negative (2/11), mixed (2/11) or unclear (2/11). Amongst the English schemes, neither Care Trusts nor pooled budgets were found to affect the probability of nursing home admission [37], and a postal survey of mental health providers suggested that cross charging had improved placements for acute inpatients at the expense of mental health inpatients [62]. In the Darlington pilot, intervention patients were significantly less likely than controls to enter residential care [6]. Evidence from outside of the UK suggested that integrated interventions did not reduce the risk of nursing home placement. In the US, short term improvements in PACE enrollees’ risk of nursing home placement were not sustained. In the Social/Health Maintenance Organizations (S/HMO) models, findings were mixed. The costs of nursing home care were significantly higher in first generation (S/HMO I) enrollees compared with the fee-for-service group; and in S/HMO II, which adopted a more targeted approach than S/HMO I, nursing home admission rates for community dwelling adults were significantly higher than for members of the traditional risk plan [7, 61] although in one site these patients were more likely to be subsequently discharged back into the community compared to fee-for-service patients [63]. In one of the first-round Australian RCTs (CareNet), intervention patients were twice as likely as controls to be admitted to a residential or nursing home [50].

Quality of care and user experience

Quality of care was measured in a variety of ways in the studies reviewed, with many focusing on the views of staff, patients and carers about their experience with the integrated care schemes, collected either via surveys, focus groups or in some cases, anecdotally. Results are mixed: the Australian trials [2] found that clients reported improved access to services and improved knowledge of health services; similarly, in the NW London pilot, some reported improved access [64]. The Audit Commission reported that user satisfaction in the Wye Valley integrated scheme was above the national average [37]. The whole-system evaluation of integrated care pilots in England [15] reported that 54% of staff involved in the schemes felt that patient care had improved, although patients reported some negative experiences such as not being able to see staff of their choice and feeling less involved in care decisions, whilst in the Somerset scheme [65] some mental health service users reported greater engagement. Higher patient satisfaction was also reported in the

⁶ Indeed, it is not clear that an IRM was used in this POPP scheme.

Darlington pilot [6, 7] and patients and carers involved in the Hertfordshire scheme [66, 67] were mainly positive. Most (75%) of the 'key informants' surveyed in the POPP schemes [4] felt that the schemes led to improvements, including better access and a broader range of services, although the single quality of life measure showed some deterioration after the interventions. In the Scottish evaluation of Integrated Resource Framework, delivery staff were less confident at the end of the study period than they had been at start that the integration agenda would improve patient care [68].

Some studies found little impact: the Somerset partnership [65] found that restructuring had not adversely affected the quality of care but was associated with short-term reductions in staff job satisfaction and morale [69]. The Minnesota Senior Health Options initiative found no substantial differences in satisfaction between comparison groups [9]; nor did the PACE programmes [3].

In terms of more objective process measures of quality, some evidence is provided of improvements such as increased numbers of care plans produced for dementia patients and greater use of testing for diabetes [64, 70-78]; the VHA scheme reported significant improvements in the quality of care relative to Medicare fee-for-service and generally outperformed Medicare and Medicaid on a range of quality measures [79, 80]. The Darlington pilot found a significantly reduced need for additional (more intensive) care and a higher level of social activities for those in the intervention group (care at home) compared with the control group of long-stay hospital patients [6]. The Commonwealth Care Alliance in the USA reported high scores for some HEDIS (national) process measures of care quality [81]. Others showed little effect e.g., the S/HMO II scheme in the USA concluded: "Quality of care was assessed by examining the provision of routine preventive care, frequency of physician visits for persons with specified chronic conditions, and rates of hospitalization for enrollees with potentially avoidable hospital conditions. Overall, there was no evidence that the quality of care provided to S/HMO II enrollees was consistently better than care received by enrollees in other Medicare HMOs or by Medicare beneficiaries using traditional Medicare fee-for-service coverage" [61].

Barriers, facilitators and unintended consequences

The large demonstration projects in the US and the Australian co-ordinated care trials invested considerable resources to investigate why their first efforts to improve outcomes and reduce costs had been unsuccessful. They identified the barriers to implementation, and adapted the models of care and financing approaches to improve their chances of success.

Perhaps the primary 'barrier' to emerge from the review was the difficulty of implementing financial integration, despite statutory and regulatory measures to support their application. This problem affected the Australian CCT2 trials, many of the English schemes (e.g. Cumbria PCT, the NW London pilot, pooled budgets arrangements), both Scottish schemes, and the Welsh joint commissioning experiment. The POPP evaluation found that translating cost reductions into an actual cost saving was usually impossible, due to difficulties in transferring funds across care boundaries. Where it was feasible, this was due to prior agreements at senior management level. Preventive based projects were expecting to be able to utilise savings from reduced emergency bed days in order to sustain their programmes in the longer term but these system wide transfers did not materialise [4].

The Australian CCT1 succeeded in achieving pooled funds, but the system lacked the qualities needed to operationalise co-ordinated care, primarily because market mechanisms failed to take account of underlying incentive structures and social processes [82]. Funds were costly to pool, but failed to break down service boundaries (p226) or give purchasers control over clients' service use (p 225) [85]. In other words, purchasing power was weak and purchasers were unable to facilitate tailored, timely care. The reasons for this were complex, but provider autonomy was an important

factor. For example, some services identified in the care plan were accessible only if clients met pre-existing eligibility criteria [13]; providers decided who was eligible to access services, and so care plans could not be used to authorise purchase of services from the pooled funds [82]. The difficulty of challenging provider autonomy was also evident the SIPA model (Canada), PACE and the Wisconsin Partnership Program (US), the Integrated Health & Social Services Boards (Northern Ireland) and Torbay (England).

Difficulties in the purchaser-provider relationship were also identified in the S/HMO I evaluation. The demonstration failed to integrate acute and long-term care because relations between S/HMO care coordinators (typically social workers) and physicians were 'poorly developed' [61]. For this reason, the second generation S/HMO models adopted 'stronger geriatric approaches' that sought to engage physicians directly in care coordination. Physician engagement was also a problem reported in Torbay [51] and in the Australian trials, where some GPs found the care planning bureaucratic, burdensome, and of questionable value – particularly for clients with lower level care needs [8](ch 14). Even within the integrated care team itself, relationship difficulties arose. Non-GP care coordinators reported communication difficulties with GPs and resented the fact that they received a lower reimbursement rate than GPs for care planning [8].

Some issues, however, appear to be relevant primarily for the UK. Differences in performance frameworks, priorities and governance were highlighted in many of the UK schemes included in our review, although these factors were also identified as barriers to integration in Swedish schemes. A good example from England is Care Trusts, where practical difficulties to integration may arise if staff members work under different pay, pension schemes or human resources support. As Care Trusts have an NHS governance and performance management framework, local government may therefore perceive Care Trusts as a 'health takeover' that undermines local accountability:

"Statutory responsibilities and accountabilities of individual organisations .. are not removed by entering into arrangements for integrated governance, whether of the care trust form or other kinds of partnership" [83].

With regard to linking different IT systems, this problem appeared to be generic and was reported by schemes in Australia, England and the US.

One important agency relationship is between the client and the provider. Self-management was found to be critical to successful care coordination in the Australian CCT1 trials, emphasizing the importance of patient education [84]. Therefore, demand side factors, as well as supply side changes, need to be considered [85]. It is not clear how many of the schemes in our review assessed whether there were difficulties engaging clients, or whether individual-level factors such as treatment adherence contributed to findings. However, recruitment difficulties were reported in both Australian CCTs, PRISMA (Canada), S/HMO II (US) and PACE (US), which suggests it may be challenging to engage eligible individuals. It is also plausible that the integrated schemes have been developed without user involvement, and that they are therefore failing to address users' preferred models of care. For instance, adult day care is a key feature of integrated management in the PACE scheme and some clients find this model unappealing [16]. Therefore, there is an implicit 'selection bias' operating with the scheme itself.

Unintended consequences of the schemes were not systematically reported, but several emerged from the review. Evaluations of PACE found evidence of 'cream skimming', with some schemes excluding those with psychiatric disorders or substance abuse problems [16]. The S/HMO I evaluations found that clients deemed to be 'nursing home certifiable' were less frail and complex than expected – which may have been due to the higher fee this paid for this client group

(incentivising ‘upcoding’). In the evaluation of cross-charging in England, there was anecdotal evidence that the scheme led to poor outcomes for patients in terms of “overly hasty” discharge and increased risk of readmission [17]. In the Australian CCT1 trials, over half of GPs thought clients outside of the trial were adversely affected in terms of their access to services [8].

Discussion

The analytical framework we considered earlier suggested a range of potential impacts arising from IRMs, as listed in Table 1. From the large volume of literature on integrated care, we identified 38 schemes that involved at least some element of integrated resources for health and social care and had been subject to an evaluation of some type. Assessing the implications of the evaluations was hindered by the fact that some evaluations covered a large number of different schemes that varied in the degree to which they involved the integration of resources and thus results applied at a general level, rather than specifically to schemes with IRMs. In addition, as IRMs are not implemented in isolation of other features of integrated care, the impacts reported in evaluations cannot be attributed solely to the IRM element: we have no way of knowing how a scheme with an IRM compares to the same scheme without an IRM element. Only one evaluation attempted to compare integrated care with an IRM to integrated care without one (Minnesota Senior Health Options (MSHO)). The study “failed to show any remarkable benefits from the merging of payments from Medicare and Medicaid... [there was] little evidence that shifting this care to a consolidated funding approach managed through a series of health insurance plans with the addition of care coordination has produced improvements in outcomes” [9].

The evidence we have reviewed is mixed so it is not possible to answer definitively the question posed - “are IRMs effective and cost-effective?”. Overall, the impact on health outcomes seems neutral or, at best, modest, although unlikely to be negative; the impact on costs seems similarly modest or neutral, although higher, as well as lower hospital use (emergency care especially) amongst the intervention group has been reported. The latter may be due to the case finding effect associated with other aspects of the integrated care schemes or to a lack of comparability between groups, despite attempts at matching. Although costs savings are equivocal, there was some evidence of changes in the care pathway with some substitution of non-hospital care. As described earlier, the schemes varied in terms of the patient or client group selected and the type of services available for clients to access. It is possible that the impact on health related outcomes may in principle be more limited for some groups and schemes and instead we might expect access to services and the “softer” measures of satisfaction and quality to be affected instead. The evidence on such measures was largely positive with some exceptions mainly related to clients not feeling involved in decisions or their inability to choose which health professionals they see.

We started from the premise that, from an economic perspective, IRMs could potentially be a useful mechanism to achieve many of the benefits expected from integrated care. The evidence does not support this premise definitively. Ironically, although the integration of finances should in principle be a major facilitator for supporting integrated care, the practical, cultural and technical difficulties involved in achieving it, also appears to be a major barrier for many of the schemes. It is possible that some of the more negative results arise because of difficulties in operationalising the IRM, rather than in the principle of IRMs per se. However, the evidence does not allow us to draw more definitive conclusions than this and suggests caution in assuming that integrating resources, even if difficult to achieve, will be a panacea if only it can be achieved.

Compared with ‘usual care’, schemes that integrated funds and resources to support integrated care seldom led to improved health outcomes, and no scheme demonstrated a sustained and long term reduction in hospital use. The case for integrated funding has therefore not yet been demonstrated, but this does not mean that it cannot succeed or that policy makers should disregard this approach.

Table 5: The evidence on the impacts of integrated care

Potential Impact	Comment	What does evidence show?
Improve access to care	The integrated care team knows which additional services the user needs – the levels of Hd ₁ and Sd ₁ – to maintain or improve his health status. They also know how to access these services and can advise on or facilitate his access to services.	Evidence is largely positive. However, provider autonomy and higher level policies on eligibility can jeopardise the team's ability to facilitate access.
Reduce unplanned admissions and readmissions	If additional discretionary care is given early enough in the disease pathway, this maintains the individual's health status above level 4 so that he does not need to be hospitalized.	Evidence is positive for some groups; but negative in others (ie, increased admissions). There are very few longer term studies, and none that demonstrates a sustained reduction in unplanned admissions.
Increase community care (health and social care)	To avoid admission to hospital or an institution, the individual needs more care than he is currently receiving from care package 0. Thus, preventative community health and social care may be required. Although the model does not show this, elective hospital care may also help reduce the risk of avoidable unplanned admissions.	Evidence is positive to some degree for community services; and not clear for institutional care In reality, the quality and type of care package needs to be tailored for the individual and early intervention may be infeasible if additional start-up funds are not available.
Reduce total costs	Higher costs at time 1, caused by the utilization of Hd ₁ and Sd ₁ , may reduce total costs in time 2 if subsequent hospital and residential care use is reduced or averted.	Neutral largely. No longer-term evidence that total costs can be reduced, although some shorter-term evidence suggested this may be possible if efforts are sustained (Australian CCT2).
Improve outcomes	Better resourced packages of care such as packages 1 and 2 can maintain or even improve health status.	Neutral or positive. If clients' health is degenerating, schemes may help to slow the rate of deterioration, rather than improve health. This underscores the need for careful evaluation.
Improve the quality of care	The quality of care services is static in this model. However, earlier intervention could be conceived as better quality care <i>per se</i> .	Few studies measured the quality of care, and they employed different measures of quality, with mixed results. As quality skimming is a potential unintended consequence of capitation budgets, it is important that this risk is appropriately monitored in new schemes.
Reduce length of stay	The team can ensure that appropriate levels of discretionary social care (Sd ₃) services are available to support timely discharge.	There was evidence that cross charging and pooled funding could reduce delayed discharges in the short term – though these were not sustained in the longer term. Measures that penalise emergency readmissions may help mitigate incentives to inappropriately early discharges.
Reduce residential care	Higher use of community services (Hd ₁ and Sd ₁) may delay or remove the individual's need for long term residential care.	Equivocal: relatively few studies assessed this outcome, and findings were very mixed. In two schemes, those receiving integrated care were more likely to be admitted to a nursing home.
Improve patient and user experience of care	Intervention to reduce avoidable morbidity may improve the individual's experience of care. However, this depends how patients/users are involved in care decisions, and delivery process. Aggressive interventions to avert hospitalisation for individuals who are frail and vulnerable may be inappropriate.	Positive largely although some negatives. There was no standardised measurement across schemes. Measuring the process of care and user /carer experience provides important information about the quality of care.

Integrating care for people with health and social care needs is a highly complex task, subject to decisions and actions made by numerous agents who typically operate under different and evolving systems of incentives, frameworks, priorities and governance. The system shapes agents behaviour, but agent behaviour also shapes the system, and this iterative process makes the impact of integrated funding difficult to predict. Integrating funds across health and social care services is not a panacea that will reliably resolve the practical and policy challenges of providing integrated care, as success is contingent upon many factors – but this does not mean that success is an unattainable ‘Holy Grail’, but only that expectations should be realistic.

If integrated funds are to be the model for the future, attention needs to focus on how they can be facilitated and it will be important not to underestimate the efforts required to forge and to maintain the relationships that underpin the financial mechanisms. Uptake of the financial flexibilities in England has been low, which may indicate that cultural and governance differences cannot be ignored or resolved by financial incentives. Even if these differences are resolved at management level, provider autonomy remains a barrier to access for some healthcare services.

Case finding means that overall system costs may increase even if the intervention is cost-effective. Moreover, if schemes improve co-ordination and focus greater attention on patient needs, there is a good chance that co-ordinated care “reveals rather than resolves” unmet need [84, 85]. Overall, although this may be a beneficial outcome for society, it may increase, rather than reduce, costs.

The greatest potential for cost savings is for high risk clients, that is where the client group is most at risk of expensive hospital care and this is borne out by the evidence (e.g. POPP schemes at tertiary level) – though this may be due to regression to the mean. The translation of cost reductions into actual cost savings is not easy – IRMs should facilitate this but there are still obstacles. For example, if bed days are reduced, the cash savings will not be released for community and social care unless beds are not filled by others. The more ambitious claims for integrated care, such as shifting care and resources from hospital into community indeed appear to remain ambitions, rather than achievements.

In England, new schemes were often introduced in the context of a raft of existing and evolving policy initiatives, which makes the evaluation of their effects methodologically challenging. For this reason, new schemes need to be rolled out cautiously and their evaluation should strive to incorporate appropriate controls. Evaluations should seek to consistently measure a range of effects and costs, including the routine assessment of unintended consequences and barriers to implementation, and patient-reported measures of outcomes (PROMs) and experience (PREMs). Some of the existing measures used in the NHS Outcomes Framework may be useful if data are analysed at the appropriate level.

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Appendix 1: Search strategy for electronic databases

Searches were originally run in October 2009. These were updated in July 2012, searching on all publication years, and deduplicating against the original endnote library. A second update was carried out in February 2013 searching 1999 onwards, and deduplicating against the previous endnote library.

- 1 pooled budget\$.ti,ab.
- 2 total budget\$.ti,ab.
- 3 single budget.ti,ab.
- 4 total budget\$.ti,ab.
- 5 lead commission\$.ti,ab.
- 6 lead contract\$.ti,ab.
- 7 (integrat\$ and (activity adj2 funding)).ti,ab.
- 8 (integrat\$ and (activity adj2 finance\$)).ti,ab.
- 9 ((integrat\$ and activity) adj2 payment\$).ti,ab.
- 10 (integrat\$ and capitation payment\$).ti,ab.
- 11 (integrat\$ and (case adj2 payment\$)).ti,ab.
- 12 (integrat\$ adj2 (commissioning or financ\$ or budget\$ or funding or reimburse\$ or payment\$)).ti,ab.
- 13 (join\$ adj2 (commissioning or financ\$ or budget\$ or funding or reimburse\$ or payment\$)).ti,ab.
- 14 (shared adj2 (commissioning or financ\$ or budget\$ or funding or reimburse\$ or payment\$)).ti,ab.
- 15 (unified adj2 (commissioning or financ\$ or budget\$ or funding or reimburse\$ or payment\$)).ti,ab.
- 16 (whole system\$ adj2 (commissioning or financ\$ or budget\$ or funding or reimburse\$ or payment\$)).ti,ab.
- 17 (partner\$ adj2 (commissioning or financ\$ or budget\$ or funding or reimburse\$ or payment\$)).ti,ab.
- 18 ((chains adj2 care) and (commissioning or financ\$ or budget\$ or funding or reimburse\$ or payment\$)).ti,ab.
- 19 ((care adj2 package\$) and (commissioning or financ\$ or budget\$ or funding or reimburse\$ or payment\$)).ti,ab.
- 20 or/1-19
- 21 shmo\$.mp.
- 22 social health maintenance organi?ation\$.ti,ab.
- 23 social HMO\$.mp.
- 24 (social adj2 health adj2 maintenance organi?ation\$).ti,ab.
- 25 (health adj2 social care partnership\$).ti,ab.
- 26 21 or 22 or 23 or 24 or 25
- 27 delivery of health care, integrated/
- 28 (commissioning or financ\$ or budget\$ or funding or reimburse\$ or payment\$).ti.
- 29 27 and 28
- 30 20 or 26 or 29
- 31 asia/ or africa/ or south america/
- 32 30 not 31
- 33 limit 32 to english language

Appendix 2: Schemes included in the review

Country	Name of IRM Sources	Category of IRM	Description	Study design Evaluation duration N	Key findings
Australia	<p><i>Coordinated Care Trials: round 1 (CCT1)</i> [2, 8, 57, 85, 86]</p> <p>See also:</p> <ul style="list-style-type: none"> CareNet (Illawarra New South Wales) North Eastern Health Care Network (Victoria) Care 21 (South Australia) Hornsby Linked Care (New South Wales) CareWorks (Southern Region of Tasmania) CarePlus (ACT: Australian Capital Territory) 	Integrated management / provision with pooled funds	<p><u>Overview:</u> Joint venture between commonwealth, state and territory governments. Total cost for mainstream trials: AUS \$120m (\$11k pr client) (ch 2). CCT 1 ran from 1997 to 1999, included 13 trials. 4 were targeted at Indigenous populations and 9 at 'mainstream' populations (N=16,538)(ch 8)</p> <p><u>Aims</u> The trials were intended to be cost neutral [50] and to deliver improved health and wellbeing [2]</p> <p><u>Clients:</u> Addressed health and social care for people with chronic and complex needs; client group varied across the trials.</p> <p><u>Integration model:</u> All trials included comprehensive client assessment; a care plan; service integration. Trials adopted one of 3 models (or devised a hybrid) (ch13): Model 1: GP care coordinator model - in which the GP was solely responsible for all aspects of the care coordination process Model 2: GP care coordinator plus service coordinator model - in which aspects of the care coordination process were varyingly shared between the two Model 3: non-GP care coordinator model - in which the GP's contribution to the medical aspects of care planning and ongoing medical management of clients was an integral</p>	<p>The 'trials' were "innovative approaches to the funding and delivery". The intervention groups were 'coordinated care'; the control groups were 'usual care', but this was poorly defined.</p> <p>Health assessed by SF-36 (a quality of life measure that assesses physical and mental health; higher scores indicate better health).</p> <p>Trial duration was intended to be 2 years, but ranged from 761 to 944 days (although 'treatment' was typically 12 months or less); 3 trials were randomised, one area ran 4 subtrials (2 RCTs), the others used geographical controls.</p>	<p><u>Effectiveness</u> In general, the intervention did not consistently deliver better health benefits than usual care (assessed by the SF-36 [50]). Individual trials identified significant differences in various components of the SF-36, but as multiple comparisons were made, some significant results may have been due to chance.</p> <p><u>Service use and costs</u> Overall, intervention groups did not consistently reduce hospital admissions, readmissions or length of stay. However, "significant reductions in hospitalisations" were achieved in 3 of the 9 mainstream trials ([2]; app C, p16). Trials developed funding models of far greater flexibility than existed elsewhere in the Australian health care system. Nonetheless, the anticipated reductions in Medicare, pharmaceutical and hospital services that were intended to cover the costs of care coordination were not apparent, although community service use increased [8](ch 2). The additional costs of care coordination were not covered by the efficiency gains of the care coordination process, including flexible uses of funds. Strategies for effective service substitution and financial management of the pooled funds (i.e. defining the benefit basket) were underdeveloped ([2]; app C, p.17). Subgroup analysis suggested that cost savings were more likely to be achieved in patients with prior hospital admission [84].</p> <p><u>Barriers</u> "The system had some key features of a coordinated care model but none of the qualities that were needed to operationalise them." [82] Primary and secondary care doctors were 'private' and funded by fee for service (FFS) [13], which reinforced a reactive rather than a planned model of care [84]. GPs were therefore reluctant to refer</p>

Country	Name of IRM Sources	Category of IRM	Description	Study design Evaluation duration N	Key findings
			<p>component of care coordination.</p> <p><u>IRM:</u> All trials received infrastructure funding and pooled funding. Trial budgets funded by health and social government programmes, and all trials pooled funds for Medicare (MBS), drug (PBS) and hospital inpatient services (ch 2). Three trials did not receive pooled social care (HACC) funds (SA Healthplus; SHCN; TeamCare) – these are excluded from the key findings summary.</p>		<p>patients to alternative care providers (community nurses, pharmacists), as this could affect their business once the trial concluded. GPs were solely responsible for service substitution, but had no control over admissions or discharges, which are under the authority of specialists. GPs did not receive information on pooled expenditure and were not liable for overspend [82].</p> <p>Some services identified in the written care plan were accessible only if clients met pre-existing eligibility criteria [13]; care plans could not be used to authorise purchase of services from the pooled funds, so money did not follow the patient [82]. Pooled funds incurred substantial administrative costs, but failed to break down service boundaries (p226) or give purchasers control over clients' service use (p 225) [85].</p> <p><u>Other benefits</u> The indigenous trials uncovered high levels of unmet need, necessitating additional funding. The trials improved access to appropriate services and built capacity. Increased use of preventative care (e.g. smoking cessation); better technological infrastructure; participant satisfaction good [87].</p> <p><u>Limitations of the study</u> The design of the RCT did not recognise that patients were clustered within practices, which increased the chance of a false positive result (type I error). Nonetheless, outcomes were generally 'disappointing' [87]. Timescale: on average, participants were 'treated' for 12 months or less, which may not have been sufficient to impact complex illness. The SF-36 may not be sensitive enough for this short time span [87]. Eligibility criteria were relaxed in response to recruitment difficulties, and some participants would have had less capacity to benefit than the target population. Interventions were not always tailored to need (one size fits all) [87].</p>

Australia	From CCT1 <i>CareNet (Illawarra New South Wales)</i> [8, 34, 50]	Integrated management / provision with pooled funds	<u>Clients:</u> Co-ordinated care for frail people aged 65+ (45+ if Aboriginal) with multiple service (medical and social) needs, or at high risk of falling (appendix g) <u>Integration model:</u> Model 3 – The non-GP care coordination approach. Care-coordinators employed to work alongside GP in developing care plan, then act as agent to negotiate service provision for the client. (ch13) <u>IRM:</u> MBS, PBS, Hospital inpatient, DVA, HACC, Community Nursing A\$11.8m	RCT (2:1) 883 days (Aug 97 – Dec 99) (live phase) 1310 / 678	<u>Effectiveness</u> SF-36: no significant differences between intervention and control groups. <u>Service use & costs</u> Higher pharmaceutical costs for the intervention group. There was no significant difference in the admission rate, risk of admission or LoS between the groups. Intervention group twice as likely to be admitted to a residential or nursing home [50]. <u>Barriers</u> Clients were healthier than comparable service users. Pooled funds did not lead to more flexible delivery; providers continued to prioritise high need individuals and were unwilling to accept the care co-ordinators' assessments [50]. <u>Other</u> The validity of the randomisation is unclear, as GPs treated patients in both groups, so clinical care for controls may have been 'contaminated' [50].
Australia	From CCT1 <i>North Eastern Health Care Network (Victoria)</i> [8] Also CCT2 trial (CHC)	Integrated management / provision with pooled funds	<u>Clients:</u> Individuals with complex care needs: multiple medical conditions, dependent on others, and may have psychosocial conditions (e.g. Alzheimer's Disease and other dementias, stroke, Parkinson's Disease, severe arthritis, chronic obstructive pulmonary disease and heart failure). The client group also includes older people with poor health who are at risk of frequent hospitalisation. <u>Integration model:</u> Model 2 – The GP Care Coordinator with Service Coordinator approach <u>IRM:</u> MBS, PBS, Hospital inpatient and outpatient, DVA, RDNS, HACC; A\$5m	RCT (1:1) 761 days (Dec 97 – Dec 99) (live phase) 526 / 530	<u>Effectiveness</u> SF-36: no significant differences between intervention and control groups. <u>Service use & costs</u> There was no significant difference in the admission rate, risk of admission or LoS between the groups. <u>Barriers</u> Lack of specificity in eligibility criteria was a challenge to identify the relevant population [8](ch 9). The trial subsequently drafted a list of eligible diagnoses (see <i>clients</i>) and exclusions (DVA clients participating in the 'DVA preventative care trial' and DVA clients who were receiving renal dialysis and had a DVA annual health care plan). Recruitment was below target, and the trial ceased to rely solely on GPs for recruitment [8](ch 9).
Australia	From CCT1 <i>Care 21 (South Australia)</i> [8]	Integrated management / provision with pooled funds	<u>Clients:</u> Older (65+, or 55+ if Aboriginal) people with complex medical conditions and/or are multiple users of HACC funded services available in the catchment area. Excludes those in permanent nursing home or hostel care. Distinguished care planning and	Geographical controls 852 days (Sept 97 – Dec 99) (live phase) 609/174	<u>Effectiveness</u> SF-36: significant decrease (worsening) in physical component scale for intervention group relative to control. This was due to a greater deterioration in the physical functioning of the intervention group. <u>Service use & costs</u> There was no significant difference in the admission rate, but LoS was significantly longer in the

			<p>service coordination.</p> <p><u>Integration model:</u> Model 3 – The non GP care coordination approach. Care planner developed plan with GP; plan then passed to service coordinator for implementation (ch 13).</p> <p><u>IRM:</u> Funds pooled from the South Australian Health Commission, HACC, MBS, and PBS. Funds from hospital services contributed to the Trial pool on the basis of resources linked to specific diagnosis groups relevant to frail older clients. MBS, PBS, Hospital inpatient (notional only), DVA, HACC, RDNS; A\$5.5m</p>		<p>intervention group.</p> <p><u>Barriers</u> Recruitment fell short of targeted levels, with less than half the anticipated number of control group clients. GP referrals only started to come in significant numbers towards the end of the recruitment period, and some who were eligible could not join the trial because their GP was not participating. The trial separated the organisation of client care into planning and supervision that were the responsibility of care planners, and monitoring and maintenance which were the responsibility of service coordinators. GPs liked this arrangement, but preferred to have a single service coordinator managing all their trial patients [8](ch 14).</p>
Australia	From CCT1 <i>Hornsby Linked Care (New South Wales)</i> [8]	Integrated management / provision with pooled funds	<p><u>Clients:</u> People with complex care: includes older people, people with disabilities, and people with complex medical needs or relatively high need of support to undertake independent activities of daily living. Clients have a high level of utilisation of specified community and health services with the likelihood that their need for these services will continue.</p> <p><u>Integration model:</u> Hybrid model of care coordination (Model 1 and Model 3). This included Care coordinator (GP and non GPs) and GP (if not a care coordinator) and Super Care Coordinator (full-time non GPs).</p> <p><u>IRM:</u> Pooled MBS, PBS, Hospital inpatient/outpatient, DVA, HACC, RDNS and private health insurance; A\$11.5m</p>	Geographical controls (“similar profile”) 852 days (Sept 97 – Dec 99) (live phase) 1150 / 425	<p><u>Effectiveness</u> SF-36: no significant differences between intervention and control groups.</p> <p><u>Service use & costs</u> The admission rate was significantly higher in the intervention group than in the controls.</p> <p><u>Barriers</u> The trial suffered high attrition rates (45% over the study period) [8](ch 9). Some GPs found the care planning bureaucratic, burdensome, and of questionable value – particularly for clients with lower level care needs [8](ch 14). Over half of GPs thought access to services was negatively impacted for clients outside of the trial (ch 14). Non-GP care coordinators reported communication difficulties with GPs and resented their lower reimbursement rate for care planning.</p>
Australia	From CCT1 <i>CareWorks (Southern Region of Tasmania)</i> [8]	Integrated management / provision with pooled funds	<p><u>Clients:</u> Frail older people with complex and long term care needs: people aged 65 or over (55 for aboriginal individuals) with chronic medical condition requiring ongoing medical treatment;</p>	Geographical controls 852 days (Sept 97 – Dec 99) (live phase) 819 / 372	<p><u>Effectiveness</u> SF-36: no significant differences between intervention and control groups.</p> <p><u>Service use & costs</u> There was no significant difference between the groups in the admission rate, risk of admission or</p>

			<p>and/or at least one admission to an Acute facility or Department of Emergency Medicine presentation in the past 12 months; and/or regularly using at least 2 HACC services; and/or have been referred to Community Options or Aged Care Assessment Team, or may be at risk because of dementia, falls, poor mobility, incontinence, social isolation, or carer stress.</p> <p><u>Integration model:</u> Model 3 – The non GP care coordination approach</p> <p><u>IRM:</u> MBS, PBS, Hospital inpatient and outpatient, DVA, HACC; Private Health Funds; Private Hospital A\$9.4m</p>		<p>LoS.</p> <p><u>Barriers</u> Most care coordinators were unfamiliar with the service brokerage component of their role and found this challenging. They were also confused about the need for data collection and found the electronic data entry system time consuming and onerous [8](ch 14).</p>
Australia	<p>From CCT1 <i>CarePlus (ACT: Australian Capital Territory)</i> [8, 82, 84]</p>	<p>Integrated management / provision with pooled funds</p>	<p><u>Clients:</u> People of any age with complex or chronic illness</p> <p><u>Integration model:</u> Model 1 – The GP approach</p> <p><u>IRM:</u> MBS, PBS, Hospital inpatient, HACC , non-governmental organisation funds, community health A\$6.8m</p>	<p>RCT (3:2) 852 (Sept 97 – Dec 99) (live phase) 754 / 517</p>	<p><u>Effectiveness</u> SF-36: no significant differences between intervention and control groups.</p> <p><u>Service use & costs</u> There was no significant difference in the admission rate, or risk of admission between the groups, but LoS was significantly shorter in the intervention group.</p> <p><u>Barriers</u> The purchasers were GPs, who were solely responsible for service substitution. However, they had no financial liability for the pooled funds, received no information on pooled expenditure, and had almost no control over hospitalisation (specialists responsible for admissions /discharges). Money did not follow the client; GPs did not consult other providers in the care plans. Incentives for providers were weak, with pharmacy and community nursing being the ‘most responsive’ though GPs rarely referred clients to them [82]. GPs are paid on FFS basis [84], so have little incentive to refer patients to alternative primary care providers.</p> <p><u>Other:</u> Data linkage facilitated, but there were confidentiality concerns when attempting to generate cross-sectoral care records [82]</p>

Australia	<p><i>Coordinated Care Trials: round 2 (CCT2) [2]</i> See also:</p> <ul style="list-style-type: none"> Coordinated Health Care (CHC) Team Care Health II (TCHII) (Queensland) 	Integrated management / provision with pooled funds	<p><u>Overview</u> CCT2 ran from 2005 to 2007 and comprised 5 ‘trials’, targeted at Indigenous (n=3) and mainstream populations (n=2). Joint venture between commonwealth (primary care), state (hospital care) and territory governments. A\$33.2m (S2, p11) <u>Aims:</u> Tested different approaches for enhancing primary care, improving access, enhancing integration and improving health and well being. <u>Clients:</u> People with chronic and complex care needs. Mainstream trials were randomised and targeted older people. The indigenous trials targeted younger people (e.g. 16 to 45 for PAC) <u>Integration model:</u> All trials included comprehensive client assessment; a care plan; service integration. <u>IRM:</u> ‘Risk-based capitation model’ was created at the end of CCT1 to support a more rigorous and generic fund-pooling approach in CCT2. Capitation model designed to represent the cost of usual care for this client group [2] (p18, pp46 ff). Social support / HACC services were provided, but unclear whether these were paid for from the pooled funds (T188; T264).</p>	<p>2 mainstream trials were RCTs, and both had been CCT1 trials (p. 50). 1. Team Care Health II (TCHII) (p69) 2. Coordinated Health Care (CHC) (p73) Indigenous trials were not randomised. Two were whole population studies (Sunrise Health Service SHS; Partnership for Aboriginal Care, PAC), SWAMSAC (South West Aboriginal Medical Service Aboriginal Corporation) recruited from a GP catchment area. Compared with ‘usual care’. Trial duration: 3 years [87] <u>Outcomes:</u> SF-1, Geriatric Depression scale, EQ-5D. Self reported outcomes from focus groups. Selected as more sensitive instruments than SF-36 [87].</p>	<p><u>Effectiveness</u> Self reported improvements in health and wellbeing were supported by health outcome assessments only in one of the two mainstream trials (TCHII). In all trials, clients reported that access to services had improved. <u>Service use & costs</u> There was a greater degree of service substitution (more primary care, less inpatient use) for the intervention groups compared with controls. No trial absorbed the costs of care coordination, although trend analysis indicated that this was a possible long-term outcome. (s2, p13) Intervention group costs were significantly higher than control group costs when clients were frail and elderly, partly because of the costs of care coordination. <u>Barriers</u> Co-working of GPs and trained health staff (nurses) was critical to successful care coordination, but recruitment difficulties and excessive workloads for nursing staff were common. Electronic communication, networking and data flows were not fully achieved. Poor management and poor systems did not self-correct, and extra measures were needed to address these (particularly for the indigenous trials). <u>Other:</u> While flexible funding arrangements were pursued by all trials neither of the mainstream trials achieved a true pooling of funds (s2, p18). Service utilisation could not be monitored against the pooled funds (s2, p17).</p>
Australia	<p>From CCT2 Coordinated Health Care (CHC) [2] Link to CCT1: CHC was also a CCT1 trial, managed by the North Eastern Health Care Network (s2, p17).</p>	Integrated management / provision with pooled funds	<p><u>Clients:</u> Older or frail people with chronic and complex needs and younger people with chronic conditions. (S4, p43) The target group for CHC was older and sicker than the TCHII trial (S5, p121) <u>Integration model:</u> Model 2 – The GP Care Coordinator</p>	<p>RCT (2:1) 15 months 1108 / 417 <u>Existing healthcare system</u> Urban setting. Well developed health care system with other large scale co-ordinated care initiatives ongoing.(S4, p43)</p>	<p><u>Effectiveness (health outcomes)</u> Control group patients reported significantly higher HRQoL at baseline. There were no significant differences between the mean scores for general health for the intervention and control groups at either the baseline or six-month measurement points, and no changes for either group over time. The trial reported positive participant outcomes in terms of access to services and level of knowledge of</p>

			<p>with Service Coordinator approach (nurses). Home based assessment, multidisciplinary care planning, service coordination.</p> <p><u>IRM:</u> Funds pool: CHC had the 'purest' approach to fund pooling of all the trials, through cash-outs from all major funders/service providers. \$14.4m pooled from inpatient (\$5.9m, only partly pooled), primary care (MBS/PBS – \$6.3m) and community care (\$2.1m). (s5, p126) . The intention was also to include pooled funds from HACC (s6, p136); it is not clear whether this actually happened. Per capita annual spend: A\$12,196</p>		<p>the health system.</p> <p><u>Service use & costs</u> The trial did not achieve service substitution and reduction in inpatient costs at a sufficient level to absorb the costs of care coordination. (p27-8) Before taking coordination costs into account (A\$1,433 annual per capita cost), per capita costs were very similar between the groups (s5, p125). Towards the end of the trial, there was a trend towards service substitution, with inpatient services falling relative to the control group, particularly with respect to avoidable hospital admissions. (s5, p130).</p> <p><u>Barriers</u> The trial successfully overcame early stakeholder relationship and management issues. Perhaps because of these early difficulties the trial struggled to reach even reduced recruitment targets; coupled with the short time frame of the trials, the study was probably under powered to detect a meaningful difference in outcomes. Nevertheless, by end trial CHC was recognised as a desirable model for inclusion in the overall Victorian DHS planning care coordination process. Although intervention participants reported better access, education and knowledge of the care system, they seemed unaware of the care planning process. (s.5 p128) "In the case of the community care pool, final agreement could not be reached between providers and the CHC trial." (s6, p132) However, some funds were pooled across health and social care (s2, p549-550).</p>
Australia	From CCT2 <i>Team Care Health II (TCHII)</i> CCT1: TeamCare Brisbane, Queensland [2]	Integrated management / provision with pooled funds	<p><u>Clients:</u> People (50+) with chronic and complex conditions, including CVD, musculoskeletal, endocrine or metabolic, psychological and respiratory problems. (s4, p39) Clients were in the early course of their condition. (s.4 p 43) <u>Integration model:</u> Model 2 – The GP Care Coordinator with Service Coordinator approach (community nurses linked to practice). GP assessment, multidisciplinary care planning, service coordination.</p>	<p>RCT (2:1) 2 years 1774 / 946 <u>Existing healthcare system</u> Urban setting. Inner regions healthcare system well resourced; outer region less well resourced (S4, p43)</p>	<p><u>Effectiveness (health outcomes)</u> At 12 months: significant difference between the intervention and control groups, with intervention participants reporting better general health, less depression and better HRQoL. (S5, p99). <u>Service use & costs</u> Total cost of service provision rose at a higher rate for the control group than the intervention group – an initial increase following entry to the trial followed by a flattening and perhaps a reduction at later periods. Intervention participants received more MBS services and less inpatient services during the trial compared with controls. However, total per capita</p>

			<p><u>IRM:</u> Funds pool: the main sources of funds were DHA's 'cashed out' MBS and PBS contributions amounting to \$10.0m, Queensland Health's in-kind contribution of \$9.2m for inpatient services, and a range of contributions to HACC services and expected substitution of inpatient services. TCHII also received \$2.6m for care coordination set-up and activities. The total ongoing coordinated care fund pool was \$21.5m (s5, p105); Per capita annual spend: A\$8,333</p>		<p>costs were higher for the intervention group, after taking the costs of care co-ordination (A\$557 annually per capita) into account. (s5, p105) (s6, p136) Trial achieved service substitution between inpatient care and community care. "Had the trial progressed for longer, evidence suggests that it would have been at least cost neutral in achieving these outcomes, even after incorporating the cost of care coordination." (s5, p109) <u>Barriers</u> Focus groups found that participants perceived funding and session caps, and were concerned that personal financial resources were needed to continue services post-trial. (s5, p96). Overall, GPs agreed that unless the financial reimbursement system was simplified, care planning would not be as successful as it had been in the trial. GPs held the view that, without the extensive support of Service Coordinators in clarifying the complex administrative process, care planning would be unlikely to occur in future (s2, p390)</p>
Canada	<p><i>PRISMA, Programme of Research to Integrate Services for the Maintenance of Autonomy</i> [10, 31, 34, 57, 88-90]</p>	<p>Integrated management / provision with pooled funds⁷</p>	<p><u>Clients:</u> Frail people aged 65+ with moderate to severe impairment <u>Integration model:</u> Coordination of health and social care Single point of entry, regardless of provider. Case manager responsible for assessment, individual service plan, commissioning, follow up and reporting. Computerised clinical chart for sharing client information on the Quebec health and social services intranet [89]. PRISMA subsequently rolled out across Quebec [90]. <u>IRM:</u> Quebec's health and social services were integrated [89], but "no new financing mechanisms" for PRISMA [34]. Budgets negotiated between partner organisations [31, 34]: a joint</p>	<p>Quasi-experimental study 4 years 728 / 773 Three experimental regions compared with three control regions in Quebec, matched on demographics and 'health indicators' [10, 89]. As part of Quebec, the comparator regions' health and social care systems were integrated and managed by the same ministry and regional authorities. The PRISMA intervention was partially implemented in these regions. Participants randomly selected from each region, aged 75+, and "at risk of functional decline" [10]. People institutionalised in long-term care were excluded.</p>	<p><u>Effectiveness (health outcomes)</u> No significant between-group difference in mortality or in institutionalisation. In the last two years of the study (when implementation of PRISMA was at least 70%), the <i>prevalence</i> of functional decline was significantly lower in the intervention group. In the final year only, the <i>incidence</i> of functional decline was significantly lower in the intervention group. [34] <u>Service use & costs</u> No significant difference between the groups in change scores for admissions, length of stay or readmissions. The pattern of ER visits over time was significantly different, with the intervention group having a higher rate initially [10]. <u>Barriers</u> Implementation slower than expected. <u>Other</u> The control regions had 'usual care' and no special alignment of budgets – so the study evaluates the whole co-ordination effort vs. usual practice, not the</p>

⁷ <http://www.prismaquebec.ca>

			governing board, with representatives from all the health and social care organisations and community agencies, agreed on the resources to allocate to the integrated system from each of the organisations involved [90].		financial integration. The comparator group also received integrated care and some level of the intervention, so was not an uncontaminated 'placebo' control.
Canada	<i>SIPA, Système de services intégrés pour personnes âgées en perte d'autonomie (system of integrated care for older persons with disabilities)</i> [7, 11, 34, 55-58]	Integrated management / provision with pooled funds Described as full integration ([89] p62; [58] p. 386)	<u>Clients:</u> Community-dwelling frail older people with moderate to severe impairment <u>Integration model:</u> Health and social care including prevention, some respite, rehabilitation, medication technical aids & long-term care. Variation on PACE [34]. SIPA teams were community based and multidisciplinary. <u>IRM:</u> The aim was that SIPA be funded on a prepayment basis, based on capitation with financial responsibility for the full range of services for a defined population [56]. In practice, the SIPA team did not receive per capita payments, but held a pooled budget – though the team was not financial accountable (see 'barriers').	RCT (block) 22 months 656 / 653 Compared SIPA with usual care over 22 months. Powered to detect differences in admission to hospital / nursing home rather than in health outcomes [11]. The control group had no case management of services "little control over the budget and could not pay for attendance in group homes." [11]	<u>Effectiveness (health outcomes)</u> No difference found in health status or mortality in those who received SIPA versus those receiving standard care. Satisfaction higher for SIPA caregivers with no increase in caregiver burden or out-of-pocket costs. <u>Service use & costs</u> SIPA was cost neutral, with participants incurring higher community care costs that were offset by the reduction in institutional costs. There were no significant differences in utilization and costs of A&E department, hospital acute inpatient, and nursing home stays. However, the cost of nursing home care was significantly lower in the subgroup of frail older SIPA clients living alone compared with similar controls. Compared with the control group, the number of acute hospital patients with delayed discharges ('bed blockers') fell by 50% in the intervention group. <u>Barriers</u> Financial incentives for family physician participation proved insufficient, and constrained the SIPA team's capacity to organise community medical care. Canadian publicly managed and funded system with global budgets meant that there were limited incentives to reduce inappropriate utilisation (i.e. SIPA staff were not financially accountable) [11].
England	<i>Barking and Dagenham initiative</i> [83]	Structural integration	<u>Clients:</u> Resident population of Barking and Dagenham (~160,000), an outer London borough with high levels of mortality and social need, but no hospital within the borough. <u>Integration model:</u> PCT established in 2001, to be coterminous with the local authority. Aim was to integrate health and social care management. Joint	Qualitative study (questionnaires, semi-structured interviews, literature review) investigating reasons for failure and learning points. Study duration not stated. N: 18 questionnaires; 16 interviews	<u>Effectiveness (health outcomes)</u> Not assessed <u>Service use & costs</u> Not assessed <u>Barriers</u> The reasons for failure were not to do with financial integration, but reflected basic incompatibilities (priorities, governance, language), the lack of national support ("No stars for integration" and NHS priorities were effectively "non-negotiable"), and the presence of significant conflicts between centrally

			<p>appointments included strategic posts (PCT Chief Executive and Director of Social Services; joint Director of Public Health and others) and others at operational management level. Similar to the model adopted in Knowsley (Merseyside) and Southwark (Inner London).</p> <p><u>IRM:</u> Aimed for structural integration, covering the commissioning and provider functions of health and social care. ‘Similar to a Care Trust but not an NHS organisation’ (p.12). The initiative ran from 2001-2003 when the new PCT received a zero star rating and the venture was disbanded.</p>		<p>managed and locally governed services – national targets vs. local discretion, structure vs. culture.</p>
England	<p><i>Care Trusts</i> [37, 83, 91-93]</p> <p>See also:</p> <ul style="list-style-type: none"> • Blackburn with Darwen Care Trust Plus • NE Lincolnshire Care Trust Plus • Somerset Partnership Health and Social Care Trust • Torbay Care Trust 	Structural integration	<p><u>Clients:</u> People with health and social care needs.</p> <p><u>Integration model:</u> Fully integrated: health and social care responsibilities combined within single NHS organisation. Includes provision of adult health and social care and/or mental health or learning disability care – approach varies by local partnership ([37]; para 27).</p> <p><u>IRM:</u> The Health Act flexibilities provide the essential mechanism for constructing Care Trusts’ constitution ([93], p 23). Partnership arrangements are tailored to local circumstances ([37], p22). Joint funding arrangements form part of the overall legal partnership agreement (p 27). From April 2013, commissioning responsibilities moved to local Clinical Commissioning Groups, and Care Trusts are now only responsible for provision. (from Torbay website: http://www.torbaycaretrust.nhs.uk/aboutus/Pages/Default.aspx)</p>	<p>Audit Commission, 2009 [37]: mixed methods including national survey of pooled funding arrangements (2008), workshops (2009), semi-structured interviews (2009), literature review and analysis of national expenditure, performance indicator and activity datasets.</p> <p>Duration: 1 year</p> <p>Analysis of activity data: 10 Care Trusts National survey: number of responding CTs unclear (overall response: 69% of organisations surveyed).</p> <p>The qualitative study included 3 CTs [37]</p> <ul style="list-style-type: none"> • NE Lincolnshire Care Trust Plus • Solihull Care Trust • Torbay Care Trust 	<p><u>Effectiveness (health outcomes)</u> No evidence of improved health outcomes. Local evaluations rarely assessed user outcomes or specified them adequately.</p> <p><u>Service use & costs</u> No evidence of greater efficiency. Trends in emergency bed days for respiratory disease, fractured neck of femur (which relates to falls) and stroke rehabilitation were similar to the PCT trend, not lower. Use of Health Act flexibilities did not appear to make any difference to delayed transfers of care or to residential and nursing home admissions.</p> <p><u>Barriers</u> Local relationships are a driving factor for choice of integration approach. Practical difficulties to integration arise if Care Trust staff work under different pay, pension schemes or human resources support. Care Trusts have an NHS governance and performance management framework. Local government may therefore perceive Care Trusts as a ‘health takeover’ that undermines local accountability. “Statutory responsibilities and accountabilities of individual organisations .. are not removed by entering into arrangements for integrated governance, whether of the care trust form or other kinds of partnership” [83].</p>

England	<i>Cross-charging</i> [17, 37, 54, 62, 94, 95]	Cross charging	<p><u>Clients:</u> People of all ages and with any condition, who require social care following discharge from an acute hospital.</p> <p><u>Integration model:</u> Previously implemented in Sweden and Denmark [62]. A reimbursement scheme to help minimise health and social care disputes over older people's services and support "good joint working" [94]. The scheme did not apply to mental health or non-acute settings. In March 2002, the DH set up a Health and Social Care Change Action Team to provide practical support.</p> <p><u>IRM:</u> The Community Care (Delayed Discharges etc.) Act 2003 introduced an incentive system whereby councils were charged around £100/day if they were solely responsible for a patient's delayed hospital discharge [37], either because the council failed to provide a timely assessment, or because of failure to provide social care services. NHS bodies had a duty to notify social services of inpatients' need for community care and of the planned discharge date. For the first three years, the scheme was funded by the Delayed Discharges grant (£100m taken annually from the NHS budget) [17, 62].</p>	<p>National evaluation before and after study by the Commission for Social Care Inspection (CSCI) (reported in Henwood 2006 [17]). Case reports of 3 local initiatives to manage the new scheme [54]. Postal survey of 83 mental health hospitals (where use of cross-charging was under consideration) [62]. Response rate: 42% (35/83) Mixed methods study of joint financing arrangements (see under <i>Care Trusts</i> for details) [37].</p>	<p><u>Effectiveness (health outcomes)</u> Anecdotal evidence in the CSCI report that the scheme led to poor outcomes for patients in terms of "overly hasty" discharge and increased risk of readmission [17].</p> <p><u>Service use & costs</u> Evidence to suggest a downward trend in delayed discharges, which began prior to the implementation of the fines, but accelerated after the scheme's introduction [17]. Southwark council put the discharge grant funding towards a pooled budget with a local hospital trust. Monies were used to fund schemes to reduce avoidable admissions and delayed discharges: a community-based urgent care team; step-down housing; and extra occupational therapists at the Trust. There was anecdotal evidence of success in reducing delayed discharges [54]. However, only 11% PCTs used pooled funds for intermediate care (69% used integrated community equipment services (ICES)) [26].</p> <p><u>Barriers</u> In some areas, a shortfall of services for people with cognitive impairment obstructed timely discharge [17], and delayed transfers of care are associated with availability of intermediate care, rehabilitation services and social care to support people living independently at home [37]; (p48).</p> <p><u>Other</u> Overall, the policy appeared to improve partnership working, although this varied locally [17]. In East Kent, the secondary and intermediate care teams were integrated. The team assessed inpatients, monitored progress and supported appropriate discharge arrangements [54]. The policy may have exacerbated shortages of appropriate residential care for mental health patients (who were not subject to the cross-charging policy), causing delays in the non-acute sector [62] As Payment by Results was rolled out alongside this policy, the separate effect of the reimbursement scheme on discharges is difficult to disentangle.</p>
England	<i>Cumbria PCT</i> [15, 51, 59]	Joint commissioning with pooled budgets	<p><u>Clients:</u> Whole of local population but targeted at those deemed to be at risk of hospital admission, especially elderly and those with long-term</p>	<p>National evaluation of Integrated Care Pilots by RAND Europe [15]. Mixed methods: difference in difference analysis of quantitative data (HES, patient/user surveys and staff surveys);</p>	<p><u>Effectiveness (health outcomes)</u> Mixed evidence on patient satisfaction (across all sites) with improvements reported in some aspects of care and deterioration in others.</p> <p><u>Service use & costs</u></p>

			<p>conditions.</p> <p><u>Integration model:</u> One of the 16 integrated care pilots funded by the English Department of Health. Cumbria PCT had 3 sub-pilots that used different approaches.</p> <p><u>Cockermouth:</u> new premises delivering range of services, 3 GP practices merged to form an integrated care primary care practice;</p> <p><u>Maryport:</u> planned a management takeover of GP practice, PCT staff and social services;</p> <p><u>South Lakeland:</u> GP commissioning collaborative.</p> <p><u>IRM:</u> "Budgets were devolved from the PCT to each of the three pilot sites to enable them to commission and provide effective integrated services tailored to meet the needs of the communities." [15]</p>	<p>cross-sectional study of cost data (secondary care costs examined via person and practice based level analysis; proformas at study sites; review of qualitative data (semi-structured "Living Documents" and in-depth case studies at 6 of the pilots). N varied with each element of the analysis and in each pilot (e.g. in all 16 pilots: 8,691 cases and 42,206 controls for secondary data analysis; 700 service user questionnaires). 3 year "embedded evaluation" undertaken whilst pilots were being implemented.</p> <p>The evaluation reports results across all pilots or sub-sets of pilots and usually not at the level of the individual pilot, so it is not possible to describe the results for the Cumbria pilot specifically.</p>	<p>Results for group of 6 pilots that involved case management and were targeted at those at high risk of admission (including Cumbria) showed an increase in emergency admissions of 9%. After consideration of potential impact of imperfect matching, the evaluation concluded "...while we cannot be certain the pilot interventions increased emergency admissions, it is very unlikely that they reduced them" [15]; p 57. Cumbria reported data to the evaluation team that suggested emergency admissions had been reduced in their own local metrics but the change began before the start of the pilot. In this group of 6 pilots, utilisation of elective admissions declined significantly (-22%), as did outpatient attendances (-21%). There was an overall reduction in bed days used of 14%. Across the group of 6 pilots, this translated to a net saving in secondary care costs of £223 per patient over 6 month period.</p> <p>Evaluation collected costs of delivering the pilots and savings made, but the information received was not sufficiently comparable across sites to allow a cost-effectiveness analysis.</p> <p><u>Barriers (specific to Cumbria)</u> Funding arrangements that "leave [the] cost of service change with one organisation and the benefits with another"; HR and personnel issues; getting timely and accurate data; working against changing national policy. Some of the planned changes did not materialise during the course of the Cumbria pilot due to practical and legal issues</p>
England	<i>Darlington Pilot</i> [6, 7, 96, 97]	Integrated management / provision with aligned funds (devolved budget)	<p><u>Clients:</u> Frail older 'mentally alert' people requiring long-stay care, but wishing to be discharged home [96]. Darlington was one of 28 pilots undertaken in the mid 1980s, and the only one that set limits on client budgets.</p> <p><u>Integration model:</u> Service ('specialist case') managers held devolved individual budgets for up to 20 patients. Responsible for developing and monitoring care</p>	<p>Quasi-experimental trial [6]</p> <ul style="list-style-type: none"> - Intervention group; N=101 - Comparator ('control') group of long stay inpatients from hospital in adjacent district; N=113 <p>Assessments made at 6 months Control group were significantly more impaired (social disturbance scale), had significantly longer mean inpatient stays, and were much less likely to be terminally ill. The authors attempted to adjust for these factors by excluding participants with terminal illness (or who died) and using</p>	<p><u>Effectiveness (health outcomes)</u> Significantly greater improvements in satisfaction, morale and depression in the intervention group. No evidence of greater stress on carers [6].</p> <p><u>Service use & costs</u> The main cost was home care assistant time. Total costs of care were slightly lower in the intervention group. Patterns of institutional use in the two groups were very different, with most people in the control group remaining in long-stay hospital throughout the study period.</p> <p><u>Barriers</u> Not reported.</p>

			<p>packages, providing emotional advice and information and co-ordinating services. Home care assistants, who worked in teams provided domiciliary care and some care usually provided by district nurses [97]; p. 67.</p> <p><u>IRM:</u> Devolved budget for health and social care, equivalent to 67% of the cost of institutional care (long-stay hospital bed). Shadow prices for statutory services, with capacity to pay for voluntary services (ibid; p127).</p>	<p>covariance analysis to deal with the imbalance in impairment. Carers were also interviewed. They included carers of people in the intervention group; for the control group, they comprised carers of people in long-stay hospital in the control area and carers of people attending day hospital.</p>	<p><u>Other</u> There were important clinical differences between the groups at baseline, so the interpretation of the findings is uncertain. Care quality was found to be higher in the intervention group.</p>
England	<i>Hertfordshire Integrated specialist mental health service</i> [66, 67]	Integrated management / provision with pooled funds	<p><u>Clients:</u> Adults and children with mental health problems, learning disability or using drug and alcohol services.</p> <p><u>Integration model:</u> Provision of specialist, integrated mental health services by Hertfordshire Partnership Trust (est. 2001). Services reconfigured to include specialist teams additional to the (more traditional) generalist Community Mental Health Teams (CMHTs).</p> <p><u>IRM:</u> Pooled commissioning budget used for joint commissioning of services for the whole county by Hertfordshire County Council and its NHS partners, 8 PCTs. In 2002/3, the total pooled budget was £160m [67].</p>	<p>Evaluation focused on the effects of the provision of specialist mental health services and used mixed methods [66]:</p> <ul style="list-style-type: none"> • User and carer focus groups (2004); 31 participants in 4 focus groups • semi-structured interviews with specialist and generalist Community Mental Health Team (CMHT) managers (2004); 31 participants • postal survey of CMHT staff (2002; [response rate 54%] and 2004 [38%] to identify job satisfaction and role clarity before and after the introduction of specialist services <p>The evaluation was of the provision of services, rather than on the role of integrated funding per se.</p>	<p><u>Effectiveness (health outcomes)</u> Not reported.</p> <p><u>Service use & costs</u> Not reported.</p> <p><u>Barriers</u> Reconfiguration of services did not ease the burden on CMHTs, as specialist teams typically focused on previously excluded client groups, rather than on existing case loads.</p> <p><u>Other</u> Users and carers were mainly positive about the specialist integrated teams, finding them sensitive, supportive and responsive. For staff, job satisfaction and role clarity scores showed moderate to good levels of achievement, including perceived team effectiveness associated with the new service. Little change over time, but wide geographical variation across Hertfordshire. For complex cases, it was difficult to provide continuity of care and client and carer wishes sometimes involved a trade off. All participants recognised that inpatient admission could be the best option for some users at certain times (a “sanctuary”, p. 413).</p>
England	<i>North West London Integrated Care Pilot</i> [64, 70-78]	Lead commissioning Aligned incentives	<p><u>Clients:</u> People with diabetes (15,000); people aged 75+ (22,000). These groups represent 10% of the population and consume almost 30% of the healthcare budget in North West London [73].</p> <p><u>Aims:</u> To improve outcomes, improve access</p>	<p>Evaluation of Year 1: 09/11 to 07/12. Quasi experimental, using mixed methods across 4 Work Programmes (WPs) <u>WP 1</u> Strategic evaluation of the pilot in the context of national policy [64]. <u>WP 2</u> Measuring service usage patterns for secondary and social care, using a propensity matched case control model. In year 1, 1236 intervention patients had</p>	<p><u>Effectiveness (health outcomes)</u> Process measures only. There were significant increases in the use of dementia screening (for care plans in over 75s), the number of people diagnosed with dementia and the number of care plans provided [77, 78]. Diabetes testing increased, but no significant improvement in disease control (Hb1A1c or blood pressure).</p>

		<p>to integrated care, reduce unnecessary admissions, and enable joint working (historically, relationships were “tense”) [64], p22). GPs had to aim to reduce one unplanned admission per client group each month (p22), equivalent to 7 avoided admissions per 2000 pilot population [70], p219), and so reduce total health and social care spending by 24% over 5 years (ibid).⁸</p> <p><u>Integration model:</u> Integration of providers, rather than commissioning functions [64]. Pilot involved 100 GP practices, 2 acute and 2 MH trusts, 3 community care providers, 5 social care providers and 2 voluntary organisations [73]. Pilot overseen by an Integrated Management Board. Proactive care planning across care settings by doctor-led multidisciplinary teams (MDGs), targeted at high-risk individuals with complex needs; care delivered by community teams; use of risk stratification tool (CPM: Combined Predictive Model) [73], and data sharing systems; aligned incentive structure. The tool assesses patients’ risk and need for intensive care management; documents individuals’ health (primary and secondary, mental and acute) and social care use; and enables the care plan to be shared across settings [74](p6).</p> <p><u>IRM:</u> £5.7m upfront investment, funded from (a) difference between tariff and payment for ‘over performance’ on emergency admissions (capped at 2008/9 levels); (b) reduced payments for emergency readmissions [72](pp32, 34). Figure later revised to</p>	<p>matched controls [77].</p> <p><u>WP 3</u> Using a mixture of clinical process and outcome measures to observe service quality, both in primary and secondary care. Patient-level data on primary, secondary and social care were available for the pilot patients, but only practice-level (QOF) data were available for the comparator group [75](pp 6, 20).</p> <p><u>WP 4</u> A mixed methods approach to capture professional and patient experience of the integrated care process, using non-participant observations of multidisciplinary meetings, patient case conferences and operational meetings; focus groups with patients and professionals; semi-structured interviews with patients and professionals; survey with main stakeholders [76, 78].</p>	<p>Most patients were unaware they were enrolled in the ICP. Some reported improved access, but only 13% had a copy of their care plan. GPs felt pressured to produce care plans, and there was concern over plans’ quality [64].</p> <p><u>Service use & costs</u> Results of the first year evaluation found no significant reduction in emergency admissions, A&E attendances, the hospital cost of emergencies or total hospital cost [74](p9); [78]. No significant change in the rate of admissions for falls and fractures [74](p7).</p> <p><u>Barriers</u> The IT tool lacked the ‘interoperability and functionality’ desired by healthcare professionals. However, it enabled the (previously impossible) tracking of health and social care use.</p> <p>The use of incentives (or even the “symbolism of the savings arrangements” [64], p 20) was considered critical to successful engagement of local providers (i.e. allaying fears and engendering trust), and important for reducing “inherent tensions in the system created by the purchaser-provider split and payment by results.” [64](p 19). However, risk sharing by primary care was recognised to be “difficult” [64](p20).</p> <p>Only acute trusts were penalised under PbR for readmissions or emergency admissions [64, 78]. The MDG meetings were intended to be forums for identifying ways to improve efficiency in the local health economy by use of innovative out-of-hospital services. In practice, discussions were dominated by GPs and consultants and only 39% of the Innovation Fund was spent in the first year [78].</p>
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⁸ See also <http://www.diabetes.nhs.uk/document.php?o=3434>

			<p>£10m [78]. No integration across commissioners, but use of financial incentives. Reinvestment payment contingent upon:</p> <ul style="list-style-type: none"> • quality of patient care maintained or improved. • net reduction in the cost of emergency care across the pilot <p>Reinvestment payment shared between partner organisations in the MDGs: GPs (40%); acute providers (30%); community health providers (15%); local authority and mental health providers (7.5%). They must be spent on healthcare services [72](p39). A “resource envelope” of £40 (diabetes) or £80 (older person) per person held by MDG to support reduction in emergency care [72](p32). Resources can be spent on care planning, MDG meeting attendance, care co-ordination and better out-of-hospital care (a “contingency pot” for pump priming new service developments [70](p223) also known as the “Innovation Fund” [64](p27).</p>		
England	<i>Oxfordshire pooled budgets/ lead commissioning</i> [37, 98]	Pooled budgets / lead commissioning	<p><u>Clients:</u> Older people and adults with a physical disability. Adults with mental health problems. <u>Integration model:</u> Health and social care (continuing care) <u>IRM:</u> Lead commissioning by the county council, who held the pooled budget. Significant effort to identify which funds to pool: PCT top-sliced continuing care / RNCC (registered nurse care contribution) budgets; council pooled a proportion of the home support budget. Joint financing</p>	Description from ex-service manager at Oxfordshire CC [98] Survey of pooled funding arrangements [37]. See Pooled budgets.	<p><u>Effectiveness (health outcomes)</u> Not assessed. Roberts 2006 reports that users and clients perceived the services to be more streamlined [98]. <u>Service use & costs</u> Streamlined payment service, reducing costs and bureaucracy; improved residential and nursing care purchasing; increased capacity for long-term placements; broader range of beds purchased (e.g. intermediate care, respite beds etc). Initial reduction in delayed transfers of care not sustained. <u>Barriers</u> See below <u>Other</u> The Single Assessment Process led to fewer disputes</p>

			<p>for continuing care enabled a single assessment process for end-of-life care.</p> <p>In 2006, Oxfordshire and Buckinghamshire NHS Trust and 2 county councils used the flexibilities to develop integrated approach for adults with MH problems.</p> <p>Performance (including financial performance) assessed on balanced scorecard.</p>		<p>and tensions between health and social care partners [37]. Good IT infrastructure essential to support and manage budget and assess performance. Flexibilities helped deliver 'coherent' commissioning ([98]; p. 44) .</p>
England	<p><i>Pilot of Partnerships for Older People Projects</i> POPP [4, 14, 60, 99, 100]</p>	<p>Varied by project, but included pooled budgets and lead commissioning</p>	<p><u>Clients:</u> 29 Local Authority led sites running 146 projects. Aimed at creating a sustainable shift in resources & culture away from institutional & hospital-based crisis care for older people towards earlier, targeted interventions within community settings. Overall, older people as volunteers provided almost half of the staffing.</p> <p><u>Integration model:</u> Focus was on prevention and early intervention. Reducing social exclusion/promoting healthy living central to two-thirds of projects (community facing); avoiding hospital admission/facilitating early discharge central to one-third (hospital facing). Projects varied in the type of needs they aimed to address:</p> <ol style="list-style-type: none"> primary prevention: low level wellbeing services to encourage independent living, such as gardening clubs, exercise, befriending (49 projects accounting for 31% of total POPP spend) secondary prevention: higher level services for people at risk of admission, such as carer support, medicines management, falls prevention and follow-up (40 projects accounting for 24% of spend) 	<p>Local evaluations at each site and a national evaluation [4]. Retrospective analysis of a sub-set of 8 projects was subsequently undertaken [14, 60]. National evaluation was a multi-method (15 methods of data collection and analysis), 3 phased approach to explore 3 key issues: outcomes; impact on joint working and resource use. Involved quantitative analysis, documentary analysis, focus groups, interviews, questionnaires – some across all sites, others with a sample only. A set of core data was collected from all sites: financial and activity data; QoL questionnaires [EQ-5D plus question on overall perception of change in QoL to sample of 1,529]; details from the Public Service Agreements for long-term conditions and for Older Persons.</p> <p>Attempts at robust (controlled) comparisons were made, although the breadth and nature of interventions and the study population (elderly) presented substantial methodological challenges. Substantial efforts were made to analyse results in terms of types of project (see 'description') but the nature of the intervention meant it was not possible to provide a micro-level analysis of what specific type of projects, managed in a particular way, would provide better and more cost-effective outcomes.</p> <p>Health Related QoL: standardised questionnaire administered before and 3</p>	<p>It is not possible to attribute the general findings from the programme evaluation solely to the use of financial integration mechanism.</p> <p><u>Effectiveness (health outcomes)</u></p> <ul style="list-style-type: none"> 75% of "key informant" survey respondents thought POPP had led to improved outcomes e.g., improved QoL for older people; better access, greater range of services. Health Related QoL: Compared to control, POPP users generally experienced slight improvements in HRQoL, although this varied by type of project. Largest improvements were in those using tertiary services and those receiving practical help in the community. The single QoL rating showed some deterioration in perceived QoL after the intervention. All results have to be treated with caution due to nature of sample and the relatively short duration of interventions. Small increase in take up of benefits. <p><u>Service use & costs</u></p> <ul style="list-style-type: none"> Before and after comparison using PCTs with no POPP projects as a control group within a DiD analysis, suggests statistically significant reduction in emergency bed day use: for every £1 spent on POPP, savings ranged from £0.80 to £1.60 in bed days saved, with the biggest effect seen in larger projects and in secondary/tertiary projects. Before and after comparison based on questionnaires suggested reductions in hospital overnights stays (47%), use of A&E services (29%) and physiotherapy/OT and outpatient appointments.

		<p>3. tertiary prevention: services for those at serious risk of imminent admission, such as rapid response teams, hospital at home, case management (35 projects accounting for 35% of spend)</p> <p>4. underpinning projects: supported development of initiatives such as staff and carer training programmes, accreditation schemes (22 projects accounting for 10% of spend).</p> <p>Projects were also categorised into types: e.g., practical help to enhance wellbeing, enhancement of physical health, information and signposting services, case finding, specialist falls, long-term conditions.</p> <p>The 8 projects included in the retrospective evaluation [60] comprised four interventions selected as they had potential to reduce emergency admissions (support workers alongside community matrons; post-discharge scheme; multi-dimensional integrated H&SC teams; out of hours response scheme), and four fell into the "prevention" category (category 1 above) and were lower level interventions aimed at short term assessment and signposting.</p> <p><u>IRM:</u> £60m in POPP funding provided to the partnerships for provision of services; however, integrated financing was not the key focus of the programme and the projects varied enormously in terms of the degree and type of financial integration pursued. It is not clear whether the schemes in the retrospective analysis involved IRMs or not [14, 60]. A range of financial levers were</p>	<p>months after POPP intervention. "Quasi-control" sample drawn from BHPS to control for expected declines in QoL amongst older population.</p> <p>A sub-set of 8 programmes with the potential to avoid unplanned admissions were analysed retrospectively using a person-based approach and prognostically matched controls, avoiding some of the methodological challenges of the national aggregate level evaluation outlined above [60]. A group of 14,100 people used the 8 POPP interventions and an attempt was made to match them all to the controls drawn from similar areas across England, but where the POPP intervention had not taken place, using pseudonymous data linked to HES hospital utilisation data. The focus of the analysis was on the use of hospital resources, mainly in terms of emergency admissions and bed-days. Utilisation was tracked between 6-9 months post-intervention, varying by POPP intervention.</p> <p>Additional analyses presented Difference in Difference regression results for 2 of the schemes (post-discharge intermediate care and the H&SC integrated teams) [14].</p>	<ul style="list-style-type: none"> - The combined project and service use costs were analysed with the HRQoL results for the POPP and the control group and analysed using a Cost Effectiveness Acceptability Curve to estimate the cost-effectiveness of the POPP compared with usual care (no POPP). The probability that the overarching POPP programme is cost-effective compared with usual care was 86% at the £30,000 per QALY level; falling to 74% at the £20,000 level. - The estimates of the probability of cost-effectiveness vary across type of projects and are especially high for tertiary prevention, although sample numbers are small. The more robust, retrospective analysis of 8 selected interventions found no evidence of a reduction in emergency admissions and in some instances there were more admissions in the intervention group than in the control group. In one site emergency bed-days were reduced, while in another the intervention group had more bed-days than the control group. "Overall we found that the POPP interventions we studied did not appear to have reduced use of acute hospitals. However, there were signs that one of the interventions reduced emergency hospital admissions for a high-risk subgroup" [60]; p. 30. - The latter intervention was the integrated health and social care teams configured around primary care teams, which focused on people with one or more long-term conditions and the result may thus suggest that some integrated H&SC schemes have potential to reduce hospital resource use for some sub-groups. However, there is no mention of use of a specific IRM in the scheme studied so it is not possible to attribute the outcome to an IRM specifically. <p><u>Barriers</u></p> <ul style="list-style-type: none"> - Practical and ethical issues in sharing electronic data between organisations - Tension between competition and co-operation, especially for projects straddling primary / secondary care
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			<p>employed across the pilot sites to facilitate partnerships and improve integration, including:</p> <ul style="list-style-type: none"> • the financial flexibilities introduced in the Health Act (1999), used by 5 of the 29 sites⁹ • Practice-based commissioning and delegated budgets; • Payment by results (whereby savings from acute care can be made available for community care). 		<ul style="list-style-type: none"> - staff recruitment and retention – due to short duration of projects - geographical reconfiguration of organisations during project period (PCT boundaries altered) - Translating cost reductions into an actual cost saving usually impossible, due to difficulties in transferring funds across care boundaries. Where it was feasible, this was due to prior agreements at senior level. Preventive based projects were expecting to be able to utilise savings from reduced emergency bed days in order to sustain their programmes in the longer term but these system wide transfers did not take place.
England	<p><i>Pooled budgets</i> [37, 93, 101]</p> <p>See also:</p> <ul style="list-style-type: none"> • Oxfordshire pooled budgets • North East Lincolnshire Care Trust Plus 	Pooled funds	<p><u>Clients:</u> Pooled funds are mainly used for learning disability, community equipment and mental health services, but rarely for older people's services [37]. In 2008, total pooled expenditure was £3.4bn (p13). <u>Integration model:</u> Varies, depending on application. For learning disability, councils were most likely to host the fund, whereas for mental health the PCT or MH Trust was the likely host. For community equipment, pooled funds were mandatory and usually hosted by the PCT [37]; p19. Pooled budgets are also mandatory for intermediate care funds, although only 11% of PCTs had these (ibid, p19). <u>IRM:</u> Resources are pooled by partner organisations; staff can then spend the pooled budget across a spectrum of health and social care resources [93]; p24. The most frequently used of the three Health Act flexibilities [102]. Can aid</p>	<p>Qualitative evaluation of first 32 localities to use the flexibilities [93, 101].</p> <ul style="list-style-type: none"> • Postal survey: at baseline and at 18 mths; N=32 • case studies of 10 partnerships • In depth case studies of 3 partnerships, with stakeholder interviews <p>Mixed methods used by Audit Commission's national evaluation [37] – see under Care Trusts. Audit Commission pooled fund survey (2008) of auditors at all PCTs and councils in England. Responses covered 69% of all organisations.</p>	<p><u>Effectiveness (health outcomes)</u> Can be used to protect services for vulnerable groups [37]. However, 'regular, systematic monitoring of outcomes against plan' was rare (p 39). Two-thirds of users were satisfied with integrated community equipment services (ICES), which is typically facilitated by pooled funds (p45). <u>Service use & costs</u> Areas with joint financing arrangements had slightly lower lengths of stay for mental health, though not statistically significant [37]; (p44). Analysis of national data found use of pooled budgets had little impact on per capita spend on mental health (p18), no impact on emergency bed days when used for intermediate care (p 45), and no significant effect on delayed transfers of care or on nursing home admissions (p63). <u>Barriers</u> Clear legal and financial frameworks were essential for defining responsibilities on commissioning, provision, monitoring, and data sharing. Obstacles included different accounting and audit requirements, VAT regimens, the valuation of infrastructure relating to pooled resources, and what proportion of new monies should be added to the pooled budget. Pooled budgets were effectively 'ring fenced', reducing partners' capacity to manage</p>

⁹ Personal communication, Dr Karen Windle, 10 June 2013

			transparency and clarify responsibilities within the partnership [37]; p28.		deficits in other parts of the system [93]; (p28). There were technical incompatibilities between the NHS and local government IT systems, and concerns about confidentiality and data governance (ibid, p30). There were similar incompatibilities between the national performance and audit systems (p31).
England	<i>Somerset Partnership Health and Social Care Trust</i> [65, 69, 103-109]	Structural integration with aligned budgets	<p><u>Clients:</u> People with mental health problems. Somerset had population of approximately 470,000 and history of joint working (this was the first Care Trust to be established in England [109]).</p> <p><u>Integration model:</u> Prototype for subsequent care trusts. Combined provision, integrating mental health & social care, including co-location. Around 120 social care staff transferred to NHS Trust [69]; p. 41.</p> <p><u>IRM:</u> Joint commissioning through the Joint Commissioning Board (JCB). Budgets not pooled but aligned ("parallel").</p>	Before and after study, one and two years post implementation (1999 – 2001). Structured interviews (service users), semi-structured interviews (managers), focus groups (service users and carers), staff surveys, workshops, non-participant based observation of Joint Commissioning Board meetings. 96 service users completed a range of questionnaires including Lancashire Quality of Life Questionnaire, Camberwell Assessment of Need scale, Verona Service Satisfaction Scale.	<p><u>Effectiveness (health outcomes)</u> The Partnership failed to produce significant benefits [107]. Service users reported improvements in self-reported mental health status. Some service users reported engagement with service increased their independence.</p> <p><u>Service use & costs</u> Restructuring did not adversely affect the quality of care (p6) and the board consistently provided "good financial settlements" for mental health services [65]; (p37).</p> <p><u>Barriers</u> Service users were concerned that there remained no alternative to hospital admission in times of crisis [107]. Evaluation of process measures suggested that restructuring was associated with short-term reductions in staff job satisfaction, morale & role clarity [69] (p. 44).</p>
England	<i>Torbay Care Trust</i> [From April 2012: <i>Torbay and Southern Devon Health and Care NHS Trust</i>] [15, 25, 51, 110-115]	Structural integration with pooled budgets.	<p><u>Clients:</u> Population of 140,000, with high proportion of older people. ICP pilot focuses on older people with complex co-morbidities.</p> <p><u>Integration model:</u> Care Trust est. 2005 Five H&SC teams based in localities, aligned with GP practices. Single access point and assessment, with pooled budget, and adult social services and PCT functions shared [116]. Shared health and social care electronic record [110]. Intermediate care services provided within each locality (occupational therapists, social workers, physiotherapists, district nurses). Integrated Care Pilot focused on improving discharge arrangements for older people. Explored pooled budgets</p>	Ham 2010 [110, 111] reports some comparative statistics, but the methodology is not described. Some strands of work were evaluated by RAND as part of the national ICP evaluation [15]. See Cumbria entry for methodology. In Torbay, the analysis of secondary care utilisation was based on practice (not individual) level data.	<p><u>Effectiveness (health outcomes)</u> Results from the ICP evaluation provided mixed findings for patient satisfaction (across all sites in the national evaluation) with improvements reported in some aspects of care and deterioration in others.</p> <p><u>Service use & costs</u> "Measurable progress in reducing reliance on acute hospitals and avoiding admissions" [110]:</p> <ul style="list-style-type: none"> - Reduction in acute and community hospital bed occupancy rates (from 1998/99 to 2008/9); - rate of emergency bed days lower than regional average - using only 47% of emergency bed days for people experiencing two or more admissions for its benchmark group of people aged 85 and over <p>The methodology for these statistics [111] is not reported, so the attribution of these effects to the Care Trust model is unclear. Compared with the regional average, twice as many people aged 65+ receive a social care package and</p>

			<p>across four providers: the Care Trust; S Devon Healthcare NHS Foundation Trust; mental health and local authority services [110].</p> <p>Part of national ICP study: the pilot included multiple works streams involving diverse range of services targeted at older people.</p> <p><u>IRM:</u> Structural integration, including pooled budgets – teams can use these to commission tailored services for clients.</p> <p>In the national ICP evaluation, budgets “were not pooled but they have attempted to utilise primary care resources in secondary care settings and vice versa.” ([51], appendix G)</p>		<p>home care provision also increased [114].</p> <p>Work streams included in the national ICP were evaluated separately from other pilot sites because patients were identified as being “enrolled” in the pilot only after admission to hospital. Significant reductions in emergency admissions (-7%); elective admissions (-7%) and outpatient attendance (-10%) were reported. These could not be attributed solely to the specific elements of the ICP because the reductions were most evident in children and young people rather than in the target population of the ICP (elderly).</p> <p>The local evaluation of Torbay’s ICP [51], (appendix F) compared Torbay with a neighbouring area and concluded that the rise in emergency admissions overall were lower in Torbay over a 3 year period. Reported reductions in average LoS for older people were greater in Torbay (8.6 to 7.6 days) than in the comparator area (8.4 to 7.8 days). Although the comparisons were imperfect, the national evaluation team concluded that they supported the general thrust of reduced secondary care utilisation.</p> <p><u>Barriers</u> Reportedly more difficult to implement joint management than joint working by front-line staff. Role of direct payments and individual budgets perceived as a potential threat to financial integration [116]. Engagement by clinicians required effort.</p>
England	<p>Wye Valley NHS Trust (Herefordshire) [37, 52, 102, 117, 118]</p>	Structural integration	<p><u>Clients:</u> Population of 178,000, of which older people account for 20%. History of partnership working between PCT and council. Wye Valley Trust established April 2011 to provide integrated acute, community and adult social care [52].</p> <p><u>Integration model:</u> In 2004, used pooled funds and lead commissioning for an integrated community equipment services (ICES) store [37]. In 2011, a formal integrated structure joined hospital services from Hereford Hospitals NHS Trust, community health services previously provided by NHS Herefordshire, and adult social</p>	<p>See under Care Trusts for Audit Commission methodology [37] Two press releases by the Trust reported efficiency savings [52, 118]</p>	<p><u>Effectiveness (health outcomes)</u> User satisfaction with the ICES experience was above the national average and improved quality of life [37]. However, the contribution of pooled finances (rather than the scheme’s working) to these outcomes was not clear.</p> <p><u>Service use & costs</u> Reported savings in management costs from the ICES fund [37]. Press releases reported the new Trust had achieved a reduction in delayed discharges, and cost savings of £440,000 (due to 1,100 bed days saved) [52]. These figures were for the period April 2010 to May 2011.</p> <p><u>Barriers</u> Not reported</p>

			<p>care from Herefordshire Council. Local 'neighbourhood teams' and intermediate care services provided at home or in community settings used to relieve pressure on acute beds. Multidisciplinary teams of therapists, nurses, social workers, along with GPs and practice staff.</p> <p><u>IRM:</u> Use of flexibilities under s.75 of the 2006 NHS Act. Joint management team, with pooled budgets for learning disabilities, adaptations, mental health and continuing care.¹⁰ In November 2011, a joint venture company between the partners was set up to deliver cost savings and improve service outcomes.¹¹</p>		
Northern Ireland	<i>Integrated Health & Social Services Boards</i> [119, 120]	Structural integration	<p><u>Clients:</u> Each community health and social services trust provided services for their local population. This included family and child care, older people, mental health, learning disability, physical disability, health promotion, primary and adult community health care.</p> <p><u>Integration model:</u> Health and social services formally integrated since 1973 in response to a failure of local government. At the time of the study, there was a 2 tier structure of 4 health and social service boards and 19 trusts (11 community health and social services trusts; 7 acute trusts; 1 ambulance trust). See note on new structure under 'Key Findings'. Community trusts were responsible for service delivery, which they managed via 9 'programmes of care':</p>	<p>Qualitative exploratory evaluation [119]. Semi-structured interviews (N= 24) with senior managers from:</p> <ul style="list-style-type: none"> - 4 health and social services boards (4 interviews with directors of social services) - 11 community health and social services trusts (20 interviews; 3 with Trust Chief Executives, 17 with directors/ assistant directors) <p>Focus groups (N=3) with 16 team leaders in integrated programmes of care</p>	<p><u>Effectiveness (health outcomes)</u> Not evaluated</p> <p><u>Service use & costs</u> Integrated health and social care budgets thought to facilitate shift of resources from hospitals into the community.</p> <p><u>Barriers</u> Despite three decades of structural integration, 'perennial tensions' between the medical and social models of care persisted, as did professional rivalries. Social care appeared more vulnerable to cuts than health care, and the study found several examples where significant sums of money (>£1m) had been diverted from community budgets into the acute sector [119](p60).</p> <p><u>Other</u> Integrated health and social care budgets thought to facilitate long-term strategic planning, and flexible, high quality and client-centred care; and to discourage cost shifting and duplication of services.</p> <p>Note: A Review of Public Administration in 2005 recommended major reform. In April 2007, five</p>

¹⁰ http://www.local.gov.uk/web/guest/productivity/-/journal_content/56/10171/3485811/ARTICLE-TEMPLATE#sthash.XbhkWGr0.dpuf

¹¹ http://www.herefordtimes.com/news/local/9327220.Herefordshire_Council_and_NHS_bosses_unveil_new_look_joint_service_partnership/

			<ol style="list-style-type: none"> 1. acute services 2. maternity and child health 3. family and child care 4. older people 5. mental health 6. learning disability 7. physical and sensory disability 8. health promotion 9. primary health and adult community <p>Programme leaders assigned a key worker (case manager) to each individual; the case manager developed the package of care and regularly reviewed care needs.</p> <p><u>IRM:</u> Structural integration: community health and social services trusts held their own budgets, determined how services were delivered, and were “managerially independent” (p53) of the HSS boards. The Boards undertook needs assessments, set priorities, commissioned services and monitored provision.</p>		Health and Social Care Trusts were established. In April 2009, a single Health and Social Care Board, 5 Local Commissioning Groups (coterminous with the Trusts) and the Public Health Agency were set up. ¹²
Scotland	<i>Community Health Partnerships (CHPs) / Community health and care partnerships (CHCPs)</i> [48, 109, 121, 122]	Aligned budgets	<p><u>Clients:</u> Whole population in principle, but often targeted to groups such as older people.</p> <p><u>Integration model:</u> Scotland has a history of partnership working, dating back to the 1990s [109](p. 393). CHPs are decentralised but integrated health and social care system, covering primary health care from a Local Health Board, and social services from one or more Local Authorities or voluntary organisations. Many CHPs coterminous with Local Authority boundaries. Public engagement via Public Partnership For a [109]. CHCPs set up in Glasgow and East Renfrewshire, bringing social</p>	<p>Evaluation of three (anonymous) CHPs in central Scotland [109].</p> <p>Process evaluation: interviews with 30 stakeholders, used to develop a questionnaire on expected outcomes of successful partnership working.</p> <p>Questionnaire survey, soliciting opinions on CHP progress against a range of process and outcome measures.</p> <p>Responses (85%) from 51 individuals (clinicians, managers or lay people) associated with the CHP. Focus of evaluation is to test feasibility of outcome measures [109].</p> <p>Respondents reported subjective assessments of progress against a range of outcome measures; scores could range from 0 to 18, with a score < 7 designated</p>	<p><u>Effectiveness (health outcomes)</u> CHP performance on reducing health inequalities and improving health / reducing death in preventable diseases was ranked as ‘low’ by respondents in all three CHPs.</p> <p><u>Service use & costs</u> Respondents in all 3 CHPs ranked performance as ‘low’ with regard to: minimising delayed discharges; improving the quality of care packages; and rationalising single access points.</p> <p>Performance on reducing waiting times and avoidable hospital visits/admissions was ranked as medium (1 CHP) or low (2CHPs).</p> <p><u>Barriers</u> Alignment and pooling of budgets identified as ‘the weakest area for all of the partnerships’. The authors suggest ‘that this is possibly the most controversial and difficult area of partnership</p>

¹² <http://www.hscboard.hscni.net/> accessed 14/05/13

			work services within the same organisation as health [48]. <u>IRM:</u> Varies but includes contributions from NHS and council to cover some services e.g., in East Renfrewshire: joint appointment for CHCP, with aligned budgets from NHS and council to cover social services, community and school nursing, health visiting, addiction clinics and community mental health [48]	as 'low'.	working' [109](p398). In Glasgow, the CHCP was dissolved due to disagreement over financial contributions (amongst other concerns) [48, 121] The evaluation took place one year after the CHCPs were set up, which helps explain why ratings were low.
Scotland	<i>Evaluation of Integrated Resource Framework Test Sites</i> [68]	Structural integration?	<u>Clients:</u> Varied by test site <u>Integration model:</u> Test sites could develop their own approaches across health and social care <u>IRM:</u> Each test site received £400k for organisational development, project management and staff time to implement mechanisms that would facilitate mapping work (cost/activity data across health and social care) and resource realignment. None implemented by the end of the study period. One test site introduced a lead agency model one month after study completion.	April 2010 to March 2012, 3 phases and mixed methods (s. 1.6) <ul style="list-style-type: none"> • review of IRF documentation in test sites; • review of processes and discussions at IRF Project Team and Programme Board meetings; • interviews with key strategic partners; • email survey of delivery staff at each test site (summer 2010 [4 sites, n NS/Spring 2012 [3 sites, n=44]; • focus groups with operational (patient and client facing) staff An evaluation of the process to prepare for IRM: “None of the test sites were actively running new integrated financial and governance arrangements by the time of the final evaluation in March 2012” (s 5.2)	<u>Effectiveness (health outcomes)</u> None identified <u>Service use & costs</u> Anecdotal evidence from survey Where integrated working led to more efficient use of resources, this did not lead to cost savings or resource realignment (s.8.5). <u>Barriers</u> Interviewees viewed some healthcare resources as 'fixed' costs (e.g. beds, ward staff, wards, day care centres s. 5.22, 5.23), which limited scope for shifting resources. Health and social care used different accounting systems (e.g. overhead allocation), which made resource transfers complex. <u>Other</u> Delivery staff were less confident at the end of the study period than they had been at baseline that the integration agenda would improve patient /client care (5.29).
Sweden	<i>The Norrtälje Model (north of Stockholm)</i> [123]	Structural integration with pooled budgets	<u>Clients:</u> The new organisation took responsibility for clients who the municipality had previously provided and funded long term care: older people, those with chronic conditions and those with disabilities or mental illness. <u>Integration model:</u> Established in 2005, there were three components to the integrated structure: 1. a single service organisation	Longitudinal case study using documentary analysis and semi-structured interviews in spring 2008 and autumn 2009. Interviews: N=13 to 17	<u>Effectiveness (health outcomes)</u> Not evaluated <u>Service use & costs</u> Not evaluated <u>Barriers</u> Access to client/ patient records by health/social care personnel was restricted by law, obstructing development of a shared record system. The existing county (health) financing and activity system did not permit recording of processes. <u>Other</u> A change in legislation (2004) facilitated a joint board. The new financing, human resources and

			<p>("Tio-Hundra AB") managed all health and social care for the population.</p> <p>2. A governing board with 12 local politicians (6 from the municipality, which had previously managed social care; 6 from the county, which had managed health care).</p> <p>3. A financing body (see below)</p> <p><u>IRM:</u> A single organisation ("TioHundra Forvaltningen") executed board policy, and administered pooled budgets for all health and social care as well as welfare payments (this budget was not pooled). This body also collected payments and paid providers. Finances were structured around 3 age groups (0-18; 18-64; 65+) and further divided into care (client) groups.</p>		<p>information systems followed preparation, planning and a new management structure. New clinical processes were then added. From 2009, management, financing and information were based on care groups</p> <p>There was a history of good joint working.</p>
Sweden	<i>Pooled budgets</i> [5, 101, 124, 125]	Pooled budgets	<p><u>Clients:</u> People aged 16-64 with a new episode of musculoskeletal disorder (2nd largest group of primary care users) [124].</p> <p><u>Integration model:</u> Weekly multidisciplinary team meetings to assess eligibility of patients for rehabilitation. Team included staff from health centres, social services and social insurance authorities, and occupational therapists and physiotherapists. Social insurance officers were co-located with health centre staff [124].</p> <p><u>IRM:</u> Underpinned by legislation 'Socsam' (1994), which was trialled for 7 years before becoming permanent in 2003. Aimed to explore opportunities for joint financing and management across agencies boundaries. Nationally, 8 projects targets at a range of client groups using Socsam</p>	<p>Peer-reviewed evidence available for one of the 8 projects (DELTA, 1997). Quasi-experimental study with control practices matched by catchment population (working age adults), sickness rate (sickness days/ number on sick leave) and proportion of immigrants.</p> <p>7 health centres with 138 patients providing data for 3 assessments [125]</p> <ul style="list-style-type: none"> • 3 health centres (128 patients) received the intervention (pooled funds, multidisciplinary assessment) • 4 matched control health centres (39 patients) (no pooled funds, no multidisciplinary assessment) <p>Qualitative study to establish staff experience [125]:</p> <ul style="list-style-type: none"> • 9 focus groups (7 health centres + 2 rehabilitation units) • Interviews with 'unit leaders' (N unclear) <p>Quantitative analysis of patient outcomes: patient interviews at 0, 6 and 12 months</p>	<p><u>Effectiveness (health outcomes)</u> No significant difference in change in quality of life (EQ5D) or occupational functioning (COPM) between the groups at 1 year follow up.</p> <p><u>Service use & costs</u> No clear evidence of a reduction in social insurance expenditure on people with long-term illness. Intervention costs not assessed. [101];(p538).</p> <p><u>Barriers</u> Although co-financing was thought to be necessary for improved interdisciplinary collaboration, its impact was unclear [125].</p> <p><u>Other</u> Staff in the intervention centres felt that collaboration with social insurance personnel had improved, but relationships with social workers remained "weak". In the control centres, external collaboration was "poor". [125]. However, Socsam was voluntary and was implemented in organisations committed to participation [101]; (p538).</p>

			were evaluated. Pooled funds for primary care, social care and welfare payments.	[5]: <ul style="list-style-type: none"> Demographics and clinical characteristics Physical activity, pain, Canadian Occupational Performance Measure (COPM), EQ5D Multiple linear regression, adjusting for baseline differences between the groups (age, gender and socioeconomic status).	
USA	<i>Arizona Long Term Care System</i> [34, 126]	Integrated management / provision with pooled funds	<p><u>Clients:</u> People with significant physical and developmental impairments, screened for clinical and financial eligibility by nurses / social workers employed directly by state (independent of managed care organisation (MCO)).</p> <p><u>Integration model:</u> State-level system. Health and social care services; type of managed care, using screening. Aimed to substitute home and community-based care for long-term residential services. Care included all long-term residential, nursing, acute and mental health care, and home care services.</p> <p><u>IRM:</u> Publicly funded capitation payments to MCOs who provided and paid for services. State made capitation payments to managed care organisations for provision of LT care related services to individuals in a defined geographical area.</p>	<p>Retrospective analysis of observational data to estimate expected nursing home use and costs for older people with physical impairments, based on a national dataset of nursing home and community residents.</p> <p>Risk factors for nursing home residency derived using logistic regression from national data. The likelihood of nursing home residency for each individual served by the home and community-based services program was then predicted, and this was combined with predicted length of NH stay using a similar methodology.[126]</p>	<p><u>Effectiveness (health outcomes)</u> Not reported</p> <p><u>Service use & costs</u> Estimated to be cost saving, based on simulation model comparing observed and expected nursing home stays and costs.</p> <p><u>Barriers</u> Not reported</p> <p><u>Other</u> Risk adjustment may have been inadequate as NH admission reflects factors other than client characteristics (e.g. clinical decisions, local policy and service provision, income, family preferences). Most of the risk factors for nursing home admission were negatively associated with length of stay – i.e. positively associated with a higher risk of death. However, time to death is difficult to model and predict, making the findings uncertain.</p>
USA	<i>Commonwealth Care Alliance</i> [81]	Integrated management / provision with pooled funds	<p><u>Clients:</u></p> <ol style="list-style-type: none"> Older people (Senior Care Options); younger people with physical and mental disabilities (Disability Care Program); Medicaid-eligible adults and children with multiple chronic illnesses (e.g. mental health and substance abuse problems) (Complex Care Needs). <p><u>Integration model:</u></p>	Compared with FFS using routine data for 'comparable' populations. No explicit risk adjustment.	<p><u>Effectiveness (health outcomes)</u> Not reported. Achieved high scores for some HEDIS (national) process measures of care quality.</p> <p><u>Service use & costs</u> Group 1: lower bed days, lower rate of nursing home placement, lower total medical spending growth.</p> <p><u>Barriers</u> Regulatory barriers to combining funds from multiple payers. The 2010 Affordable Care Act may help integrate Medicare and Medicaid payments [81]. High costs of meeting state insurance regulation.</p>

			<p>Established 2003 by Robert Master, who had also founded CMA, aiming to reach a broader population. Based in primary care practices, multidisciplinary teams (nurse practitioner-led) conduct needs assessments, design individualised care plans, and co-ordinate primary, mental health and social care in the community. Some care is provided by the teams, other services by affiliated provider groups. Computerised routine data used to benchmark performance across sites.</p> <p>Affiliated to CMA.</p> <p><u>IRM:</u> Capitated payments from Medicare and Medicaid (client group 1); risk-adjusted capitated contracts with Medicaid and Neighborhood Health Plan (2); financing for client group 3 not stated.</p> <p>See also Community Medical Alliance</p>		
USA	<p><i>Community Medical Alliance (CMA)</i> [32, 127]</p>	<p>Integrated management / provision with pooled funds</p>	<p><u>Clients:</u> Severely disabled or seriously ill children or adults eligible for Medicaid (e.g. people with AIDS).</p> <p><u>Integration model:</u> Established in 1992, incorporated as a specialist part of a large HMO in 1996. Primary care team (physician and nurses) coordinated all aspects of care, including mental health services, long-term care, social and support services (e.g. equipment), and medical care.</p> <p><u>IRM:</u> Risk-adjusted Medicaid premium (based on Medicaid FFS average for client condition). Individual physicians and nurses bore no direct financial responsibility – e.g. no penalty for hospital referral. Specialists paid fee-for-service,</p>	<p>Uncontrolled before and after study [127]</p>	<p><u>Effectiveness (health outcomes)</u> Not reported. High level of client satisfaction maintained in both client groups.</p> <p><u>Service use & costs</u> Relative to fee-for-service, total per capita spend and acute hospital spend fell for members with severe physical disabilities [127]. In the AIDS programme, the cost experience was “more erratic” (p. SP96, [127]) but shifts in resources from hospital to primary care, medical equipment, AIDS-related pharmacy, personal care, and community-based long-term care services were observed [32].</p> <p><u>Barriers</u> Diffusion (roll out) of this demonstration project has proved challenging. Reasons include: inflexibilities in Medicaid which prohibit pooled funding (almost all middle income individuals are ineligible); and accountability requirements / regulation limit clinical freedom to shift resources towards community based care [32].</p>

			<p>primary care physicians paid by monthly capitation.</p> <p><i>See also Commonwealth Care Alliance</i></p>		
USA	<p><i>Minnesota Senior Health Options (MSHO)</i> [9, 20, 128-131]</p>	<p>Integrated management / provision with pooled funds</p>	<p><u>Clients:</u> People aged 65+ who are eligible for Medicare and Medicaid. Eligibility not defined by frailty level. Minnesota Disability Health Options program implemented in November 2002 (no evaluation found).</p> <p><u>Integration model:</u> Introduced 1997. Health insurance plans subcontract providers and programmes, which can integrate delivery and financing of a full range of medical and chronic long-term care services. Flexible provision, but all enrollees have coordinated care. Evercare is the main subcontractor for MSHO nursing home enrollees.</p> <p><u>IRM:</u> Pooled Medicare and Medicaid funds, provider incentives to encourage home and community based care [20]. Use of 'partial' capitation: the capitation payment for Medicaid long-term care services includes 6 months of nursing facility liability, after which the managed care organisation receives a supplemental payment [131].</p>	<p>Kane 2003 [9] undertook longitudinal analyses of <u>outcomes</u> in MSHO enrollees in two settings:</p> <ol style="list-style-type: none"> 1. Community: data collected by two surveys, using proxy responses where necessary. Outcomes dichotomised, and logit regressions run adjusting for demographics and cognitive status. Study period: 1998/9 and 2000/1 2. Nursing home (NH): routine data collected for reimbursement to analyse change in ADL (functional status) using OLS regressions, adjusting for demographics and morbidity. <p>Community enrollees (N=293) compared with two matched control groups</p> <ol style="list-style-type: none"> 1. In area controls (N=341): people in the same county who were eligible but did not enrol in MSHO 2. Out of area controls (N=276): people in other metropolitan areas where MSHO was not available <p>Nursing home resident data for 1995 to 1998 were analysed by enrollee status (2392 in MSHO / 9050 not).</p> <p>Kane 2004 [129] reports quasi-experimental <u>utilisation</u> study, also using two control groups; two analyses:</p> <ol style="list-style-type: none"> 1. matched cohort 2. rolling cross-sectional analysis <p>Regression models used to adjust for case-mix differences. Study period: 1997-2000. Cohort study: MSHO (N=2709); control-in (N=8790); control-out (N=2486).</p>	<p><u>Effectiveness (health outcomes)</u> <u>Community group:</u> no substantive differences in outcomes (health status, disability, unmet functional needs, and satisfaction). Carer burden was significantly lower in the MSHO group, but only when data from the two surveys were pooled (i.e. cross sectional analysis) [9]. <u>NH group:</u> no significant differences in functional decline in the fully adjusted model [9]. <u>Service use & costs</u> In both analyses by Kane 2004 [129], the MSHO enrollees, whether community or nursing home based, had significantly fewer physician contacts; the NH group also had significantly fewer admissions and emergency services (preventable and overall). Other findings varied by type of control group and type of analysis. <u>Community cohort:</u> no significant differences in hospital admission rates or in hospital days. MSHO enrollees had significantly fewer preventable hospital admissions and significantly fewer preventable emergency services than the control-in group. <u>NH cohort:</u> MSHO enrollees had significantly fewer hospital admissions than either control group with or without adjustment at 12 and 18 months. MSHO enrollees had significantly fewer hospital days and preventable hospitalizations than the control-in group. MSHO enrollees had significantly fewer emergency room visits and preventable emergency room visits than either control group [129]. <u>Barriers</u> Not addressed. <u>Other</u> This evidence is interesting because it evaluates the effect of integrated funding as the major change (+ some care co-ordination) on similar patients. The study "failed to show any remarkable benefits from the merging of payments from Medicare and Medicaid... little evidence that shifting this care to a consolidated funding approach managed through a series of health insurance plans with the addition of care coordination has produced improvements in</p>

					outcomes" [9]. Authors did not adjust for clustering of patients within organisations, so the precision of the findings may be overstated.
USA	<i>On Lok</i> [7, 16, 30] See also: PACE	Integrated management / provision with pooled funds	<u>Clients:</u> Frail older people on low incomes who were eligible for nursing home care [7]. <u>Integration model:</u> Based in Chinatown, San Francisco; expansion of adult day care in response to shortage of skilled nursing beds for local community [16]. Consolidated case management by multi-disciplinary in-house team (staff model) where possible, for provision of health and social care services. Prototype for PACE. <u>IRM:</u> Capitated Medicare and Medicaid payments to cover all acute and long term care, including primary care.	Descriptive review of quasi-experimental study that used matched controls [7]. N=140 2 year study	<u>Effectiveness (health outcomes)</u> Significant differences regarding functional independence, favouring On Lok. <u>Service use & costs</u> Relative to controls, the intervention group received more outpatient services for medical, therapeutic and supportive needs and significantly less use of skilled nursing facility. The control group received more personal care and homemaker input. Lower acute hospital use by On Lok clients, but difference was not significant. On Lok per person costs were 21% lower than the control group, reflecting lower costs of inpatient care (hospital and skilled nursing). <u>Barriers</u> Some clients find the group setting of adult day care unattractive [16]; see also PACE.
USA	<i>Program of All-Inclusive Care for the elderly (PACE)</i> [3, 7, 16, 20, 30, 32-34, 58, 131-136]	Integrated management / provision with pooled funds	<u>Clients:</u> People aged 55+ on low incomes, living in the community and eligible for nursing home care according to state certification criteria, i.e. significant functional problems and several chronic conditions. About half of PACE clients have dementia and 95% are dual eligibles for Medicare and Medicaid [16]. However, only 17,000 (of 9m) dual eligibles are covered by PACE [33](p 571). <u>Integration model:</u> The model has operated for over 20 years. PACE aims to enable individuals to live in the community as long as possible, through comprehensive medical, psychosocial and long term care services. Clients must switch to the PACE care team, including the primary care doctor, hospital, pharmacy and nursing home. The core of the package is the adult day	Quasi-experimental studies. <u>Study 1:</u> In Chatterji 1998 [3], PACE refusers were the controls, with multivariate analysis used to adjust for known differences in baseline characteristics. Sample varied by follow up period. Largest N: 881 / 374 <u>Study 2:</u> Quasi-experimental cohort study compared PACE with the more flexible Wisconsin Partnership Program (WPP), in which clients could use their own family physician and were not obliged to attend adult day care [134]. Both WPP and PACE integrated funding from existing Medicaid and Medicare programs into one program through federal demonstration waivers [134]. Therefore, this study investigates differences in the integrated care approach (less restricted day care and physician choice options), not differences in	<u>Effectiveness (health outcomes)</u> <u>Study 1:</u> Few significant differences in quality of life, health status or satisfaction with care ([3]; p 38) although PACE clients were more likely to attend a weekly social event. Functional status (on a small subset of domains assessed) was better in the intervention group [3];(p 40-1). Lower mortality rates and longer stays in the community reported (ibid, p 47). <u>Study 2:</u> Not addressed. <u>Service use & costs</u> <u>Study 1:</u> Programmes expensive to implement and very capital intensive. PACE enrollees had lower admission rates and shorter stays in both hospitals and nursing homes than comparison group members (PACE refusers). Use of primary care was significantly higher in the intervention group. The effects diminished over time and most differences were not statistically significant at 24 months [3] (p 29-30). <u>Study 2:</u> Compared with WPP, PACE enrollees were significantly less likely to be admitted to hospital and less likely to visit the emergency department

			<p>care centre, co-located with a primary care clinic, which clients attend several times a week for needs assessment and carer respite. As a result, start-up capital for a PACE programme is around \$1-\$1.5m [131]. Extension of On Lok. There were 19 further demonstration sites and the integrated care model became known as PACE. Designated as a permanent Medicare program in 1997 [16].</p> <p><u>IRM:</u> Qualified organisations receive monthly prospective risk-adjusted¹³ capitation payments from CMS, financed through pooling of Medicare and Medicaid revenues, to cover all acute and long term care for eligible population. The Medicaid component can be renegotiated annually to reflect within-year changes in health status [33]. PACE programs authorised to use prepaid, capitated funds flexibly [58] for home and hospital services. Programs contract with outside entities for hospital and medical specialty services, but the primary care physician retains control over utilisation [16].</p> <p><i>See also: On Lok, and Wisconsin Partnership Program (WPP)</i></p>	<p>financing. Methodology very similar to that used by Kane 2006 [12] (see WPP). 634 / 651</p>	<p>(p<0.01).</p> <p><u>Barriers</u> Helped to break down funding silos within US system, but the nursing home market remains dominated by for-profit providers. Although open to for-profit providers, none has entered the market: may be due to lack of start-up capital – (need sponsor) and/or high risk client group [16]. PACE may involve ‘cream skimming’, excluding those with psychiatric or substance abuse problems. Adult day care unappealing to some potential clients [16].</p> <p><u>Other</u> Non-equivalent group design subject to the usual caveats (imperfect risk-adjustment, unknown confounders etc). In particular, the authors could not adjust for frailty or functioning, so findings may reflect selection bias.</p>
USA	<p><i>Social Health Maintenance Organisations S/HMO</i> First and second generation S/HMOs (I & II) [7, 20, 30, 61, 63, 128, 135, 137-140]</p>	Structural integration	<p><u>Clients:</u> S/HMO I: Persons 65+ year olds, including those not eligible for Medicaid (i.e. non-frail). Long term care restricted to enrollees eligible for nursing home care. S/HMO II: frail, medically complex Medicare beneficiaries with specific risk factors [61].</p> <p><u>Integration model:</u> S/HMO I: 4 demonstration sites. Medicare HMO coverage of acute</p>	<p>Retrospective descriptive analysis of observational data on utilisation and costs for 14,815 individuals enrolled in an S/HMO I over an 18 year period (1985 to 2002) [138]. The SHMO was Kaiser Permanente Northwest (Oregon).</p> <p>Quasi-experimental study of S/HMO I. Matched controls obtained from people aged 65+ and Medicare fee-for-service clients in the areas of 4 sites [7].</p>	<p><u>Effectiveness (health outcomes)</u> S/HMO I: relative to FFS group with similar medical conditions, lower satisfaction and higher mortality rate [61]. S/HMO II: no consistent evidence that the S/HMO improved health or functional status relative to HPN’s Medicare risk plan. No evidence that the quality of care was better than in other Medicare HMOs or in Medicare FFS systems.</p> <p><u>Service use & costs</u> S/HMO I: over an 18 year period, membership casemix became increasingly older and more</p>

¹³ Reflects individual’s ‘comparative frailty’, relative to general Medicare population, and can also take factors such as end-stage renal disease into account.

			<p>services supplemented with a limited range of long-term care services (home and community based) for nursing-home certifiable clients (i.e. with functional needs). Managed by individual care coordinators (social worker), low engagement with physicians.</p> <p>S/HMO II: 1 demonstration site (HPN). More generous and better targeted care benefits than S/HMO I; multidisciplinary team prepares care plan that integrates primary and social care with specialist geriatric services [20, 61].</p> <p>Demonstration project ended 2004, and S/HMOs then supported through disability adjustment to Medicare payment.</p> <p><u>IRM:</u> S/HMO I: capitation payments to integrate acute care and long term care; financial risk-sharing between demonstration sites and CMS. Payments 15-30% higher than expected, based on Medicare risk contracting [61].</p> <p>S/HMO II: incorporated more sophisticated risk-adjusted reimbursement, based on health and functional status, to discourage cream-skimming [20]. Capitation 5% above level expected for Medicare + Choice plans. Sites assumed full financial risk, and only 1 of the 6 planned sites went live [61].</p>	<p>Case study of S/HMO II implementation in its first year (1999) [139] and first three years [140]. Review of administrative reports and charts and interviews with clinicians and administrators.</p> <p>Analysis of 3 years of data on S/HMO II (Health Plan of Nevada's (HPN) 'senior options') compared with</p> <ol style="list-style-type: none"> HPN Medicare risk plan national Medicare beneficiaries <p>Administrative data, including data on health and functional status collected by the health plans [61].</p> <p>Logistic regression using routine data to test the effect of S/HMO vs. FFS on risk of conversion of nursing facility stay to long-term institutional care [63].</p>	<p>disabled. Utilisation shifted from nursing home towards community based care [138]. Evidence from controlled evaluations found that relative to FFS group, S/HMO I enrollees had higher nursing home and home care costs and lower hospital costs [7, 61].</p> <p>Capitation payments were higher than expected, after taking account of casemix. Possibly due to gaming behaviour: enrollees classified as nursing home certifiable but not highly impaired [61]. May alternatively be due to unmet need.</p> <p>S/HMO II: No evidence of reduced hospitalisation, except in subgroup of high-risk enrollees with history of multiple hospital admissions. S/HMO members used more physician services and were more likely to use skilled nursing facility than members of traditional risk plan [61].</p> <p>Compared with FFS, being enrolled in the S/HMO increased the likelihood of successful discharge from nursing home facilities to the community by 26% [63].</p> <p><u>Barriers</u> S/HMO I: One of the 4 sites closed because of sustained and substantial losses. Lack of co-ordination between care co-ordinators and physicians, and failure to integrate acute and long-term care. Findings informed S/HMO II [61](p. 12). S/HMO II: Six sites received development grants for S/HMO II, but just one went live. In addition to financial reasons, lack of infrastructure and loss of key staff were cited [61]. The case study found that it took three years for the S/HMO II to establish its programme within clinics and so the evaluation was of S/HMO "start up" rather than "steady state" and so might not capture longer term effects.</p>
USA	Veterans Health Administration (VHA) [25, 38, 53, 79, 80, 141-143]	Integrated management / provision with pooled funds	<p><u>Clients:</u> Veterans, with varying levels of service-related disability.</p> <p><u>Integration model:</u> VHA is mostly funded from general taxation [142]. Fragmented, specialist-dominated culture and delivering care of variable quality, the VHA was re-structured in 1995 to 1999 and is now the largest integrated</p>	<p>Jha 2003 [79] compared</p> <ol style="list-style-type: none"> the quality of VHA care in 1994 (pre restructuring) with that in 2000 (post-restructuring) (13 indicators) VHA care with fee-for-service Medicare 1997 – 2000 (11 indicators). Samples were selected to reflect comparable populations in terms of age and treatment setting. Quality indicators were process measures 	<p><u>Effectiveness (health outcomes)</u> Not assessed.</p> <p><u>Service use & costs</u> After restructuring, the rate of hospital admissions fell, bed days were reduced and per-patient expenditure fell by 25% [53].</p> <p><u>Barriers</u> "Alignment of finances with desired outcomes is essential in any change effort" [53] (p. 328). Kizer 2009 [53] also cites communication, strategic and</p>

			<p>provider in the US [80]. Care provided by geographical networks: Veterans Integrated Service Networks (VISNs), each covering ~250,000 veterans. VISNs encompass hospitals, primary care clinics (facility-based and home-based), nursing and residential homes and counselling centres [53]. Responsible for pooling resources, coordinating care. Home-based primary care (HBPC) team: primary care manager, 24-hour contact for patients, prior approval of hospital readmissions, and HBPC team participation in discharge planning [53].</p> <p><u>IRM:</u> VHA allocates resources to each network (VISN) using a capitation approach known as VERA: veterans' equitable resource allocation. Adjusted to reflect network's historical distribution of basic and complex care, and input costs.</p>	<p>(e.g. vaccines and screening tests, use of aspirin for AMI etc). Total VHA sample: 84,500 Oliver 2007 [80] compared quality indicators for the VHA in 2005 with those from commercial, Medicare and Medicaid sectors (HEDIS data) in 2004 using unadjusted routine data from 2004/5.</p>	<p>flexible planning, and appropriate use of performance data as keys to success. 'Virtual' integration can be achieved by the 'glue' of an information management system, contracts and partnership agreements (p. 328).</p> <p><u>Other</u> Computerised patient record system. Quality of care improved significantly after re-structuring and relative to Medicare FFS [79]. Oliver 2007[80] found that the VHA generally outperformed Medicare, Medicaid and the commercial sector on a range of quality measures although it was not clear if these observed differences were statistically significant. VHA patients tended to receive better overall care, chronic care and preventative care than a national sample of non-VHA controls. Acute care quality did not differ significantly across groups. VHA had slightly fewer acute conditions compared to national sample.</p>
USA	<p><i>Wisconsin Partnership Program (WPP)</i> [12, 16, 128, 134]</p>	<p>Integrated management / provision with pooled funds</p>	<p><u>Clients:</u> Frail older people and those with physical disabilities, mostly community dwelling. Eligible for Medicaid, and requiring intermediate or skilled nursing care.</p> <p><u>Integration model:</u> Managed care programme. Extension of PACE, established in late 1990s. Provides health and long-term care services, clients can continue to use their primary care physician and may use adult health care. Interdisciplinary team (primary care doctor, nurse, social worker, client) manages care.</p> <p><u>IRM:</u> Integrates Medicare and Medicaid funding into a capitation stream through waivers.</p>	<p>Regression and survival analyses of claims (billing) data [12]. Included intervention clients and two matched control groups, one from counties where WPP was operational and one from other Wisconsin counties. In both control areas, participants were eligible for (or enrolled on) home and community based waiver services. Control groups were merged and matched with the intervention group for demographic, clinical and resource use (e.g. use of inpatient care within previous 6 mths) characteristics.</p>	<p><u>Effectiveness (health outcomes)</u> No significant difference in mortality rates.</p> <p><u>Service use & costs</u> There were "no major differences" between the groups in terms of hospital admission rates, length of stay, preventable hospital admission rates, and use of emergency services. Compared with the control group, there were significantly fewer preventable admissions in year 1, and a significantly lower rate of hospital days per 1000 enrollees. WPP clients received significantly more face-to-face provider contacts. No significant differences in probability of nursing home admission.</p> <p><u>Barriers</u> Physicians each manage a small number of WPP clients and, although part of the interdisciplinary team, do not usually attend team meetings - so lack incentives to change their management of these patients.</p>
Wales	<p><i>Joint commissioning of mental health services</i> [144]</p>	<p>Joint commissioning</p>	<p><u>Clients:</u> People with mental health problems using primary care and/or social care</p>	<p>Based on a mapping exercise of joint commissioning, in the health authority, social services and in GP commissioning</p>	<p><u>Effectiveness (health outcomes)</u> Not applicable (patient outcomes not assessed)</p> <p><u>Service use & costs</u></p>

			<p><u>Integration model:</u> None described, but scope was health and social care for people with mental health problems.</p> <p><u>IRM:</u> Joint commissioning, defined as planning and purchasing. The mapping exercise found that 'true' joint commissioning (i.e. joint planning and purchasing) of mental health services did not exist at the time of the study (1998)</p>	<p>groups (12/97 – 11/98). Interviews with</p> <ul style="list-style-type: none"> • HA commissioners for MH services • Social services commissioners for MH • GPs in commissioning groups <p>Case study: interviews with 28 commissioners in 3 commissioning groups. Selection criteria:</p> <ul style="list-style-type: none"> - One from each urban, rural and valleys areas. - All had a planning structure for MH services - Needs assessment, resources assessed and prioritisation done - purchasing - Social services and primary health care represented. 	<p>Not assessed</p> <p><u>Barriers</u> Recent (1996) reorganisations had impeded progress with joint commissioning. Tension was reported between policy drives towards (i) a primary care-led NHS and (ii) a specialist mental health service (the All Wales Strategy targeted resources towards people with severe and enduring MH problems), compounded by misperceptions and poor communication between secondary care teams, social services and primary care. The secondary care teams perceived GPs as having little expertise in mental health and who saw patients with SMI only for physical complaints. GPs refuted these assumptions. There was also uncertainty about whether the new flexibilities would enable GMS resources to be pooled.</p>
<p>CMS: Centers for Medicare and Medicaid Services; DiD: difference-in-difference; DVA: Department of Veterans' Affairs; GP: general practitioner; HA: health authority; HACC: Home and Community Care; HMO: Health Maintenance Organization; ICES: integrated community equipment services; IRM: integrated resource mechanism; MBS: Medicare Benefits Schedule; MH: mental health; PBS: Pharmaceutical Benefits Scheme; RCT: randomised controlled trial; RDNS: Royal District Nursing Service</p>					

Appendix 3: Schemes excluded from the review

Name of scheme	Reason for exclusion				Comments
	health care only	social care only	no financial integration	Other	
ACOs (accountable care organisations) [145]	x				
Bath and North East Somerset [37, 102]				x	No evaluation identified (financial integration introduced after the Audit commission evaluation).
Birmingham East and North Primary Care Trust (BEN PCT) [116]	x				Aim: to link provider pay to savings delivered. PCT identified 8 areas, began with end of life care (clinical only). Process terminated after PCT could no longer afford start up costs.
Blackburn with Darwen Care Trust Plus(CT+) [from April 2013: Blackburn with Darwen Clinical Commissioning Group (CCG)] [146] [147]				x	No evaluation identified
Bolton diabetes network. [25]	x				
Brent Integrated Diabetes Care [25, 38]	x				
British Columbia system(Canada) [34, 148-150]				x	No relevant empirical data.
Chain DTC, NL [151]	x				
Chains of care [152-156]	x		x		
Collaborative Care for Depression (CCD) [157]	x				
Commissioning of integrated care – PCT examples [116, 146, 158]	x				
Community Care North Carolina [145, 159]	x				Mostly clinical, but social workers may be involved.
Evercare (UK) [25, 160]	x		x		
Evercare (US) [128, 161]	x				Clinical only (for the descriptions / evaluations in the literature)
Geisinger Health System (Pennsylvania, US) [25, 38, 162]	x				
Greater Rochester Independent Practice Association [159]	x				
Health Eastleigh Initiative [163]			x		No explicit integration of finances
Healthy Communities programme [164]				x	Descriptive only, little information about joint commissioning
High intensity case management, US [34]			x		
Hong Kong model [34]	x		x		
Isle of Wight mental health services [165] [166]			x		integration of finances unclear
Jönköping County Council [167]	x				
Kaiser Permanente [20, 168, 169]	x				KP commissions social and community care to help keep patients out of hospital, but focus is clinical care and governance (but see Appendix 2 for KP's adoption of the S/HMO model).
Knowsley Health and Wellbeing Partnership [37, 83, 102, 116, 146]				x	No evaluation identified Knowsley has received good ratings from health and social care inspectors, and its work acknowledged through a number of national awards.
Knowsley PCT [25, 116, 170, 171]	x				Clinical care is main focus (includes social care assessment).
Liverpool care pathway [25]	x		x		
Local Health Care [154, 172]	x		x		
Milton Keynes PCT	x				

Name of scheme	Reason for exclusion				Comments
	health care only	social care only	no financial integration	Other	
NE Lincolnshire PCT (became North East Lincolnshire Care Trust Plus) [37, 116]				x	No evaluation identified
Nene, Northamptonshire Integrated Care Partnership (ICP pilot) [15]			x		Joint working between health and social care (especially for the 'end of life care' stream), but the evaluation aggregated findings across pilot sites. This means it is not possible to disentangle Nene and certainly not just one of the streams.
New York Visiting Nurse service: VNS CHOICE [173]			x		
Newquay care pathway for dementia [15]			x		No (explicit) integration of finances
Norfolk integrated care pilot (Norfolk Integrated Care Network) [15]			x		Joint working and joint funding for the scheme but no joint budgets for services
North Lanarkshire Health and Care Partnership [159, 174]			x		
Northumberland Care Trust [83, 175]				x	No evaluation found; CT had financial problems and was disbanded. & Little information available about the working of the CT.
Norwich PCT [176]				x	No evaluation identified
PCMHs (patient-centred medical homes) [145]	x				
Principia Partners in Health, Nottingham [15, 25, 110]	x				
Puget sound: Group Health Cooperative of Puget Sound [20, 168]	x				
Redbridge [110]	x				
Regionale Huisartsenzorg Heuvelland [159]	x				
Rovereto [7] [34, 57]			x		No (explicit) integration of finances
Smethwick Pathfinder [170]	x				
Södertälje mental health and social care consortium [156] [177]			x		
Somerset PCT [116]	x				
South East London Cancer Network [25, 38]	x				
Texas STAR+PLUS [128]		x			Social care only
Total Purchasing Pilots [178]			x		
Tower Hamlets PCT [15, 170]	x			x	Although the overall setup meets our inclusion criteria, the evaluation is restricted to an area which is healthcare only
Trafford [110, 179]	x				
Vittorio Veneto [7, 180]			x		No (explicit) integration of finances
Wales chronic care: health and social care [25] [117, 181]			x		No (explicit) integration of finances
West Kent PCT [25, 116]	x				
Working Unit for Continuous Care (Italy) [25]			x		No (explicit) integration of finances

Appendix 4: Methodological issues

Implementation

Australian CCTs: Eligibility criteria were relaxed in response to recruitment difficulties, and some participants would have had less capacity to benefit than the target population. Interventions were not always tailored to need (one size fits all) [87].

Measurement and reporting issues

Australian CCTs: Timescale: on average, participants were 'treated' for 12 months or less, which may not have been sufficient to impact complex illness. The SF-36 may not be sensitive enough for this short time span [87].

Confounding

Observational studies can seek to adjust for known confounding factors (subject to data availability) but are unable to adjust for unknown biases. Administrative data may be unreliable and limited in scope, which limits researchers' scope to risk adjust appropriately, and so reliably assess the counterfactual. An example of this problem was faced by the analysts of ICP pilot data who used prognostic scores to match cases with controls for a difference-in-difference analysis:

"Although cases and controls were similar in terms of the variables that we could observe, it is nevertheless possible that systematic unobserved differences existed between the groups. We have some evidence that this was the case because six-month mortality was greater in cases than controls (8.4% vs. 4.8% in case management sites)" [59].

An example from the US was the evaluation of Program of All-Inclusive Care for the elderly (PACE), compared with its more flexible counterpart the Wisconsin Partnership Program [134]. The analysis was based on claims data, and risk-adjustment was restricted to characteristics reported in these routine data. Therefore, the finding that PACE clients used less hospital care took no account of individuals' frailty or functioning and so results may have been biased. A broader problem facing many studies is the difficulty of isolating the effect of a particular intervention that is introduced in the context of a raft of other interventions and policy initiatives [182]. Not only do the effects of these initiatives vary over time, but the effects may also be synergistic.

Selection of the time frame for analysis

Difference-in-difference analyses need to select the 'correct' start points and endpoints to define the before and after periods. In the evaluation of the NW London pilot, the findings of effects on hospital admissions were found to vary depending on choice of start date and comparator area [78].

Regression to the mean

Several studies (e.g. POPP, SHMO II) found that the intervention reduced admissions, but only for a small subgroup of people who had high predictive risk scores [60, 61]. These risk scores are formulated on the basis of previous hospital use, for instance the use of inpatient and outpatient care over the previous three years [51]. However, if these individuals subsequent use of hospital care falls, this may be due not to the intervention but to natural variation in repeated data. Regression to the mean is a statistical phenomenon associated that happens when repeated measurements are made on the same individual. As values are observed with random error, extreme (e.g. high or low) observations are likely to be followed by less extreme ones nearer the individual's true mean [183]. The effects of regression to the mean can be mitigated by robust study design, such as randomization.

Use of clustering in RCTs

The two sets of Australian Coordinated Care Trials randomized individual patients to one of four arms: three models of integrated care or 'usual care'. The models of integrated care all involved GPs, but the design of the RCT did not recognize that patients were clustered within GP practices. Care given to individuals in the same site will tend to be correlated, which increases the chance of a false positive result (type I error). The other confounding influence is that the GPs who provided integrated care were also providing 'usual' care to other patients in the trial, which could lead to contamination of care for the control group. These factors may help explain why the trial outcomes were generally "disappointing" [87].

Other issues

NW London: The MDG meetings were intended to be forums for identifying ways to improve efficiency in the local health economy by use of innovative out-of-hospital services. In practice, discussions were dominated by GPs and hospital doctors and in the first year only 39% of the Innovation Fund (set up to support innovation) was spent [78].