

Clinical and service integration

The route to improved outcomes

Natasha Curry and Chris Ham

TheKingsFund›

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Executive summary

Integration can take a variety of forms, involving either providers, or providers and commissioners, who work together to deliver better outcomes at the macro, meso and micro levels.

- There are many examples of integrated systems operating at the **macro level** in the United States and wide variations in how these systems are organised. The integrated systems reviewed in this paper, such as Kaiser Permanente and Geisinger Health System, demonstrate high levels of performance on many indicators for the populations that they serve. Common characteristics of these integrated systems contributing to their performance include multispecialty group practice, aligned incentives, the use of information technology (IT) and guidelines, accountability for performance and defined populations, a physician–management partnership, effective leadership and a collaborative culture.
- Integration at the **meso level** focuses on the needs of particular groups of patients and populations, such as older people and patients with one or more long-term conditions. Evidence from North America and Europe shows that integrated health and social care systems for older people demonstrate positive results on many indicators. There is also evidence that disease management for patients with long-term conditions can deliver benefits on some indicators. The evidence on approaches such as chains of care and managed clinical networks is inconclusive.
- Integration at the **micro level** encompasses a diverse range of approaches, many of which seek to improve care co-ordination for individual patients and carers. These approaches include care planning, case management, patient-centred medical homes, virtual wards, personal budgets, IT, telehealth and telecare. There is evidence to support the use of all these approaches, although the findings of evaluations are inconsistent, for example, in relation to case management. Interventions using multiple strategies to strengthen care co-ordination appear to be more successful than those using single strategies.

The evidence brought together in this paper shows that moves to achieve closer integration of care in the English NHS should continue. Organisational integration alone is unlikely to deliver better outcomes and effort must focus on clinical and service integration. Action is needed at the macro, meso and micro levels, and multiple strategies should be pursued at all three levels.

General practice commissioning offers a platform on which to develop integration provided that practices involved in commissioning consortia are encouraged to commission and provide services in collaboration with clinicians in community health services and secondary care.

Policy-makers should encourage the emergence of clinically integrated groups and integrated provider networks based on patient choice wherever possible and linked through contractual integration.

Introduction

Policy-makers have used a variety of mechanisms for reforming the NHS in England in the past decade, including targets and performance management, regulation and inspection, and choice and competition. The coalition government elected in May 2010 has put forward proposals to extend choice and competition and to reduce reliance on targets and performance management as part of a far-reaching programme of reform. These proposals are designed to put patients at the centre of the NHS and improve outcomes.

Alongside the emphasis on choice and competition, there has been increasing interest in integrated care. The policy document that signalled the importance of integrated care was the final report of the NHS Next Stage Review led by Lord Darzi which noted:

We will empower clinicians further to provide more integrated services for patients by piloting new integrated care organisations (ICOs) bringing together health and social care professionals from a range of organisations – community services, hospitals, local authorities and others, depending on local needs. The aim of these ICOs will be to achieve more personal, responsive care and better health outcomes for a local population (based on the registered patient lists for groups of GP practices).

(Department of Health 2008, p 65)

Subsequently, 16 areas were selected for inclusion in a pilot programme and these are being evaluated to explore how services have been integrated and the impact they have had on patients and service use. The 16 areas include some of the NHS organisations involved in adapting lessons from Kaiser Permanente's integrated way of working over the past decade (Ham 2010b). Alongside the pilot programme, other areas have also taken the initiative to integrate care and have sought to do so in the face of policies that have not always supported integration (Ham and Smith 2010).

One of the questions that arises from the change of government is whether the interest in integrated care will continue in view of the even greater emphasis being placed on choice and competition. On one reading, integrated care could act as a barrier to choice and competition if it were to entail establishment of organisations that take on the appearance of monopoly providers of care in their areas. An alternative argument is that integrated care organisations could be in the vanguard of the disruptive innovations needed to improve performance, especially if there is competition among integrated care organisations (Christensen *et al* 2008). As this argument implies, there is no inherent contradiction between integration and competition provided that patients are able to exercise choice either within or between integrated care organisations.

To make these points is to emphasise the need for a more nuanced debate about the direction of reform that recognises the possibility of integration and competition both having a part to play in improving performance. This debate should be informed by evidence on the performance of integrated systems and the many ways in which integrated care can be taken forward. It should also be informed by greater clarity on the meanings of integration, integrated care and integrated care organisations, because these terms are often used synonymously but may have different meanings.

This paper contributes to that debate by describing and summarising relevant evidence about high-profile integrated systems and outlining examples of integrated care for particular care groups or people with the same diseases or conditions. It also reviews ways of achieving closer integration for individual service users and carers through care co-ordination and other approaches. It is not intended to be an exhaustive review of these issues; rather it offers a selective summary of experience and evidence, focusing on examples of integrated care that appear to have most relevance to the NHS in England in the context of the coalition government's programme. The paper is aimed primarily at policy-makers and NHS leaders working on these issues, in the hope that the evidence brought together here will help to inform the future direction of reform.

The paper starts by clarifying the meanings of different terms and the many forms of integration in health care.

Definitions and forms of integration

There are many competing definitions of integration and integrated care. A review by Kodner and Spreeuwenberg (2002, p 3) led these authors to suggest that:

Integration is a coherent set of methods and models on the funding, administrative, organisational, service delivery and clinical levels designed to create connectivity, alignment and collaboration within and between the cure and care sectors. The goal of these methods and models is to enhance quality of care and quality of life, consumer satisfaction and system efficiency for patients with complex, long term problems cutting across multiple services, providers and settings. The result of such multi-pronged efforts to promote integration for the benefit of these special patient groups is called 'integrated care'.

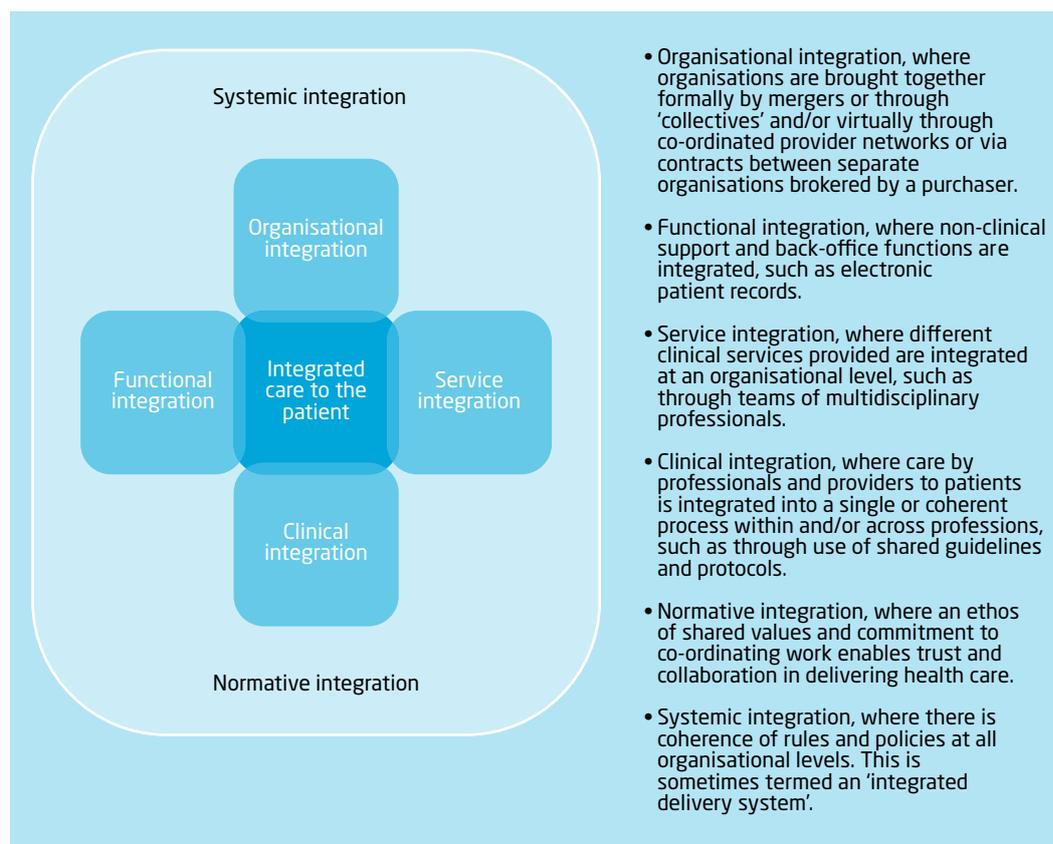
It follows from this definition that integration is concerned with the *processes* of bringing organisations and professionals together, with the aim of improving *outcomes* for patients and service users through the delivery of integrated care.

Many advocates of integration see it as a potential solution to fragmentation, defined as the breakdown in communication and collaboration in providing services to an individual which results in 'deficiencies in timeliness, quality, safety, efficiency and patient-centredness' (Wagner 2009). MacAdam (2008), for example, writes about integration as 'frameworks of care' that reduce fragmentation and duplication of health care, which can lead to poor patient outcomes, inefficient services and wasted resources. Fragmentation is often the result of organisations, professionals and services operating independently of each other, with adverse consequences for service users.

Leutz (1999) has suggested that there are different degrees of integration, ranging from linkage through co-ordination to bringing together services into one organisation. Linkage involves organisations agreeing to collaborate to improve outcomes; co-ordination entails organisations putting in place defined structures and processes to overcome fragmentation; the most radical form of integration involves establishing new programmes and units in which resources are pooled and information shared. Whatever the degree of integration, Lewis *et al* (2010, p 11) emphasise that 'the primary purpose of integrated care should be to improve the quality of patient care and patient experience and increase the cost-effectiveness of care. As such, integrated care is provided with both a rationale and a common basis for judging its impact'.

Typologies of integration

One of the most comprehensive typologies is that developed by Lewis *et al* (2010), which builds on work by Fulop and colleagues (*see* Figure 1 overleaf).

Figure 1 Fulop's typologies of integrated care (from Lewis *et al* 2010)

Source: Adapted from Fulop *et al* (2005)

A distinction can be made between horizontal and vertical integration. *Horizontal integration* occurs when two or more organisations or services delivering care at a similar level come together. Examples include mergers of acute hospitals as well as the formation of organisations such as care trusts that bring together health and social care. *Vertical integration* occurs when two or more organisations or services delivering care at different levels come together. Examples include mergers of acute hospitals and community health services, and tertiary care providers working with secondary care providers.

Both horizontal and vertical integration may be real or virtual: *real integration* entails mergers between organisations, whereas *virtual integration* takes the form of alliances, partnerships and networks created by a number of organisations. Virtual integration may occur along a continuum, ranging from formalised networks based on explicit governance arrangements at one extreme to loose alliances or federations at the other. Virtual integration is often underpinned by contracts or service agreements between organisations, as in the supply chains found in many manufacturing industries. It can therefore be seen as a form of *contractual integration* rather than organisational integration.

Examples of integration in the NHS

Torbay Care Trust was formed in 2005 and brings together responsibilities for commissioning of and provision for adult social care and community health services. The formation of the care trust was facilitated by a history of partnership working, a long-standing commitment to integrated care and, at a practical level, co-terminous boundaries between the council and the primary care trust (PCT). In order to meet the needs of older people, Torbay has established five integrated health and social care teams organised in localities aligned with general practices. The teams seek to proactively manage vulnerable service users with the intention of reducing hospitalisation and, where hospitalisation has occurred, to facilitate re-ablement.

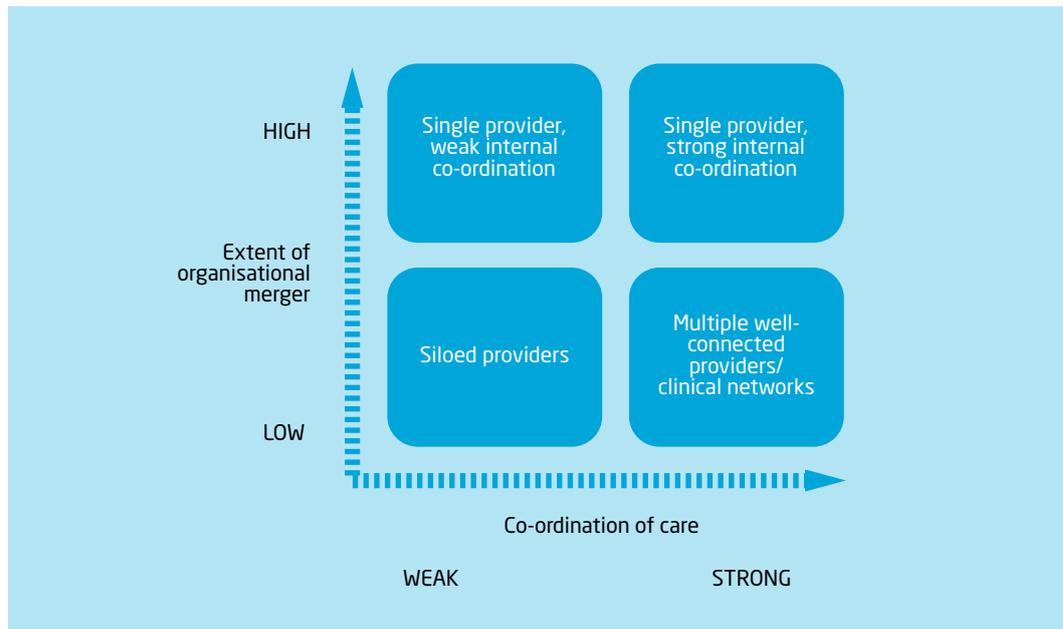
Brent Integrated Diabetes Care aims to improve outcomes for people with diabetes through closer working among staff in hospitals, the community and general practice. Much diabetes care is provided in general practice, supported by a diabetes specialist nurse. An intermediate specialist care service acts as an interface between primary and secondary care, and cares for patients with poorly controlled diabetes or those recently discharged from hospital. A rapid access clinic has been established, which aims to treat those individuals who have minor issues but would otherwise have had to wait for a specialist appointment. As a result, only patients with very complex needs are seen by specialists in secondary care.

South East London Cancer Network was set up in 2001 with the aim of ensuring equitable access to high-quality care for all patients in the area wherever they are treated. The network seeks to provide seamless, multidisciplinary and multiagency care as close to a patient's home as is safe and cost-effective. Cancer networks were identified in the National Cancer Plan as the framework through which cancer services should be delivered. The South East London network covers six PCTs, six acute trusts and a range of palliative care providers. All member organisations sign up to a common set of values around collaborative working, and agree to share good practice, information and experience.

North East London Foundation Trust took over Barking and Dagenham PCT's provider arm in July 2009. Under the previous government's Transforming Community Services policy, PCTs have been required to divest themselves of their provider services to further formalise the purchaser/provider separation. Although patients continue to receive care at the same sites, the management of services has shifted to the trust which will continue to manage them until March 2011. This is an example of vertical integration and the first such case to be reviewed (and approved) by the NHS Competition and Cooperation Panel.

Evidence from the United States indicates that organisational integration may occur in the absence of clinical and service integration. As Burns and Pauly (2002, p 134) found in their review, 'the structures that were put in place to integrate different providers often failed to fundamentally alter the manner in which physicians practiced medicine and collaborated with other health care professionals.' The consequence was that 'integrated structures rarely integrated the actual delivery of patient care' (Burns and Pauly 2002, p 134). This observation is supported by a recent review of organisations claiming to deliver integrated care to older people in North America which found that only half actually provided more co-ordinated care for older people and their carers (MacAdam 2008). Alongside organisational integration, therefore, it is important to consider the extent to which care is effectively co-ordinated.

Figure 2 Conceptualisation of integrated care in terms of organisational form (from Donaldson in Ham and de Silva 2009)



The relationship between organisational integration and care co-ordination is illustrated in Figure 2, which indicates that organisational integration in itself may be insufficient to overcome fragmentation of care. It also suggests that high levels of care co-ordination can be achieved both within integrated organisations and between different organisations working together in networks.

This brings out a further important distinction, relating to the *level of care* that is the focus of integration. As discussed in more detail below, integration may be pursued at macro, meso and micro levels. Care co-ordination is one way of achieving integration at the micro level by ensuring that service users experience seamless care. Care co-ordination depends less on organisational integration than on clinical and service integration, because the experience of service users is influenced more by the nature of team working and the adoption of shared guidelines and policies than by the nature of organisational arrangements. This has important implications for the NHS and we return to them in the final section.

Implicit in the discussion so far is that integration is concerned with the provision of care. Although this is often the focus for both policy-makers and practitioners, the extent to which the provision of care should be integrated with or separated from responsibility for health care funding or commissioning is also an important issue of debate. Until the introduction of the internal market reforms in the 1990s, the NHS was an example of a health care system in which funding and provision were largely integrated in the same organisations, such as area health authorities and district health authorities.

In line with developments in other countries, the reforms in the 1990s resulted in separation between provision and commissioning (as funding has become known) in England. The merits of maintaining this separation continue to be discussed, with some commentators arguing that organisations in the United States combining provision and commissioning perform better than those in which these functions are separate (Christensen *et al* 2008). The argument for bringing together provision and commissioning in the same organisations has proved more persuasive in Scotland and Wales, which have reverted to an integrated structure since political devolution.

Policy-makers in England continue to promote separation, most recently by requiring PCTs to divest themselves of their responsibilities for service provision.

The final point to make in clarifying definitions and forms is that integration may also involve funders or commissioners working together to deliver integrated care and improve outcomes. Commissioner integration has been pursued in various forms since the late 1970s, when joint financing was introduced between health and social care. More recently, the flexibilities made available under the Health Act 1999 (now the Health and Social Care Act 2001) have enabled NHS organisations and local authorities to set up arrangements under which one authority transfers resources to the other to undertake *lead commissioning* of health and social care, and to transfer resources into a single budget managed by one of the authorities on behalf of both (known as *pooled budgets*). It is also possible to establish care trusts to achieve organisational integration of health and social care budgets and services. One example is Torbay, which is described in more detail later (p 25).

Where they have been taken up, these flexibilities have been used mainly in relation to services for people with mental illness, learning disabilities and physical disabilities, as well as for older people. Although many of the examples discussed in this paper relate to the integration of health care services, some of the evidence on health and social care integration has also been reviewed, especially concerning services for frail older people in whom the risks of fragmentation are most apparent. In relation to the typology outlined above, commissioner integration focuses mainly on the normative and systemic dimensions of integration.

Levels of integration and evidence of impact

Examples of integration are reviewed at three levels:

- The *macro level* is one at which providers, either together or with commissioners, seek to deliver integrated care to the populations that they serve. Examples include health maintenance organisations such as Kaiser Permanente and Geisinger Health System, and integrated medical groups.
- The *meso level* is one at which providers, either together or with commissioners, seek to deliver integrated care for a particular care group or populations with the same disease or conditions, through the redesign of care pathways and other approaches. Examples include initiatives to integrate care for older people in North America and Europe, disease management programmes, chains of care and managed clinical networks.
- The *micro level* is one at which providers, either together or with commissioners, seek to deliver integrated care for individual service users and their carers through care co-ordination, care planning, use of technology and other approaches.

Although we have distinguished between these three levels for the sake of analysis, in practice they are often used in combination; this is in recognition of the fact that changes at the macro level, on their own, are limited in their ability to make a difference for service users and also to address the weaknesses of care fragmentation. For example, organisations such as Kaiser Permanente and the US Veterans Health Administration seek to leverage the benefits of organisational integration by focusing on population management and care co-ordination. As discussed in the final section, integration is unlikely to deliver on its promise of improving outcomes unless there is action at all levels.

There are a multitude of difficulties associated with measuring the impact of efforts to achieve closer integration. First, the aims of integration may be manifold, so the criteria

against which success is measured vary widely. Second, even where intentions are clear and consistent, the target populations, size of intervention group and context may be different and difficult to compare. Third, some of the intended outcomes of integration are not easily measurable. For these reasons, assessing the impact of integration remains a significant challenge (Goodwin *et al* 2008) even if there are promising signs that integration can have positive effects and the evidence base is 'good enough to be both intriguing and frustrating' (Tollen 2008).

With these caveats in mind the following sections summarise the evidence and highlight the emerging findings.

Macro-level integration

Some of the best examples of integration at the macro level are to be found in the United States where there is evidence that integrated systems, which have high levels of organisation, often perform better than the fragmented forms of care that predominate there (Shih *et al* 2008). These systems seek to integrate one or more of the three core elements that underpin health care in the United States, to overcome the issues of duplication, poor-quality care and inefficient use of resources which can arise due to fragmentation of care. These three elements are the health plan (or commissioner to use UK terminology), the physicians who provide outpatient care and have admitting rights, and the hospitals that deliver inpatient care (Gleave 2009).

Some systems have integrated all three elements and represent examples of complete provider and commissioner integration; others have focused mainly on provider integration, for example, by bringing together physicians and hospitals; there are also examples of physicians coming together in integrated medical groups. In some cases, medical groups come together to work at a sufficient scale to be able to take on responsibility for commissioning all or part of the care for the populations whom they serve.

The diverse forms of integration in the United States add to the complexity of assessing their impact and distinguishing the different elements that have a bearing on their performance, let alone assessing whether one form of integration is superior to the others.

Kaiser Permanente

Kaiser Permanente is the largest non-profit-making health maintenance organisation in the United States, serving 8.7 million people in eight regions. Kaiser Permanente is a virtually integrated system in which the health plans, hospitals and medical groups in each region remain distinct organisations and co-operate closely using exclusive and interdependent contracts. The exclusivity of the contract means that the medical groups do not see patients from other health plans and members of the health plan generally obtain all their care from Permanente physicians. The Permanente Medical Groups receive a capitation payment to provide care to members in Kaiser facilities and, as such, take responsibility for clinical care, quality improvement, resource management, and the design and operation of care delivery in each region. The mutual interdependency of the three parts of the system means that no single part can afford to let the others fail; this acts as an incentive for partnership working.

In all regions, there is an emphasis on keeping patients healthy, consistent with Kaiser's mission as a health maintenance organisation. Key principles of their approach are summarised in the box overleaf. Although these principles hold for all regions, each region has the autonomy to deliver care according to local need (McCarthy *et al* 2008). For example, Kaiser Permanente in California owns and runs hospitals, whereas in Colorado it is made up of a health plan and medical group that contract with non-Kaiser hospitals with which they have a long-term relationship.

Kaiser's model emphasises the **integration of care**, with Kaiser combining the roles of insurer and provider, and providing care both inside and outside hospitals. Care integration enables patients to move easily between hospitals and the community, facilitated by a model of multispecialty medical practice in which specialists work alongside generalists and have no incentive to build up facilities and resources in hospitals at the expense of other services.

Kaiser also focuses on **chronic care** rather than primary and secondary care. Chronic diseases are a priority because they represent the major source of demand among the membership served by Kaiser. These diseases are tackled by stratifying the population according to risk and adopting an approach to population management that combines an emphasis on prevention, self-management support, disease management and case management for highly complex members.

Population management is one of the factors that enables Kaiser to avoid inappropriate use of hospitals. This is summarised in the philosophy that 'unplanned hospital admissions are a sign of system failure'. Put another way, Kaiser takes the view that patients who require hospital treatment that has not been planned have not received optimum care at an earlier stage in their illness. It seeks to provide optimum care through the use of evidence-based guidelines and by managing care to reduce unacceptable variations in practice.

Kaiser's much lower use of beds compared with the NHS is driven by the **active management of patients in hospital**. This is achieved through the use of care pathways for common conditions such as hip replacements, the employment of discharge planners to move patients through pathways, and the availability of skilled nursing facilities to provide rehabilitation for patients who no longer need to be in an acute hospital but are not ready to go home. Similar to a number of US health care organisations, Kaiser also makes use of general physicians, known as hospitalists, to work only with inpatients and to ensure that those patients receive the appropriate level of care.

Chronic care and short hospital stays are underpinned by the provision of **self-management support** to members. Self-management support takes the form of the provision of information and patient education programmes, increasingly supported by information technology. Kaiser's **HealthConnect** programme involves a significant investment in information technology, including Kaiser Permanente online, which enables members to communicate by email, access their medical records, make appointments and order prescription refills.

Underpinning Kaiser's model of care is a relationship of **mutual exclusivity** between the health plan and the Permanente Medical Groups. A high proportion of doctors take on leadership roles in the medical groups, and it is within these groups that decisions are made on clinically appropriate care. Physicians in Kaiser take responsibility for the performance of the organisation, and are actively committed to its success. A significant investment is made in **leadership development** to support doctors and other staff to contribute effectively.

By empowering clinicians across primary, secondary and tertiary care to share responsibility for the budget and quality of care, specialists and generalists are required to resolve their differences and work towards the single goal of providing the most cost-effective service. As doctors are on fixed salaries, unlike their self-employed counterparts, there is no financial incentive to undertake or order unnecessary procedures.

The relationship of mutual exclusivity between the health plans and the medical groups means that physicians are aware that their clinical decisions have an impact on the financial performance of Kaiser and indirectly on their own remuneration. High levels of patient satisfaction mean that patient turnover is low and enables Kaiser to invest in long-term preventive medicine and information technology (The Economist 2010).

Impact

Kaiser Permanente is recognised as one of the top-performing health systems in the United States and is one of the lowest-cost health care providers in most of the regional markets in which it competes (The Economist 2010). In the 2009/10 US News and World Report rankings, Kaiser Permanente was ranked first in Hawaii and Colorado for Medicaid and Medicare plans, respectively (*see* <http://healthusnews.com>). The California Office of the Patient Advocate's 2008 Healthcare Quality Report Card gave Kaiser's northern and southern California systems the highest overall ratings among eight large health maintenance organisations in the state, including four-star ratings (excellent) for clinical quality and three-star ratings (good) for consumer experience. The medical group was ranked by the Integrated Healthcare Association in the top 20 per cent of Californian medical groups.

In a survey conducted for the California HealthCare Foundation, Kaiser members reported higher levels of collaborative goal-setting in their health management and reminders for preventive or follow-up care, compared with patients seen in other care settings in California. In addition, members reported fewer difficulties in securing an appointment for the same or next day or accessing services after hours and were more likely to be satisfied with their care (McCarthy *et al* 2008). Kaiser's sophisticated electronic medical record and information systems allow patients to directly access their doctors via email, often avoiding the need to visit in person.

When compared with the NHS, Kaiser performs better, with around a third of the bed use for about the same cost (Feachem *et al* 2002). Although there has been much debate about the reliability of this study (eg, Talbot-Smith *et al* 2004), further analysis confirmed that, for 11 medical conditions studied, the NHS uses 3.5 times the number of bed days as Kaiser for those aged 65 and above (Ham *et al* 2003). Part of the explanation is that, compared with the NHS, Kaiser can deliver more care outside the hospital in large medical offices, analogous to the polyclinics that have been advocated by some for adoption in the NHS.

Veterans Health Administration

The Veterans Health Administration (VA) is an example of real integration, in contrast to Kaiser Permanente, which is virtually integrated. The VA employs physicians, owns and runs hospitals and medical offices, and manages services within a budget allocated by the federal government. As such, the VA is often likened to the NHS, even though the population it serves is much narrower, being focused on older people, often with complex needs.

Although the VA is now recognised as a leader in the provision of high-quality care, this has not always been the case. In the mid-1990s, it was seen as an inefficient bureaucracy delivering mediocre care in urgent need of radical transformation. At the time, the VA was a large hospital-centric system providing a range of services through directly managed, or indirectly supported, facilities. This resulted in facilities acting independently of each other, occasionally in competition and frequently duplicating services (Perlin *et al* 2004).

The appointment of a new leader was the trigger for reorganisation of the VA into a series of regionally based, integrated service networks. It now consists of 21 networks, each of which has responsibility for resources across all care settings. Instead of a fee-for-

service payment system, in which providers are rewarded for volume of activity, the VA allocates resources on a capitation basis to each network which is then responsible for providing all care with those resources. As managers know that they are responsible for a person's entire care needs and likely to care for people throughout their lives, they have an incentive to provide health promotion and effective care management over time (Jha *et al* 2003).

Network managers are held to account via a rigorous accountability structure and performance regimen. Overarching performance measures are agreed centrally and cascaded down the system to clinicians and managers, to ensure that all parts of the system are working towards the same goals. Many of these measures focus on clinical quality and are supported by a culture of measurement and reporting. Financial incentives are also aligned with organisational goals. Performance of all the networks is reviewed quarterly and results are widely communicated. Investment in IT enables effective data sharing and also promotes consistent high-quality care through the dissemination of evidence-based guidelines, decision support tools and physician alerts (Perlin *et al* 2004). The VA has also invested in health service research in support of quality improvement.

These mechanisms have enabled the VA to introduce patient-centred care co-ordination, which has sought to rationalise and unify care, and ensure that care is provided when the patient requires it. For example, the VA's Care Coordination/Home Telehealth (CCHT) system – consisting of sophisticated remote monitoring technology – has allowed patients to manage their conditions at home with visits or appointments being triggered as a problem arises, offering scope for clinicians to intervene and prevent deterioration and admission (Darkins 2008). The VA's co-ordinated approach to disease management, facilitated by data sharing and multispecialty networks, means that patients with two conditions are no longer managed through two separate, overlapping services but rather through a package of integrated care which addresses all their needs.

- The VA's transformation was based on the creation of **regionally based integrated service networks** in place of a fragmented hospital-centred system.
- A strong **culture of measurement and reporting** was developed, focused on key performance criteria which facilitated transparent comparisons between regional networks.
- Data on comparative performance were reviewed as part of a **performance management system** which enabled the headquarters to hold regional directors accountable for performance.
- Performance criteria emphasised **clinical quality** and **patient outcomes** as well as other measures.
- Financial and non-financial **incentives** were used to support performance management and quality improvement.
- **Information technology** underpinned these developments, including the electronic patient care record, and supported integration of care.
- A culture of evaluation and **health service research** was promoted to support evidence-based decision-making.
- **Leadership** was strengthened at all levels of the organisation with physicians and other clinicians taking on key roles.

Impact

In the period since it emerged from being a hospital-centric system to one based around integrated service networks, the VA has reduced its use of hospital bed days by 55 per cent with no adverse health outcomes (Ashton *et al* 2003). The number of acute and long-term care beds has fallen from 92,000 to 53,000, whereas ambulatory care visits and home care services have increased (Perlin *et al* 2004). During the six-year period after its transformation, the number of VA members increased by 75 per cent whereas the total budget increased by only 32 per cent. In a comparison of the VA with other US systems, the VA scored higher for overall quality (67 per cent vs 51 per cent), long-term conditions management (72 per cent vs 59 per cent) and preventive care (64 per cent vs 44 per cent) (Asch *et al* 2004).

Jha *et al* (2003) found the VA to have achieved statistically significant improvements in quality between 1994/5 and 2000 for all nine indicators collected and, compared with Medicare Fee For Service, it performed significantly better on all 11 quality indicators collected between 1997 and 1999. The study of Asch *et al* (2004) concluded that patients cared for in the VA system received higher-quality care than patients who received care elsewhere. This difference was greatest in the areas that the VA measures for quality, which suggests that the act of measuring quality can actually improve care. The VA's substantial investment in its CCHT system appears to have yielded benefits, with analysis revealing a 25 per cent reduction in the number of bed days, a 19 per cent reduction in admissions and high satisfaction scores (Darkins 2008).

Although the performance of the VA has been questioned in some quarters (*see* Oliver 2007), it is widely perceived as an example of a high-performing health care system (Baker *et al* 2008). For example, in 2005, *Washington Monthly* described the VA as 'the country's best health care system' and a more recent review of its performance was entitled *Best Care Anywhere* (Longman 2007). As this brief summary has indicated, the emphasis on integrated care contributed to the turnaround in its fortunes, but other factors also played a part.

Geisinger Health System

Geisinger is based in north-east Pennsylvania and comprises a hospital system of three acute hospitals and 12,000 employees, including a multispecialty group of 740 physicians. It serves a population of 2.6 million and is also insurer for about 30 per cent of the patients who use its services. This means that Geisinger is an integrated provider and has partial integration of provision and commissioning. Geisinger's Chief Executive, Glenn Steele, is clear that the real benefits are felt when there is integration of commissioner and provider, arguing that, if the financial benefit of innovative practice goes to someone else, the system will not work (Dentzer 2010).

The population that Geisinger serves is older, poorer, sicker, more rural and less transient than the national average (McCarthy *et al* 2009a). As a result of the rural context, specialist services are provided from three large hubs while 200 physicians provide primary care at 40 community practice clinics. Geisinger differs from the previous models in that, in addition to directly employed staff and directly provided services, it also contracts with more than 18,000 independent providers and community hospitals in a form of virtual integration.

Central to Geisinger's care delivery system is the idea of multispecialty care and co-ordinated provision in the form of bundles of evidence-based practice. Physicians are brought together in 22 cross-disciplinary service lines to jointly plan and budget for care and to assess each other's performance. Each individual's care needs are the responsibility

of a single practice (Shih *et al* 2008). Geisinger has developed a model called ProvenCare, which is a hospital-based portfolio of products for which care processes have been developed to reliably administer a co-ordinated bundle of evidence-based practice (McCarthy *et al* 2009a).

As 'products' are priced as bundles of care, physicians are motivated to be efficient and deliver evidence-based practice. For example, a flat fee is set for certain procedures, which includes preoperative care, the surgery or treatment itself, and time-limited postoperative care. The intention of such bundled payments is to encourage physicians to follow best-practice guidance to promote consistent quality and reduce complications (Shih *et al* 2008). Prices include a percentage of the historical costs of complications, which adds a strong incentive to get it right first time (Carbonara 2008).

Part of the drive to develop ProvenCare was to eliminate unwarranted variation in practice. Developed initially around heart surgery, the process involved clinicians reaching a consensus around best practice from the start to the end of the care pathway, and then 'hard-wiring' this into the organisation's systems (Dentzer 2010). The ProvenCare heart programme has reduced mortality, infection, length of stay, re-admission rates and costs (Dentzer 2010). ProvenCare has been extended to other areas such as angioplasty, hip replacements and cataracts, as Geisinger seeks to deliver a warranty for the quality of its acute care; it has also been used in relation to chronic diseases such as diabetes and heart failure.

In addition to its hospital-based package, Geisinger has developed the ProvenHealth Navigator, which is a community-based advanced medical home for individuals with multiple chronic conditions (*see* p 36 for more discussion of medical homes). By redesigning primary care, changing incentives for physicians and putting nurses in primary care practices, the intention was to keep people healthier in the community and avoid hospital admission. Geisinger tries to ensure that nurse practitioners, physician assistants, pharmacists and physician 'extenders' work to the limits of their licence to maximise quality and decrease cost. Nurse care managers are embedded in practices and assigned a case load of 125–150 of the sickest patients. Nurses act as central points of triage and ensure that the patient sees the right professional at the right time (Dentzer 2010).

As well as bundled payments, high performance is incentivised by a pay-for-performance system, with 15–20 per cent of a physician's compensation based on meeting performance targets related to cost-efficiency, quality, satisfaction and teaching. As in the VA, the personal performance targets for individual physicians align with the overall organisational goals. A quality summary is also used to rate practices and those achieving high scores receive a financial reward. Geisinger's operations are underpinned by a high-performing IT system which enables the use of electronic health records and efficient information exchange. Geisinger's patients are also able to access the web portal to order prescriptions, email clinicians and make appointments.

Geisinger shares many characteristics with Kaiser and the VA. First, there is clear investment in IT through which patient records and evidence-based guidelines are accessed and care is co-ordinated. Second, there is a focus on patient activation and self-management through a 'patient compact', which encourages patients to be active partners in their own care. Third, multidisciplinary team working and clear accountability structures feature in all systems (McCarthy *et al* 2008, 2009a). Finally, financial incentives and rewards are aligned to enhance quality and stimulate innovation.

Impact

Geisinger has achieved impressive results and recognition for its performance in various national rankings and awards. Its Gold plan is ranked third among Medicare plans and the Geisinger Health Plan is ranked sixth among commercial plans in the US News and World Report 2009–10 list (Geisinger 2009). In five years, Geisinger climbed from the 45th percentile to the 78th in terms of productivity. Patient satisfaction has also increased in the same time period.

The ProvenCare model of fixed pricing has produced good outcomes. The method was developed initially for coronary artery bypass graft procedures, which are high volume and associated with low mortality and complication rates. In trials, the ProvenCare group of patients had 16 per cent shorter lengths of hospital stay, bills were 5 per cent lower and re-admission rates reduced by 45 per cent (Carbonara 2008).

Although performance has not been uniformly positive, data from the Dartmouth Atlas suggest that Geisinger has achieved high levels of efficiency in many areas (McCarthy *et al* 2009a). Data for end-of-life patients with chronic illness who received most of their care at Geisinger Medical Center from 2001 to 2005 show that these patients had lower Medicare spending per person (83 per cent of the national average), fewer hospital days (64 per cent of the national average) and fewer physician visits (73 per cent of the national average) (McCarthy *et al* 2009a).

Preliminary results from a pilot of the community-based ProvenHealth Navigator in two sites indicate better patient adherence to prescriptions, greater use of generic drugs, and greater compliance with evidence-based care practices for diabetes and coronary artery disease. In the two sites, all-cause hospital admission rates declined by around 20 per cent whereas there was no change among other Medicare patients in the plan (McCarthy *et al* 2009a). Analysis indicated that Geisinger has gone from one of the highest cost systems to one of the lowest between 1992 and 2006 (Dentzer 2010).

As Geisinger has only partially integrated its payer function, it negotiates with both its in-house insurance staff and its external insurers. In a recent interview, Glenn Steele described the different approaches that those two relationships entail and highlights some of the benefits of provider/commissioner integration (Dentzer 2010, p 1202):

... when we have a conversation with our non-Geisinger payers about us as a provider, the conversation starts and ends with a negotiation over the amount of money that we will be reimbursed for each unit of work. That contrasts with the conversation that we have between our providers and our own insurance company leaders which starts with this: let's look at a high-utilising, high-cost group of patients, and let's see what the optimum outcomes for them would be.

Mayo Clinic

Mayo Clinic is the world's oldest and largest multispecialty group practice and a non-profit-making organisation dedicated to patient care, research and education. Its origins are in Rochester, Minnesota, where the medical group delivers world-class care in hospitals and medical offices owned by Mayo Clinic. It has since expanded into two other states and currently comprises an affiliated regional system of clinics, hospitals and nursing homes serving 2.4 million people (Shih *et al* 2008). Unlike the other integrated systems described in this paper, Mayo Clinic does not have its own health plan other than for staff and family members.

Mayo Clinic has strong core values, one of which is patient centredness. These values lie behind the delivery of integrated personalised care by assigning a co-ordinating physician to each patient. The physician's job is to ensure that the patient has an appropriate care plan, and that all consultations are scheduled in a timely fashion to meet the patient's needs. Early prediction and prevention of disease are also important activities at Mayo Clinic, there being a strong belief that early intervention is cost-effective in the long term. Other key values that characterise Mayo Clinic's model of care, for example, collaboration, co-operation, co-ordination and team work, are contained in a document given to all employees (Berry and Seltman 2008).

Values are underpinned by the availability of advanced clinical and information technology (IT), which allow efficient medical record-keeping and appointment scheduling. Similar to the other systems described, Mayo Clinic has electronic medical records that are accessible by all clinicians at every site. Since recognising that variation in practice is expensive, it has also worked hard to standardise practice. A central advisory group reconciles protocols from across all sites and uses its sophisticated IT systems to disseminate best-practice guidance. Quality improvement is a constant focus and transparent performance reporting (on the intranet and, latterly, internet sites) has helped to drive standards up (Berry and Seltman 2008; Shih *et al* 2008).

Impact

Mayo Clinic is recognised as one of the top performing health systems in the United States if not the world. The 2009/10 US World and News Report annual rankings put the hospital in Rochester in second place nationally for a bundle of 16 specialties and in first place for diabetes, gastroenterology and kidney disorders (Comarow 2010). As documented by McCarthy *et al* (2009b), Mayo Clinic has been ranked in the top quartile in a number of inpatient care quality measures, including treatment of heart attack and heart failure, surgical care improvement and overall patient rating of care.

A study at Dartmouth Medical School concluded that Mayo Clinic's hospital in Rochester delivers care to Medicare patients with long-term conditions more efficiently than many other equivalent medical centres. For example, patients who received most of their care at the hospital between 2001 and 2005 had similar spending levels in their last two years of life but fewer hospital days (90 per cent of the US average) and fewer physician visits (73 per cent of the US average) (McCarthy *et al* 2009b).

The use of shared clinical guidelines and standard procedures has been identified as a possible explanation for a fall in complications and an improvement in clinical outcomes for heart surgery. Significant savings were made after standardisation of hip and knee replacement procedures across all sites with no adverse clinical outcomes, echoing the development of ProvenCare at Geisinger Health System (Berry and Seltman 2008). These changes to practice were introduced following publication of research to indicate that about half of all care delivered in the United States is not based on current best practice (McGlynn *et al* 2003). Although progress has been made, the Dartmouth study still found variation in the intensity of care at the end of life across different hospitals, which suggests that there is room for improvement in realising a more consistent performance (McCarthy *et al* 2009b).

Integrated medical groups

Integrated medical groups, also referred to as multispecialty medical groups (MSMGs), are usually composed of physicians from a range of specialties who may be directly employed by an integrated system (as in the VA and Mayo Clinic), have an exclusive relationship with such a system (as in Kaiser), or come together to take on a budget with

which to provide and commission all or some of the services required by the populations served. Integrated medical groups in the United States take many different forms, but generally comprise primary, community and specialist physicians who have formed organisations that take responsibility for the design, delivery and commissioning of health services. It is important to note that most physicians in the United States work in solo practice or small groups rather than in large integrated medical groups. This may be because of either a preference for working independently or in small groups or the lack of opportunity to join a large medical group.

Integrated medical groups have often evolved from physician group practices and grown into larger organisations that have the ability to take on responsibility for a wide range of services. The degree of integration within groups varies from those that are loose alliances of practices coming together in independent practice associations, mainly to negotiate with health plans, to tightly organised groups based on a common culture and set of values which attract physicians who prefer to practise in a collaborative system of care (see Robinson 1999, for an analysis of the varieties of medical groups and their history). The claimed benefit of groups is linked to their ability to promote an environment that encourages communication, collaboration and peer review, so potentially leading to higher-quality care. Multispecialty group practices also provide a setting in which physicians can specialise in a particular area and work alongside colleagues who can help diagnose and treat complex medical problems.

One of the motivations behind the establishment of medical groups in the 1990s was physicians' concern to strengthen their negotiating position in relation to health insurers, at a time when managed care was seeking to contain increasing health care costs. This was associated with the interest by insurers to engage in risk-based contracting with physicians, often involving medical groups taking on capitated budgets broadly analogous to proposals to develop GP-led commissioning in the NHS in England. The expectation was that medical groups taking on capitated budgets would become more cost conscious and help to slow the rate of increasing health care costs, for example, by reducing the use of hospital services.

Shortell and colleagues (2010) note that there are currently at least 210 MSMGs with 50 or more physicians, some of whom have developed alliances with hospitals through either the integrated systems described or forms of virtual or contractual integration. Physician-hospital integration reached a peak in the early 1990s during the managed care era because providers saw opportunities to work together in response to the increasing power of insurers. Subsequently, physician-hospital integration unravelled in the face of difficulties in achieving this kind of integration, except in the established integrated systems described earlier.

These difficulties centred on 'persistent, longstanding conflicts between the two parties that inhibit power sharing and common incentives' (Burns *et al* 2010, p 39). Recent developments have focused on hospitals directly employing physicians in some markets and physicians forming large single specialty groups in others. The consequence is that 'large multispecialty clinics (100-plus physicians) represent only 1 percent of all group practices, leaving few such practices on which to build new Kaisers and Mayos' (Burns *et al* 2010, p 33).

Impact

Evidence from the managed care era indicates that medical groups working under capitated budgets and risk contracts did reduce their use of hospital services by both avoiding inappropriate admissions and cutting lengths of stay (Robinson 1999, pp 109–110). This was achieved by medical groups using management techniques such as prior authorisation of referrals. Medical groups also established case management programmes

for people with complex needs and appointed physicians known as hospitalists to take care of patients in hospitals. These techniques are common in established integrated systems such as Kaiser Permanente, as well as in medical groups set up as a result of managed care. However, having realised these benefits, many medical groups outside established systems ran into difficulties and some went bankrupt (Ham 2010a).

In a review of different studies, Shih and colleagues found that large group practices are twice as likely as small groups or solo practitioners to engage in quality improvement and to use electronic medical records. The same review noted that large groups are more likely to practise in teams, use performance and outcome measurement for quality improvement, and provide preventive services than solo practitioners or small groups (Shih *et al* 2008). Other positive evidence includes studies showing that large groups have more medical home infrastructure (Rittenhouse *et al* 2008), and are more likely to follow care management processes.

A comparison of large integrated medical groups with independent practice associations found that patients cared for in the former generally received a higher quality of primary care than those cared for in the latter (Mehrotra *et al* 2006). Shortell *et al* (2010, p 55) summarised their review of evidence in the following way:

Existing evidence suggests that large MSMGs have more clinical information technology, use more organised processes to improve care, are more likely to participate in quality improvement activities, and are more likely to score well on process measures of quality than are less organised or integrated physicians. There is also evidence that they perform more recommended prevention services. Larger groups also meet more criteria for serving as a patient-centred medical home, including having more clinical information technology.

This summary echoed an earlier analysis by Shortell and Schmittiel (2004) which concluded that there was growing evidence that more organised forms of physician practice are associated with providing greater value in the delivery of health care services. Tollen (2008) arrived at a similar conclusion after reviewing a range of studies, although like Shortell and Schmittiel she emphasised the mixed nature of the evidence.

Recent research on the impact of multispecialty groups concluded that large MSMGs are able to provide higher-quality care at lower costs than other types of practices (Weeks *et al* 2010). This research found that patients mostly cared for by physicians in these groups experienced between 5 and 15 per cent higher-quality care at an average 3.6 per cent lower cost than those cared for by physicians who did not belong to a group. Patients also received more evidence-based care and had an 8 per cent lower risk of avoidable admissions. The medical groups also exhibited lower physician, home health and overall Medicare spending which, the authors estimate, could save Medicare US\$15 billion per annum (Weeks *et al* 2010).

Although large groups can achieve economies of scale, they may find it difficult to co-ordinate activities and some have found that they lack personal relationships which are so important when co-ordinating a patient's care (Casalino 2010). This is reflected in findings that show patient satisfaction to be relatively low among patients cared for by large group practices (Shih *et al* 2008). There is also a risk that large groups can increase bureaucracy and lack the cohesion of smaller, less diverse groups (Robinson 2004).

Other learning from the United States suggests that medical disaffection and disengagement may increase as the organisation grows (Smith and Walshe 2004). This may help explain the emergence of single-specialty groups, which many physicians feel can achieve the benefits of multispecialty groups (eg, in gaining leverage over health plans and economies of scale) while avoiding the co-ordination problems and conflicts often experienced

between different professions in an MSMG (Casalino *et al* 2003). The high level of performance seen in Kaiser Permanente and established integrated systems is often attributed to the development of a strong culture developed over time, which is difficult to replicate quickly in newly formed medical groups, offering a clear warning as the NHS in England embarks on further reform.

Macro summary

This section of the paper has shown that integrated systems in the United States take a wide variety of forms while sharing many of the same characteristics. These characteristics include (derived from Shortell and Schmittiel 2004):

- **multispecialty medical groups** in which generalists work alongside specialists to deliver integrated care
- **aligned financial incentives** that avoid the perverse effects of fee-for-service reimbursement, encouraging the prudent use of resources and promoting quality improvement
- **information technology** that supports the delivery of integrated care, especially via the electronic medical record and the use of clinical decision support systems
- **the use of guidelines** to promote best practice and reduce unwarranted variations in care
- **accountability for performance** through the use of data to improve quality and account to stakeholders through public reporting
- **defined populations** that enable doctors and the wider health care team to develop a relationship over time with a 'registered' population
- a **physician–management partnership** that links the clinical skills of health care professionals and the organisational skills of executives
- **effective leadership** at all levels with a focus on continuous quality improvement
- a **collaborative culture** that emphasises team working and the delivery of patient-centred care.

Listing the characteristics in this way illustrates that the performance of integrated systems rests on a core of factors. Although there have been no studies that have examined the relative importance of these factors, it is plausible to argue that it is their combined impact that lies behind the achievements of integrated systems rather than individual factors.

Analysts who have studied integrated systems in the United States have explored the arguments for both real and virtual integration (Robinson 1999). Although the experience of the VA demonstrates what can be achieved through real integration, many of these analysts point to the theoretical and empirical evidence in favour of virtual integration, emphasising in particular the weaknesses of incentive attenuation and influencing costs associated with real integration (Robinson and Casalino 1996). Other work reinforces this assessment and suggests that networks based on contractual integration may offer advantages over real or vertical integration (Goodwin *et al* 2004). The exception may be in relation to relatively well-defined population groups such as older people for whom there is evidence that real integration can deliver positive results (*see below*).

The evidence also indicates that there are benefits in integrated medical groups with large MSMGs performing better than small groups and independent practice associations. However, attempts to promote physician–hospital integration have often not been successful outside the large integrated systems such as Kaiser Permanente and Mayo Clinic. One of the characteristics of these systems is that they have been working to achieve effective integration over many years and have therefore been able to develop a level of trust and collaboration often lacking in the moves to integrate medical groups and hospitals during the managed care era. This has implications in the emerging debate about the establishment of accountable care organisations, which could take clinical and fiscal accountability for the entire continuum of care for a given population (Shortell *et al* 2010).

It is important to add that the emphasis on choice and competition in the United States means that integrated systems function in a market environment. Some analysts argue that competition is a key factor in stimulating these systems to achieve high levels of performance, alongside the characteristics listed above (Enthoven 2002), although this remains an issue of debate. What is clear is that integrated systems in the United States are the exception rather than the rule. Some observers conclude from this that integrated systems have ‘failed the market test’ and will always struggle to survive in a highly competitive environment that rewards organisations able to respond quickly to changing market conditions.

The corollary of this argument is that integrated systems may be more likely to succeed in non-competitive environments such as those in countries with publicly funded and (historically) planned health care services, for example, the United Kingdom, New Zealand and Scandinavia. On the other hand, integrated systems in those countries that function as geographical monopolies may lack the incentives that stimulate Kaiser Permanente, Geisinger Health System and Mayo Clinic to achieve outstanding results. As we noted at the start of this paper, competition and integration may have a bigger effect when used in tandem rather than separately. Also important are the other factors discussed, including leadership, culture and incentive alignment, underlining the complexity of replicating the levels of performance demonstrated in high-performing integrated systems. These other factors may explain variations in performance in countries that have adopted integrated systems and where differences can be observed in the performance of these systems.¹

Evidence from the experience of integrated medical groups in the 1990s contains a number of lessons for the NHS, including the need to think carefully about the size and scope of GP commissioning in England, the critical importance of medical leadership and management expertise, the need for budgets to be adjusted for the risks of the populations served, the role of incentives in motivating GPs to become involved and the importance of stop loss insurance to provide safeguards against fluctuations in demand for rare, costly treatments. As an assessment of experience in the United States concluded, ‘a strong argument can be made for piloting and evaluation in advance of widespread implementation’ with ‘careful selection of participating practices and federations to avoid the problems in the United States and to ensure that a policy that has considerable potential is able to deliver in practice’ (Ham 2010a, p 7).

¹One of the authors of this paper [CH] observed these differences in a recent visit to Northern Ireland where the integration of health and social care has not eliminated variations in indicators such as delayed transfers of care between trusts providing these services.

Meso-level integration

Meso-level integration refers to integration of care for particular groups of patients and populations, whether they are classified by age, condition or some other characteristic. Much of the focus at this level has been on older people because of the challenges that this group presents in terms of their high use of services straddling the care and cure boundaries, and the risk that fragmented care will deliver poor outcomes. In recent years, attention has also turned to people with long-term conditions, in recognition of the fact that they too are high users of care and, like older people, their care needs tend to straddle traditional professional and organisational boundaries (Beland *et al* 2006).

All the integrated systems described earlier use models of care that often involve multidisciplinary teams focusing on a particular condition and disease-specific management programmes. This section examines examples of such programmes that have developed outside the large integrated systems to assess the impact of these approaches. The section is divided into two parts: the first examines a range of models that have been used to integrate care for older people and the second examines approaches to condition-specific integration.

Integration for older people

This section examines a small number of examples of programmes that seek or have sought to better integrate care for older people. The examples referred to include the North American Programme for All-inclusive Care for the Elderly (PACE), the System of Integrated Services for Aged Persons (SIPA), PRISMA programmes in Quebec, and three European examples: Rovereto, Vittorio Veneto and Torbay. Tables 1 and 2 (*see* pages 26–27) summarise the key features and impacts of these examples.

Programme for All-inclusive Care for the Elderly

The US PACE (Programme for All-inclusive Care for the Elderly) is an integrated provider model aimed at maintaining frail older people in the community for as long as possible. PACE is provided for individuals with Medicaid and Medicare coverage and focuses on community-dwelling older people. To qualify for PACE, an individual must be aged 55 years or more, live in a PACE service area and be certified by the state to need nursing home-level care. The typical PACE enrollee is similar to the average nursing home resident: that is, female, aged 80 years with 7.9 medical conditions and limited to about 3 activities of daily living. Almost half of PACE enrollees have a diagnosis of dementia but, despite high needs, more than 90 per cent are able to continue to live in the community (*see* www.npaonline.org/website/article.asp?id=50).

The key feature of PACE is that services are co-ordinated by, and organised around, adult health day centres which are run by its own directly employed staff. The day centre is the primary setting for the delivery of most care services and operates similarly to a geriatric outpatients clinic where primary medical care is provided along with ongoing clinical oversight. As such, most of the services are delivered in-house with no need to make

and maintain connections with providers in the wider health community (Kodner and Kay Kyriacou 2000). Where required, PACE contracts with specialist physicians, acute hospitals and skilled nursing facilities (Johri *et al* 2003).

At the heart of PACE is the multidisciplinary team, which comprises nurses, physicians, therapists, social workers, nutritionists, and so on. The team is responsible for managing patients, dispensing services, promoting co-ordination and continuity of services, and collectively holds clinical responsibility for each individual in their care. This interdisciplinary team approach facilitates group decision-making and consensus building, and facilitates better care management and performance. Patient care is also facilitated by a data system that collects information on all aspects of a patient's health status and forms the basis of the patient's care plan (Kodner and Kay Kyriacou 2000).

As mentioned above, PACE is targeted at community-dwelling people aged more than 55 with Medicare or Medicaid cover who have a disabling condition and require long-term care. The premise is that an older person with a serious chronic and disabling condition may avoid or postpone entering nursing home care through effective community-based geriatric care. Small numbers (each of the 34 sites cares for approximately 300 people) ensure that there is close patient and carer contact and enables personalised care. Resources are pooled and – through capitation payments from Medicare and Medicaid – the programme has total control over all long-term care expenditure, assuming financial risk for its population (Johri *et al* 2003).

Impact

PACE has been shown to decrease hospital inpatient and nursing home use, while increasing use of outpatient medical care, therapies, and home- and community-based services. When compared with a control group, PACE-enrolled older people showed a 50 per cent decrease in hospital use. They were also 20 per cent less likely to be admitted to a nursing home and, when they were admitted, used 16 fewer bed days. However, PACE patients used more ambulatory care services (93 per cent compared with 74 per cent in the control group) (Kodner and Kay Kyriacou 2000).

In terms of patient experience, an evaluation of PACE found that patients and their carers were 15 per cent more likely to be satisfied with their care than those not in PACE (Kodner and Kay Kyriacou 2000). Health status and quality-of-life outcomes have been found to be generally positive, with 43 per cent (vs 37 per cent in the control group) reporting good health and 72 per cent (vs 55 per cent in the control group) reporting a 'more satisfying life' (Kodner and Kay Kyriacou 2000). Cost-effectiveness of PACE is unclear, although State Medicaid agencies estimates cost savings of 5 to 15 per cent over standard fee for service care (Johri *et al* 2003).

System of Integrated Services for Aged Persons

Inspired by PACE, SIPA (System of Integrated Services for Aged Persons) was a demonstration programme introduced to overcome the fragmented nature of Canadian health and social care in which the financial and organisational structures do not incentivise the provision of the most appropriate and least costly services (Beland *et al* 2006). Similar to PACE, SIPA was an integrated provider model aimed at maintaining frail older people in the community. Funded by the Quebec government, the target population was community-dwelling older people. SIPA, which ended in 2001, involved the use of case management, multidisciplinary teams and home care (MacAdam 2008). It provided comprehensive long-term, acute medical and social services including some respite housing. Similar to the day centre idea in PACE, SIPA operated services out of local community service centres and had pooled funding streams. The demonstration involved

two teams based in two community service centres, each with its own budget, staff and management, with responsibility for the provision of both health and social care services, and for the co-ordination of hospital and nursing home care. The centres provided most health and community care directly, but they contracted with other providers to deliver more specialist services (Kodner 2009).

Impact

An evaluation examined the performance of SIPA compared with that of the Quebec health and social service system in terms of its ability to substitute community-based services for institutional services, to increase use of and expenditures for home care services, and to reduce the use and costs of patients waiting in acute hospitals for placement in a nursing home (Beland *et al* 2006). It concluded that SIPA had resulted in a transfer of, on average, \$4,000 institution-based services per person to community-based services, although this was found to be the result of an accumulation of moderate (but not statistically significant) reductions over a range of services. SIPA also succeeded in reducing the use and costs of several institution-based services, although these reductions were statistically significant only with respect to waiting time in acute-care hospitals for nursing home placement.

Emergency room visits and permanent nursing home placement occurred 10 per cent less frequently within the SIPA group than within the control group, but this was not statistically significant. The impact of SIPA was particularly significant on the costs of services for people with several chronic illnesses or several disabilities or for those living alone. This is important because it indicates that the impact of SIPA was not uniform across all groups and emphasises the need to target programmes appropriately (Beland *et al* 2006).

In terms of cost-effectiveness, the evaluation found that increased access to home and community-based services meant that average costs for those services were higher per SIPA patient than for non-SIPA patients but, as institutional costs were lower, there were no differences in the overall costs per person in the two groups (Beland *et al* 2006).

PRISMA

PRISMA is a Canadian model that works alongside existing care and aims to integrate service delivery to ensure functional autonomy of community-dwelling older people, with moderate-to-severe impairment, who need two or more services yet have the potential to stay at home. It is similar to the other models in that it has a single entry point, when the patient is screened, and uses case management processes and computerised charts for communicating between institutions and clinicians (Hebert *et al* 2005). However, it is not integrated in the same way as PACE and SIPA but rather co-ordinates provision across a network of different providers (Ham *et al* 2008).

Co-ordination is achieved through a joint governing board of health and social care provider organisations, including the voluntary sector. The board decides on strategy and allocates pooled resources to fund the network. A professionally led co-ordinating committee facilitates the adoption of a service continuum, which comprises a single entry point, a single assessment and individual care plans. Multidisciplinary teams of practitioners are managed collectively through a mix of contracts and/or direct management (Goodwin *et al* 2004). The funding of PRISMA differs from the other North American programmes in that capitation budgeting is not an essential component. Instead, funding can be included as part of the agreement between organisations (Hebert *et al* 2005).

Impact

An evaluation of the PRISMA programme found that, of those individuals with moderate-to-severe disability on entering the programme, fewer experienced functional decline (defined as death, institutionalisation and significant increase in disabilities) compared with a control group. It found that the unmet needs of participants declined in comparison to those in the control group. In addition, the desire to be institutionalised decreased in the PRISMA group after 12 months and 24 months in the programme, and the risk of institutionalisation was greater in the control group. The caregivers' burden was found to be significantly lower in the PRISMA group, compared with the control group.

The use of acute-care hospitals (in terms of hospitalisation, length of stay and re-admissions) was similar between the two groups, but the risk of returning to the emergency room within 10 days of a first visit or after discharge from hospital was significantly higher in the control group (Hebert *et al* 2005). An analysis of the cost-effectiveness of the programme is being carried out but, based on the positive outcomes to date, the programme is being rolled out across the province (Hebert *et al* 2010).

Rovereto and Vittorio Veneto

Two Italian models of integrated care – Rovereto and Vittorio Veneto – also targeted community-dwelling frail older people and were piloted with small groups of patients in the mid to late 1990s. Similar to the SIPA and PACE models, both Italian models integrated provision without the commissioning function. Rovereto aimed to integrate medical and social services in a continuum of care through case managers, whereas Vittorio Veneto aimed to improve the integration and co-ordination of older people's health and social care (Johri *et al* 2003).

Key features of the Italian models mirrored the North American ones, with a focus on case management and multidisciplinary teams. General practitioners were incorporated into the multidisciplinary team to allow patients to maintain choice of physician. No financial incentives for downward substitution of services were used in either pilot. These models also had a single point of entry into the system, when there is a geriatric assessment. They also provided comprehensive community-based medical and social services (Johri *et al* 2003). The pilots were run in the late 1990s and involved small numbers of individuals (200 in Rovereto and 115 in Vittorio).

Impact

A randomised study of the Rovereto pilot compared the effect of the intervention with standard care. The results were largely positive, reporting a decrease in the use of community services and institutional services by the intervention group over a one-year period. Significant reductions in acute hospital admissions were also reported for the intervention group and there was a trend towards lower (although not statistically significant) rates of nursing home admissions. The study showed that those in the intervention group entered institutional care later and less often than those receiving standard care. Health outcomes were also shown to be better for the intervention group. In addition, the model was found to be cost-effective with overall savings estimated at Lire 1,125 per person per year (Johri *et al* 2003).

Results from the Vittorio Veneto pilot were similarly positive. A pre- and post-intervention questionnaire revealed improvements on several functional measures. In addition, significant reductions in hospitalisations and hospitalisation days were found. As a result, there were substantial cost savings of an estimated 29 per cent per client (Johri *et al* 2003).

Torbay

There are similarities between these examples and the experience in Torbay, England. To overcome fragmentation of care for older people, Torbay established five integrated health and social care teams that are organised in localities aligned with general practices. The teams target their efforts at the very highest-risk individuals who require intensive support from community matrons and integrated teams. Teams meet regularly to review the most complex cases and to decide on actions needed. Joint decisions are made about an individual's needs and care is co-ordinated.

The key focus for all teams is knowing their population and proactively managing the care of the most vulnerable in partnership with GPs. Health and social care co-ordinators, who are not professionally qualified, act as a single point of contact within each team. A single assessment process and patient-held records accessible to any professional involved in their care also help to co-ordinate care across care settings. The vision in Torbay is to deliver integrated care to improve the experiences and outcomes for service users.

Central to the work undertaken in Torbay has been a clear focus on the needs of people like Mrs Smith, a fictional 85-year-old, living alone and requiring support from different health and social care professionals. It was recognised that Mrs Smith was often in contact with different health and social care professionals and had to repeat her story on many occasions. The aim of integration was to provide more co-ordinated care to Mrs Smith through integrated teams and to make it easier for her to navigate through the local health and social care system.

In pursuit of this vision, Torbay took a decision in 2005 to create Torbay Care Trust to bring together responsibility for commissioning and providing health and social care services, building on the creation of health and social care teams. In the care trust, pooled budgets can be used to commission whatever care is required. The development of intermediate care under these arrangements has led to better links with the acute hospitals and its specialists in the care of elderly people. Proactive discharge planning is also being developed whereby a team reviews patients while they are still in hospital and works with hospital staff to discharge patients to reduce lengths of stay (Ham 2010b).

Although the Torbay Care Trust is both a commissioner and a provider, integration has been mainly provider driven. As in other parts of the NHS in England, commissioning is relatively under-developed, and the achievements described below have resulted from changes to service provision made possible by bringing together frontline teams that were previously employed by separate organisations. The impact of commissioning has been felt mainly in the ability of integrated teams to make use of pooled budgets to put in place packages of care for service users.

Impact

Recent analysis from Torbay has revealed positive results. The analysis found that Torbay had the lowest use of hospital bed days in the region and the best performance in terms of length of stay. The area has reduced the average number of daily occupied bed days from 750 in 1998/99 to 528 in 2008/9; in addition it has the lowest rate of emergency bed day use for older people with two or more admissions, and the second lowest proportion of older people discharged to residential homes in the south-west of England. Delayed transfers of care are close to zero.

When compared with its benchmark group, the Torbay population aged 85 or more uses only 47 per cent of emergency bed days for people experiencing two or more admissions; the use of emergency beds for the 65+ population is 2,025 per 1,000 population compared with a regional average of 2,778 per 1,000 population (Ham 2010b). Patient experience also appears to be positive: an Ipsos Mori survey ranked Torbay highest in the south-

west for the proportion of people reporting confidence with NHS services (Ham 2010b). Although use of acute hospitals is low, there are no data available for cost-effectiveness.

Tables 1, below, and 2, opposite, summarise the key features and impacts of the programmes included in this paper.

Table 1 Summary of evidence (from Kodner 2009)

	PACE (USA)	SIPA (Canada)	PRISMA (Canada)
General description	Adult day health centre-based comprehensive health and long-term care programme with risk-based capitation financing for elderly nursing home-certifiable population	Community-based, primary care-led, case-managed health system for frail elderly people operating out of local community service centres; inspired by PACE	Community-based, case-managed, single-point-of-entry service network
Model type	Real integration	Real integration	Virtual (co-ordinated) integration
Project objectives	Maintain frail elderly persons in community for as long as possible by avoiding or postponing institutionalisation	Maintain and promote autonomy of frail elderly people; and promote optimal use of community-based services as substitute for hospital and nursing home care	Integrate service delivery to ensure functional autonomy
Target population	<ol style="list-style-type: none"> 1 Community-dwelling elderly people residing in service area 2 Aged 55 and over 3 Certification of eligibility for nursing home admission 	<ol style="list-style-type: none"> 1 Community-dwelling elderly people residing in demonstration area 2 Aged 64 and over 3 Moderate disability 4 Willingness of carer(s) to participate 	<ol style="list-style-type: none"> 1 Community-dwelling elderly people residing in demonstration area 2 Aged 65 and over 3 Moderate-to-severe impairment 4 Need two or more health care or social services 5 Show good potential for staying at home
Dates	The On-Lok model, which is the foundation for PACE, started in 1971. Operated as a federal demonstration between 1987 and 1997. Continues as permanent programme	1999-2001; in two stages	Bois-Franc intervention (1997-98 to 1998-99)
Services covered	Comprehensive primary, acute and long-term care; enriched home- and community-based services; on contract basis	Comprehensive long-term care; acute medical and social services, including some respite housing; largely on contract basis	Existing acute, long-term care, rehabilitative and supportive services in region
Service management	Multidisciplinary team, including primary care physicians	Multidisciplinary team, including primary care physicians	Case managers working closely with family physicians and others
Size	36 operational sites in 18 states with 10,523 enrollees	1,254 persons in 2 sites; half received SIPA intervention	272 persons (PRISMA cohort); 210 persons (control cohort)
Referral methods	Community outreach; voluntary enrolment	Existing home care clients; referrals from hospitals and physicians, government agencies and outreach activities	Outreach; single point of entry
Payer(s)	Capitation payments from Medicare and Medicaid programmes; some private out-of-pocket premiums	Government	Government
Evaluation methodology	Quasi-experimental, non-randomised design	Randomised design (RCT) based on two geographical sites	Quasi-experimental, non-randomised design
Results	<p>Decreased hospital inpatient and nursing home use</p> <p>Increased use of outpatient medical care, therapies and home- and community-based services</p> <p>Positive impact on Medicare costs vis-à-vis non-enrollee comparison group</p> <p>Favourable health status outcomes</p> <p>Overall satisfaction with care arrangements</p> <p>Inconsistent impact on physical functioning</p> <p>Differences in quality of life (not statistically significant)</p>	<p>Increased access to home- and community-based services</p> <p>Reduced hospitalisation of alternative level of care patients (ie 'bed blockers')</p> <p>Decreased use and costs of emergency department, hospital inpatient and nursing home stays (not statistically significant)</p> <p>Average community care costs per person were higher in SIPA group, but institutional costs were lower with no difference in total overall costs per person in the two groups</p> <p>No differences in health outcomes</p> <p>Increased satisfaction for SIPA caregivers with no increase in caregiver burden or out-of-pocket costs</p>	<p>Declining trend in institutionalisation and client preference to be institutionalised</p> <p>No deterioration in autonomy/ functioning at year one and year two, but effect disappeared by year 3.</p> <p>Little effect on utilisation of services</p> <p>Positive effect on carer burden</p> <p>No impact on mortality (survival)</p>

Table 2 Summary of evidence (adapted from Ham *et al* 2008)

	Rovereto (Italy)	Vittorio Veneto (Italy)	Torbay (UK)
General description	Demonstration project to integrate services for frail older people	Attempt to reorganise and integrate the care of frail older people	Alignment of health and social care services through five integrated health and social care teams targeting older people
Model type	Single entry point, with geriatric assessment, case management and multidisciplinary team	Single entry point, with geriatric assessment, case management and multidisciplinary team	Single assessment process, case management, pooled budgets and patient-held records
Project objectives	To integrate medical and social services in a continuum of care with case managers	To improve the integration and co-ordination of older people's health and social care	To improve the integration and co-ordination of older people's health and social care
Target population	Community-dwelling frail older people	Community-dwelling frail older people	Highest-risk older people who require intensive support from community matrons and integrated teams
Dates	1995-96	1997-98	From 2003
Services covered	Comprehensive community-based medical and social services	Comprehensive community-based medical and social services	Comprehensive community-based medical and social services. Includes discharge planning from acute trust and intermediate care
Size	200 people	115 people	All older people deemed to be high risk in PCT population
Referral methods	Identified through home health agency records	Primary care physicians, families, hospitals	Referral from GPs, social workers, and other sources
Payer(s)	Government	Government	Government
Evaluation methodology	Randomised allocation to intervention group or control group	Quasi-experimental study with 6-month follow-up	Before and after comparison of resource use and comparison with other areas
Results	Positive impact on health outcomes, reductions in use of community and institutional services and cost savings	Improvements in health outcomes, reduction in hospital admissions/ days in hospital and cost savings	Reduction in hospital admissions/ days in hospital, reduced discharge to residential homes, high satisfaction levels

Condition-specific integration

As well as integrating care for older people, many countries have sought to provide better integration of care for people and populations with certain diseases, often long-term conditions. Examples include disease management programmes in Germany, chains of care in Sweden and managed clinical networks in Scotland. Before describing these examples, it is worth emphasising the heterogeneity of integrated care programmes for people with long-term conditions and the difficulty of reflecting the variety of approaches that have been tried in practice.

Disease management programmes

The focus of disease management has been on long-term conditions such as diabetes, coronary heart disease, asthma, depression and chronic obstructive pulmonary disease (COPD). A systematic review of disease management programmes undertaken in 2004 revealed the various different components: patient education is a feature of most of the programmes (79 per cent), followed by multidisciplinary team care (57 per cent), provider education (37 per cent), provider feedback (37 per cent) and patient reminders (26 per cent). Financial incentives for providers and patients are infrequently used (Ofman *et al* 2004). The Disease Management Association of America also highlights the importance of self-care as a component of many disease management programmes (*see* www.dmaa.org). In reality, most programmes are multicomponent, comprising several different elements. One example – that of Germany – is described in the box below.

Case study: Disease management in Germany

Disease management programmes have been introduced widely in Germany with the intention of reducing deficits in the health care system. The programmes vary in content but all have standard elements:

- use of evidence-based guidelines
- patient involvement and self-management
- intersectoral care with treatment in specialised institutions
- quality assurance measures.

Patients who take part must first choose a physician (usually the patient's family physician) who co-ordinates their treatment within the programme. The programme sets out how and when specialists should be involved in the patient's care, with the intention of avoiding gaps in care provision between ambulatory and inpatient sectors. Programmes are structured and have set disease-specific objectives, defined treatment goals and specific criteria for referral to secondary care. Deviation from the framework is discouraged and physicians are increasingly expected to justify any variation (Nolte *et al* 2008).

Patient involvement is emphasised and patient education and self-management are key elements of all programmes. Indeed, if a patient fails to participate, his or her registration with the programme can be cancelled by the health insurance fund. Active participation among patients and physicians is rewarded through financial incentives, for example, providers receive reimbursement for disease-specific education programmes for registered patients and patients may be exempted from the quarterly practice fee (Nolte *et al* 2008).

Impact of disease management

The impact of disease management programmes is difficult to ascertain partly because there is no single definition of disease management and no common understanding of the concept. Goodwin (2007) emphasises the complexities of comparing disease management programmes and states that we simply do not know whether disease management in Europe is more cost-effective than usual care in the long term. Where there is positive evidence, it is generally limited to a small number of long-term conditions (namely, diabetes, depression and coronary heart disease) with the impacts being inconclusive in other cases (Goodwin 2007). A further complexity, particularly arising in the United States, is that much of what is considered to be disease management is delivered by private companies and a lot of the evidence produced from their own evaluations is not available in the public domain.

A review of disease management literature in 2006 concluded that there is some evidence that disease management programmes can reduce unplanned admissions. The paper found that all but one of the five reviews and three trials identified resulted in reduced unplanned admissions and a further review suggested that such programmes can reduce the average length of hospital stay (Ham 2006). The same paper also found that, in 18 of 27 studies of people with long-term conditions, elements of the chronic care model were associated with reduced health care costs and reduced hospitalisation (Ham 2006, p 5).

Ofman *et al* (2004) found that, although there were some positive impacts of specific programmes, most reviews demonstrated modest benefits and few reported on cost and return on investment; for example, they found that depression management programmes

had the best outcomes in terms of improvements in care but that programmes for COPD and chronic pain were least effective. Patient satisfaction measures yielded favourable results although patient adherence to treatment recommendations and disease control were lower. The authors conclude that there are often greater improvements in the processes of care and intermediate outcomes rather than clinical outcomes (Ofman *et al* 2004).

Studies of COPD programmes produced similar findings, with authors concluding that outcomes are similar to usual care and most struggle to prove their cost-effectiveness (eg, Clark *et al* 2009; Steuten *et al* 2009). There are some examples of programmes that have reduced cost or resource use (eg, Ham 2006 identifies a carefully targeted disease management programme in the United States for older people with heart failure which was associated with reduced emergency admissions and reduced cost of care), but evaluations either do not report cost-effectiveness results or find no significant impact on resource use.

Weingarten *et al* (2002) try to separate the different components of disease management programmes to identify the most effective elements. They suggest that programmes using provider education, feedback strategies and financial incentives for patients tend to have better outcomes in terms of disease control. These authors confirm other analyses that report little evidence of cost-effectiveness. Mattke and colleagues (2007) support Ofman's findings that disease management can improve the process of care but there is little evidence to suggest that it can lead to better long-term outcomes.

Ouwens and colleagues (2005) summarised the results of 13 systematic reviews of integrated care programmes for people with long-term conditions. Despite the heterogeneity of these programmes, positive results were found relating to hospital use, quality of life, functional health, patient satisfaction and process outcomes. Ouwens *et al* (2005, p 143) noted that 'Effects on mortality remained unclear and little systematic analysis was performed on cost-effectiveness of integrated care programmes'.

Early evaluations of Germany's extensive array of disease management programmes seem to support these findings. Although there have been some indications of improved quality of care as reported by enrolled patients, compared with usual care, limitations with the evaluations make generalisation difficult (Szecsenyi *et al* 2008). One German study suggests improvements in patient-reported quality of care but, as with the findings of the systematic reviews, health outcomes have not been found to differ significantly from those for patients receiving usual care (Gapp *et al* 2008).

Sweden: chains of care

A common way to co-ordinate and integrate care for patients and populations with specific conditions across organisational and professional boundaries has been to establish care pathways and networks. This approach has been developed in Sweden and is known as chains of care. Chains of care have been described as 'co-ordinated activities within health care, linked together to achieve a qualitative final result for the patient' and were introduced to improve quality of care and address the increasing fragmentation of the system (Ahgren 2003). A chain of care seeks to meet the needs of patients with a certain condition by linking primary care, hospital care and community care through care pathways, based on local agreements between providers, and is a form of *contractual integration*. As such, a typical chain of care might include a screening element in a primary care centre, treatment plans being developed at a specialist centre at the local hospital and then rehabilitation provided in the community (Nolte *et al* 2008).

As responsibility for health care is split between municipalities and county councils in Sweden, close co-operation is necessary to provide care effectively along the

pathway (Nolte *et al* 2008). Chains of care based on contractual relationships between commissioners and providers can often involve several responsible authorities and medical providers in a form of virtual integration (Ahgren 2003). Commissioners set up agreements with providers that specify volume, cost, quality and method of delivery.

Agreements are overseen by a manager and payments are based on health care use across the system. The arrangements are designed to incentivise efficient use of resources and the creation of pathways across traditional boundaries, with the aim of delivering integrated care. About half of the chains of care that have been developed are for long-term conditions, with the other half being developed for a range of acute illnesses and general ill-health. Care is delivered using evidence-based health care and clinical guidelines that are agreed between different care providers (Ahgren 2003).

Impact

Although numerous chains of care have been established, there is little evidence that significant changes have been made and their development has been generally slow. Ahgren (2003) points to the strong compartmentalisation of responsibilities between different professions and departments which has not allowed a culture of integration to develop. Further obstacles include resistance among some health care managers who feared change. A lack of participation among some local authorities has meant that the chains of care developed cannot include all activities throughout a patient's treatment (Ahgren 2003). This indicates the limits to this type of contractual integration and reinforces the argument that commissioners face major challenges in using their leverage to create better integrated care (Goodwin *et al* 2004).

Scotland: managed clinical networks

Managed clinical networks in Scotland have been defined as 'linked groups of health professionals and organisations from primary, secondary and tertiary care, working in a coordinated manner, unconstrained by existing professional and health board boundaries to ensure equitable provision of high quality clinically effective services' (Scottish Executive 2002, p 62). In a similar way to Swedish chains of care, managed clinical networks do not require the creation of new organisational entities or physical facilities. Rather, they seek to broker care across providers for patients with a particular condition in a form of virtual integration.

Managed clinical networks were conceived on a number of scales (from local to regional to national) and with a range of scopes – for those with a particular condition (eg, diabetes), across various specialties (eg, neurology) and for particular functions (eg, emergency care). The intention for all networks was to create a working relationship between organisations and individuals to improve the treatment of people who require care across a range of institutions (Goodwin *et al* 2004). According to Goodwin *et al*, this is achieved by making efficient use of staff, dismantling professional and organisational boundaries, sharing good practice, putting patients at the centre and enhancing access to services.

One of the drivers of managed clinical networks in Scotland has been the variation in quality between institutions. As health care is delivered over such a wide area with a dispersed population, some providers were undertaking a very low volume of procedures and quality has suffered (Woods 2001). Managed clinical networks were, therefore, introduced with the objective of securing access to locally delivered, quality-assured care through the integration of otherwise separate clinical services (Woods 2001).

One example of a managed clinical network is the Scottish Cardiac Network, the focus of which is to develop appropriate pathways and associated protocols. Based in a rural area,

the network uses 36 GPs in four local health care co-operatives and one district general hospital. Piloted in 2000 and launched formally in 2001, it is intended to provide better quality care through better co-ordination of services, provision of consistent advice, and better care and prevention (Hamilton *et al* 2005). Unlike in Sweden, where chains of care have taken budgetary responsibility for care delivery, no such regimen has been put in place in Scotland.

Impact

The Scottish experience has been similar to that of Sweden. Early reports suggested that centrally defined objectives had been hard to operationalise and implement because no single agency owned the network. Top-down imposition of such networks had risked disharmony and network failure as social ties between professionals within the network remained weak (Goodwin *et al* 2004).

Hamilton *et al* (2005) reported that the Scottish Cardiac Network experienced early difficulties but was ultimately successful in bringing together clinicians, patients and managers to redesign services. What was crucial to its success was the leadership of clinicians (Hamilton *et al* 2005). The set-up costs were approximately £100,000 but that is thought to be an underestimate because clinician time invested was not recorded. Costs for treatment remained steady, so the network does not appear to be saving costs. However, there is evidence of some quality improvement (Hamilton *et al* 2005).

An evaluation of four managed clinical networks found evidence of some impact, although there was variation among the networks. In terms of the professionals' perception of impact, most pointed to intangible outcomes such as culture and communication. Where tangible benefits had been felt, many professionals identified the networks as valuable facilitators of that change. For example, participants in the evaluation said that the networks had improved the implementation of clinical guidelines. In one example, a network had facilitated the implementation of a diabetes specialist nurse in a remote area because it had acted as a broker between GPs and the local NHS board (Guthrie *et al* 2010).

Patient accounts provided some indication that co-ordination of care had improved and care had become more systematic, but the emphasis put on personalised care by patients was not mirrored in clinician accounts which pointed to the importance of standardisation of care. An analysis of hospital data found that there had been some change in admission rates sensitive to ambulatory care which suggests that there might be some support, albeit weak, for the professional perception that quality of care had improved as a result of voluntary network implementation.

Analysis also found that, for heart disease, there was a significant and sustained reduction in emergency admissions for patients with angina after network implementation and some evidence of an initial reduction in chest pain admissions. Emergency admissions for diabetes also fell in the three years after implementation. There was no evidence of impact on heart failure admissions.

Overall, the evaluation concluded that there was some evidence of beneficial impacts, but these more frequently related to interprofessional working rather than patient experience or quality of care (Guthrie *et al* 2010). A note of caution sounded by the authors of the evaluation report is that, if all clinical networks were disease focused, there would be a risk that attempts to improve continuity for that disease could actually fragment individual care (Guthrie *et al* 2010).

Meso summary

Meso-level models take different forms and focus on various population groups. Integrated health and social care for older people has demonstrated the potential to decrease hospital use, achieve high levels of patient satisfaction, and improve quality of life and physical functioning. Kodner's (2009) review of North American models of integrated care for older people identified the following elements as being important in these models:

- **umbrella organisational structures** to guide integration at strategic, managerial and service delivery levels
- **case-managed multidisciplinary team care**, with a single point of contact and co-ordinated care packages
- **organised provider networks**, with standardised referral procedures, service agreements, joint training, shared information systems, etc
- **financial incentives** to promote prevention, rehabilitation and the downward substitution of services.

Kodner's findings are reinforced by a review of European models of health and social care integration which identified the following key factors as lying behind the positive outcomes delivered by these models:

- case management, geriatric assessment and multidisciplinary teams
- a single entry point
- financial incentives to promote downward substitution (Johri *et al* 2003).

The similarities in the findings of these two studies adds weight to their conclusions, although evidence of cost-effectiveness is inconclusive. The experience of Torbay has shown opportunities to improve the care of older people in England through health and social care integration. Although Torbay has adopted the care trust model to take forward this work, organisational integration was a consequence and not a cause of its success. As we argued at the outset of this paper, clinical and service integration are more important in influencing service use and outcomes than organisational integration, and in Torbay this is evident in the work of its integrated health and social care teams and their ability to use resources flexibly to meet the needs of patients and clients. The setting up of the Torbay Care Trust was important mainly in creating the umbrella organisational structure, to use Kodner's language, to support this work.

Programmes targeting different conditions are more heterogeneous than those focused on older people. A key complexity is the lack of a single definition of 'disease management' and the consequent variety in content of programmes. Initiatives targeting certain conditions (eg, depression, diabetes and heart failure) have achieved positive results, although the impact on clinical outcomes and mortality is uncertain. The cost-effectiveness of disease management has not been extensively studied or demonstrated. Clinical networks and chains of care have had a modest impact, with results varying according to how they were set up and led.

Micro-level integration

Micro-level integration is concerned with co-ordination of care for individual patients and carers. Bodenheimer (2008, p 1064) uses the following definition of care co-ordination: ‘the deliberate integration of patient care activities between two or more participants involved in a patient’s care to facilitate the appropriate delivery of health care services’. Such deliberate integration activities are required where there is a risk of fragmentation or breakdown in communication. Fragmentation arises when providers fulfil their responsibility to provide care at the time that the patient presents, but no overall co-ordination is taking place over time and/or sectors. Integrated systems recognise this risk and put in place arrangements for care co-ordination to address it.

Many systems assign responsibility for care co-ordination to a specific individual or team to overcome this risk. A survey of countries in the Organisation for Economic Co-operation and Development (OECD) found that most countries place importance on primary care providers to ensure patient follow-up and care co-ordination (Hofmarcher *et al* 2007). In recognition of the fact that much co-ordination activity is not medical, these systems may also employ specific care co-ordinators, such as managers and coaches (as in the Torbay example described above).

Another common element of care co-ordination is the use of shared care plans. The aim of such a care plan is to ensure smooth transitions between providers and that everyone involved in an individual’s care is working towards the same goals. Plans can also be used as a way of involving patients in their care and some of the literature emphasises the need for patients to be ‘activated’ (Coleman 2009).

Care planning and care co-ordinators: the Care Programme Approach

Care co-ordination has long been established in mental health, with a formalised approach – the Care Planning Approach (CPA) – developed in the early 1990s. Goodwin and Lawton-Smith (2010) identify four key elements of the CPA:

- a systematic needs assessment, including health and social care. Since 1999, there has been a single point of referral with a single health and social care assessment process
- the creation of a care plan to address the identified needs. Care plans tend to be highly complex, setting out the patient’s needs, emergency contacts and processes for review
- the appointment of a care co-ordinator to oversee delivery of the care plan
- regular review of the patient’s needs and care plan. The plan is intended as a dynamic document that is constantly updated and amended as required to best support the patient.

The care co-ordinator plays a vital role in the CPA process, which includes developing the care plans in collaboration with the patient, ensuring consistency with any specialist

care plans, overseeing the delivery of the multidisciplinary care required, and constantly measuring outcomes and reviewing plans with patients (Goodwin and Lawton-Smith 2010). The co-ordinator must not only identify the patient's needs but also have the ability and authority to broker an appropriate care package with multiple providers.

The plan, which should have been co-produced with the patient, acts as the central point of reference for everyone involved in the individual's care. Care planning is an approach that is being rolled out more widely and the aim was to provide all 15 million people with a long-term condition in England with an integrated and personalised care plan by 2010 (Department of Health 2008). These care plans are being developed within a wider context of long-term condition management that promotes risk stratification, targeted care and self-management.

Impact

A survey by the Healthcare Commission (2007) found that 77 per cent of patients were satisfied with their care, reporting it as good, very good or excellent. However, the survey also identified deficiencies: not everyone on the CPA had been offered a copy of their care plan (less than half on standard CPA), not all those with a plan understood it (58 per cent), only 40 per cent of those who wanted to be involved in the development of their plan had actually been involved, and only half of those wanting help finding work had received any. What has become clear from studies of the CPA is the importance of the care co-ordinator and the need for that individual both to identify the needs of the patient and to have the authority to broker the care package with the authorities. As Goodwin *et al* (2004) have found, much of the evidence indicates that brokering care across networks of diverse providers can be problematic due to the lack of power that co-ordinators have to do so.

Case management

Case management is a generic term, closely related to the CPA, which refers to the planning, co-ordinating, managing and reviewing of an individual's care (Department of Health 2000). Although case management programmes vary, the broad principle is to assign each patient a case manager or small team to assess needs, develop a care plan, organise the required care, monitor the quality of care, and maintain contact with the patient and his or her family (Singh 2005b). One example of a case management programme trialled in the United Kingdom is that of Evercare. Targeted at those aged over 65 with two or more previous emergency admissions, the programme involved developing individual care plans, undertaking assessments, regular monitoring by a case manager and ad-hoc interventions when required (Boaden *et al* 2006).

The Evercare model was introduced into nine pilot sites in England in 2003 and consisted of four key elements (Boaden *et al* 2006):

- defining a target group of patients according to risk: the technique used involved identifying patients aged over 65 who had had two or more previous emergency admissions although, later in the pilot, clinicians were also able to refer into the programme
- individual assessment and care planning
- monitoring of patients on a regular basis
- intervening when problems arose.

The role of the care co-ordinator was initially performed by 'advanced primary nurses'. This role involved assessing the patient's needs, developing a care plan with the patient

and carer, monitoring the plan and organising care when required. Importantly, the patient and carer were able to contact the case manager when required instead of phoning/visiting the GP or calling an ambulance. The key aims of the English pilots were to integrate health and social care to meet an individual's needs and for a care co-ordinator to help navigate the patient's journey along a care pathway, to maintain health and detect changes to prevent unnecessary admission.

Another example of case management is an initiative focused on cancer patients in Manchester. This initiative sought to strengthen care co-ordination by using a clinical nurse specialist or allied health professional to assess patients and develop a comprehensive care plan. The aim is to improve patient experience and outcomes and to reduce avoidable admissions to hospitals and lengths of stay. The initiative was also designed to help patients to die at home rather than in hospital (NHS Confederation 2010).

Impact

Case management, and its effectiveness, has been the subject of much debate in recent years but there is conflicting evidence on its effectiveness. MacAdam's (2008) review of integration for older people found that all successful programmes for older people include an element of case management. A review by Singh (2005a) that included 11 systematic reviews, 19 additional randomised controlled trials (RCTs) and 4 other studies concluded that the evidence of the impact of case management on quality of care, clinical outcomes and use of health care resources was inconsistent. A later review found that, in some studies, case management had reduced unplanned admissions, whereas in others it had no effect (Ham 2006).

The Evercare evaluation found that, despite evidence of reduced admissions and cost-effectiveness in the United States (Kane *et al* 2003), the programme in England had had a negligible impact on admissions (Boaden *et al* 2006). Analysis of why the programme might not have delivered suggested one possible explanation as patients included in the intervention not being identified accurately and not actually at high risk of re-admission (Gravelle *et al* 2006). Others have suggested that the wider systems were not comparable with the United States and the availability of step-down care places was a key factor in its success.

Work on case management for cancer patients in Manchester reported that co-ordinated care could release up to 10 per cent of cancer expenditure. This includes potential savings through reduced emergency admissions and reduced lengths of stay (NHS Confederation 2010).

Other approaches

Sitting alongside the care programme approach and case management are a number of mechanisms that facilitate the co-ordination of care. Some systems have experimented with models, such as the patient-centred medical home, in which the financial mechanisms provide an incentive for physicians to co-ordinate care over time and across sectors. Use has also been made of pilots that involve giving budgets to patients to facilitate patient-centred care and co-ordination. Information technology, and telehealth and telecare, may also facilitate care co-ordination. The following examples illustrate different approaches.

Patient-centred medical home and virtual wards

The patient-centred medical home (PCMH) is an example of a care co-ordination initiative that has at its core the ideas of an accountable individual/team and shared

information systems. Initially used in the United States in the late 1960s as a term referring to a central location for archiving children's medical records, the concept has since been expanded to refer to accessible, continuous, co-ordinated, family-centred care, broadly analogous to the organisation of primary care in the NHS. Although it can take numerous forms and have varied foci, a medical home has been described as 'accessible, continuous, comprehensive and coordinated and delivered in the context of family and community' (see www.medicalhome.info.org).

Different models are being tested as part of a Medicare nurse practitioner-led demonstration project (Schraum 2010). In its most basic form, a patient registers with a particular practice, the patient's records sit in the medical home, the patient knows who is responsible for his or her care and physicians know for which patients they are responsible. The practice co-ordinates care for their patients with the rest of the health system, offering advocacy and order for patients as they attempt to navigate the complex health care system (Berenson *et al* 2008).

The PCMH is a good example of a model of care for complex individuals for whom a standard programme of care is unlikely to be appropriate. This means that much of the care required is provided in-house by the practice team but, where specialist expertise is required, the practice buys that in on behalf of the patient. This model works well for these highly complex patients for whom it is probably inefficient for all specialist care to be provided in-house, the intention being to provide higher-quality care at a lower cost (Rittenhouse *et al* 2009).

Underlying mechanisms include a payment regimen that reimburses co-ordination activities and strong information technology (IT) systems that support the co-ordinating function of the PCMH (Rittenhouse *et al* 2009). The key principles of the PCMH are: each patient has an ongoing relationship with a physician; that physician leads a team of individuals at a practice level who collectively take responsibility for the ongoing care of the patient; care is holistic; and the personal physician has the responsibility for provision of all health needs or arrangement of care with other appropriate professionals (see www.pcpc.net/content/joint-principles-patient-centered-medical-home).

A similar model developed in England is the virtual ward. Although the United Kingdom does not have many of the problems that medical homes in the United States were meant to overcome (ie, patients visiting multiple primary care providers and the inherent disincentive to co-ordinate care in the fee-for-service model), there are still challenges with complex patients with multiple needs for whom a single multidisciplinary team is unlikely to have all the necessary expertise. Virtual wards combine the idea of case management with that of team responsibility.

Patients are identified for admission to the 'ward' through risk stratification techniques and their care needs are assessed by a multidisciplinary team. A case manager (usually a community matron) keeps in regular contact with the patient and co-ordinates care, buying it in from various different sectors and professions to meet the person's needs. Their care plan is regularly reviewed by the team while the GP with whom the patient is registered remains clinically responsible for that person's well-being (The King's Fund 2007).

Impact

Data published in a Commonwealth Fund report following a one-year PCMH pilot indicated a 20 per cent decrease in hospital admissions and a 12 per cent reduction in re-admission rates (Schraum 2010). In other Medicaid medical home projects in which physicians were paid an additional sum to co-ordinate care, states were able to save between US\$66 million and US\$220 million (Schraum 2010). An evaluation of a further

pilot in North Carolina, which implemented the PCMH for 650,000 patients, suggested cost savings to Medicaid and improved quality of care for those with asthma, chronic heart failure and diabetes (Pawlson *et al* 2007). A Geisinger pilot of an advanced medical home model that combined case management alongside patient education and telehealth achieved promising results: patients demonstrated greater adherence to prescriptions, there was greater use of generic drugs and re-admissions were reduced by 29 per cent compared with 4 per cent in control groups (McCarthy *et al* 2009a).

These are positive results but it is difficult to identify to what extent each of the different components contributed to the outcomes. One of the limitations of the PCMH model is that, although the primary care practice has responsibility for co-ordinating care, there is little incentive for other providers to work collaboratively (Rittenhouse *et al* 2009). Thus, although the model might work well in some contexts, in a highly fragmented system in which financial mechanisms do not explicitly incentivise integration, it may be less effective. Virtual wards in the United Kingdom are also a relatively new idea and formal evaluations are only just under way.

Financial mechanisms: personal health budgets

One approach to co-ordination at an individual level is to give patients greater autonomy over their care by letting them administer their own care budget. Self-directed care, as it is sometimes called, is based on the premise that assigning a budget to an individual allows that person to tailor care to meet needs (Alakeson 2010). Several pilots, known as ‘cash and counselling’, have been undertaken in the United States and the approach has been used since the early to mid-1980s in social care in the United Kingdom. Personal budgets and direct payment are now being rolled out for health in England. Individual budgets have also been used in a number of countries in Europe, such as Germany, Austria and the Netherlands (Alakeson 2010). The United Kingdom is also piloting similar ideas in children’s services, employment, housing and the criminal justice system (Needham 2010).

The US demonstration projects, ‘cash and counselling’, introduced by Medicaid in the mid-1990s, have sought to provide greater options for home- and community-based long-term care services (Alakeson 2010). The programme has integrated income support and service benefits by educating Medicaid beneficiaries about the range of services available, and giving them choice and freedom over the services that they need by enabling them to manage their own budgets (Anderson and Knickman 2001). As such, patients are able to choose the type and amount of paid services and support that they feel they require instead of the traditional medical services (Doty *et al* 2007). Cash payments can be used to pay for services but also to support family members as carers. Budget holders have the flexibility to save up the money for when they might need it (Anderson and Knickman 2001).

The right for service users to manage their own budget was campaigned for by groups of disabled people in the United Kingdom in the 1980s and introduced after a long period of lobbying (Glasby and Duffy 2007). Once introduced in the 1996 Community Care (Direct Payments) Act, direct payments in social care enabled local authorities to make cash payments to disabled adults instead of providing services directly to them. The original Act has since been extended to younger people aged 16 and 17, carers and the parents of disabled children and, from 2002, it has been compulsory for all local authorities to offer direct payments to those who meet the criteria (Glasby and Littlechild 2009). The payments can be used to purchase services from any provider (voluntary or private) or by individuals to employ assistants of their own choosing. Direct payments are, at present, available for social care only (Glasby and Littlechild 2009). Although only formally available since 1996, many local authorities had been using ‘indirect

payments' for a number of years, which involved making payments to a third party to overcome uncertainties about the legality of transferring cash to service users (Glasby and Littlechild 2009).

In 2005, the Department of Health began to pilot 'individual budgets' in a number of local authorities. The concept of an individual budget was pioneered by the charity 'in Control', the basic idea being that individuals know from the start how much money is available to meet their needs and then they are allowed maximum choice over how the money is spent. Individuals are also given as much control as they want over the budget itself. In Control pioneered the budgets for social care only but, based on positive early evaluations (eg, Poll *et al* 2006), the Department of Health pilots later expanded the approach to bring together a number of funding streams, including council-provided social care services, independent living fund, supporting people, disabled facilities grant, integrated community equipment services and access to work (Department of Health 2009). The budgets aim to give people the ability to use their allocation in a way that best suits their needs, with the intention that service users can play a bigger role in their own needs assessment and care planning (Glendinning *et al* 2008).

Demographic pressures and heightened public expectations have begun to put pressure on health services to deliver personalised services organised around the patient and not the service (Glasby and Duffy 2007). In 2009, the government announced that the personal budget approach adopted in social care was to be rolled out to health. Individuals with long-term conditions are now eligible for a personal health budget. At present, the budget is still virtual but a pilot of direct payments is now under way. There is debate over how much support and advocacy an individual with a budget should have and from whom – different models are being developed through the pilot sites.

Direct payments and individual budgets have been introduced widely across European countries. The schemes vary in the extent to which individuals can opt for direct payments or individual budgets, whether family members may be employed with the budgets and in the way the schemes are regulated. For example, a cash allowance has been introduced in Austria, Germany gives people the option of a cash allowance or care in kind (or a combination), the Netherlands offers a personal budget option to people when they become eligible for long-term home-based care, and Norway offers a personal budget for care assistants when the local authority considers this option preferable to formal care (Coyte *et al* 2008). Take-up of direct payments has also varied widely between countries (Poole 2006).

Impact

The principal findings from evaluations of cash and counselling in the United States suggest that those with budgets reported greater satisfaction with their care, were less likely to report problems with carers and had fewer unmet needs than control group members. In addition, none of those with budgets suffered any adverse events or worse outcomes than those in the control groups. The evaluation suggested that care may be provided more efficiently than traditional programmes (largely through stripping out duplication and multi-tasking by carers) (Carlson *et al* 2007) but no cost-benefit evaluation has been undertaken.

Evidence from social care in the United Kingdom suggests that direct payments have led to greater user satisfaction, greater continuity of care, fewer unmet needs and more cost-effective use of public resources (Glasby and Duffy 2007). Despite this evidence, uptake remains low. Glasby and Duffy surmise that the low uptake can be explained by the way in which the payments have been operationalised, rather than the concept itself being flawed.

The evaluation of individual budgets in social care showed some positive results, although they appeared to vary across population groups. For example, young disabled people were more likely to report higher quality of life and were more satisfied by the control offered by individual budgets to build a better quality support network. In contrast, older people reported lower well-being scores and many saw the budgets as an additional burden. The evaluation indicated that those with budgets had slightly better outcomes but cost-effectiveness varied by group. They tended to be more cost-effective than normal care for those with mental health needs and marginally more for young disabled people. Individual budgets proved less cost-effective for those with learning disabilities (Glendinning *et al* 2008).

A review of the European experience of personal budgets concluded that, although people value being in control, the burden of administration and risk falls on users and their families, and support is needed to facilitate care provision and enable appropriate choices. The review also found that the quality of personal care purchased is uncertain and there is an incentive for the user to underuse potentially necessary, more expensive, formal care. In Germany, such concerns resulted in informal carers being encouraged to attend formal training (Poole 2006). Evidence about direct payments suggests that consumer-directed payments are not necessarily cost-effective. For example, costs can be shifted into the state sector where carers have previously been providing informal unpaid care, although learning from Germany suggests that people might take lower-cost services in exchange for more control (Poole 2006). In addition, in some cases, formal provider agencies may offer more expensive services to individuals than they do to public sector departments (Poole 2006).

Personal budgets are still being piloted in health in the United Kingdom and so few data are available on their cost-effectiveness. A paper on the early experience of budgets points to a number of challenges, including the difficulties of promoting choice and control in the absence of a clear and developed market (Jones *et al* 2010).

Use of information technology

IT systems that facilitate the timely and efficient flow of information are often cited as an essential enabler of integrated care (eg, Feachem *et al* 2002; Fulop *et al* 2005). The examples of integrated systems in the United States described earlier have in common high levels of investment in IT. All have implemented electronic health records and many use IT systems to spread good practice and ensure consistent standards.

Kaiser's HealthConnect allows care teams to access patient information and the latest best-practice guidance in one place, and facilitates collaboration between generalists and specialists in different settings. As well as communicating with professionals, patients are able to access their own records and arrange 'e visits' as well as face-to-face appointments. Patients can also access laboratory results, order repeat prescriptions and read summaries of their health conditions. Electronic interprovider messaging about care is automatically incorporated into a patient's records (Chen *et al* 2009).

The Veterans Health Administration (VA) has also invested heavily in IT and implemented an electronic medical record on a national basis in 1999. This was achieved through the collaboration of local clinical champions and central software engineers. It has been argued that this model of in-house development was critical to its successful implementation (Evans *et al* 2006). As in Kaiser Permanente, investment in IT facilitates communication between providers in different settings and provides clinical decision support.

Impact

A study of the impact of HealthConnect on the use of ambulatory care between 2004 and 2007 found that, after its introduction, overall attendances decreased by 26.2 per cent, visits to primary care decreased by 25.3 per cent and visits to specialists decreased by 21.5 per cent. In the same period, telephone consultations increased eightfold and email messaging increased sixfold in the period after its introduction (Chen *et al* 2009). The study concluded that the electronic health record system created operational efficiencies and suggests that this is consistent with other evidence in an inpatient setting which has found electronic health records to be of value in improving patient safety, improving care co-ordination, facilitating clinical decision-making and adhering to evidence-based guidelines (Chen *et al* 2009). Research has found that integrated medical groups and large practices are twice as likely as small groups or single practitioners to use electronic medical records (Mehrotra *et al* 2006; Shih *et al* 2008).

The transformation at the VA described earlier resulted from multiple changes pursued in parallel. Investment in IT and the adoption of the electronic medical record across the VA in 1999 was one of the most important changes, not least because it 'provided the basis for large-scale databases, conferring, in turn, the foundation for evidence-based management and system accountability through the tracking of processes and outcomes' (Evans *et al* 2006, p 168). The VA's experience reinforces the role of IT in facilitating integration of care.

Use of telecare and telehealth

Between 2003 and 2007, the VA introduced a national home telehealth programme with the intention of better co-ordinating the care of patients with long-term conditions. As the largest programme of its type in the United States, it provides an example of how IT can be used to transform clinical, educational, technical and business processes (Darkins 2008). The VA's Care Coordination/Home Telehealth (CCHT) programme cares for patients with long-term conditions using a combination of telehealth and disease management techniques. Patients enrolled in the programme have devices fitted in their homes that send vital signs, disease management and e-health information via the internet to hospitals.

The principal goal of the CCHT programme is to reduce avoidable and costly use of health care services such as hospitalisations (Barnett *et al* 2006). One study looked at the use of the programme for patients with diabetes in Florida, Puerto Rico and southern Georgia, where the principal type of technology used was a messaging device that was used to answer questions about patients' symptoms and health status. Care co-ordinators monitored responses daily and made clinical judgements about whether a telephone call should be made to the patient or whether a physician's appointment was necessary. In a small number of cases, a telemonitor and videophone were used for two-way weekly contact (Barnett *et al* 2006).

Interest in telecare and telehealth has not been confined to the United States. In 2008, the Department of Health in England launched its two-year Whole System Demonstrator programme, with the aim of testing whether technology can help people manage their own health while maintaining their independence. The pilot is being run in three primary care trusts and is aimed at vulnerable people who need the support of social care or health services to stay in their own homes (Department of Health 2009b). The programme tests both telecare (ie, alarms and sensors) and telehealth (ie, remote monitoring of vital signs) as ways of enabling people to stay in their own home. As the largest RCT of telecare and telehealth in the world to date, its evaluation will produce extremely valuable evidence about the potential of telecare and telehealth.

Impact

The VA's CCHT programme has reduced its number of bed days by 25 per cent, cut admissions by 19 per cent (compared with a reduction of just 4.6 per cent across the VA), achieved a patient satisfaction score of 86 per cent after enrolment and cost \$1,600 per patient per annum, which is significantly lower than the VA's home-based primary care service (\$13,121 per annum) and nursing home care (\$77,000 per annum). The intention is to expand the scheme to 50,000 patients by 2011 to enhance patients' ability to self-manage and, if not to prevent, then to delay institutionalisation (Darkins 2008). In the study looking at those with diabetes in Florida, results were positive. After two years of enrolment in the CCHT programme, patients were significantly less likely to be hospitalised and had a lower likelihood of being referred to primary care by the care co-ordinator than the non-enrolled group. The study concluded that the CCHT programme reduced use of avoidable health care services for diabetes (Barnett *et al* 2006).

Although remote monitoring of patients has now been widely tested in England, there still remains a lack of robust evidence about its cost-effectiveness. Part of the challenge is turning findings from multiple small-scale pilots into a business case on a larger scale (Goodwin 2010). A recent paper for the Department of Health's Whole System Demonstrator Action Network demonstrates that such technology has the potential to reduce hospital and care home admissions and to improve quality of life, although it also highlights the limited evidence on cost-effectiveness and outcomes (Clark *et al* 2010).

One of the reasons for the lack of evidence base is the relatively low uptake of the technology. There are a number of barriers to adoption and implementation of such technologies, the key one being the high initial investments (Liddell *et al* 2008). The process of scaling telehealth services is also a barrier to the adoption of such technologies (Goodwin 2010). The Department of Health's evaluation of its Whole System Demonstrator programme will be published in 2011 and should go some way to filling the evidence gap.

Micro summary

The tools of care co-ordination are many and varied and are rarely used in isolation. Interventions vary widely in terms of content and criteria of success, so it is difficult to compare them systematically. Different contexts and external factors may also play a part; for example, the impact of one technique within the context of a large integrated delivery system might be different to the impact of the same technique in a more fragmented system.

In terms of the tools and techniques reviewed here, which represent only some of those in use, the evidence suggests the following:

- **Care planning**, via the CPA, has been shown to produce high levels of patient satisfaction although roll-out has been patchy.
- Evidence for **case management** is inconsistent, with some initiatives demonstrating positive impacts on quality, outcomes and use of resources, and others having negligible or negative impacts; case management is more likely to offer benefits when targeted at high-risk groups.
- **Patient-centred medical homes** have demonstrated positive early results in terms of admissions and cost-effectiveness.
- Evidence for assigning **personal budgets** suggests that they have the potential to increase satisfaction levels and provide care more efficiently, but they may be more appropriate for some groups than others.

- Use of **electronic health records** and electronic messaging in US integrated systems has reduced patient visits, increased adherence to evidence-based guidelines and facilitated care co-ordination.
- **Telehealth and telecare** show the potential to yield positive results in terms of quality of life and resource use, although robust cost-effectiveness evidence is lacking.

In summarising this section, it is worth noting the findings of a systematic review of different strategies to co-ordinate care within primary health care and among primary health care, health services and health-related services (Powell Davies *et al* 2008). The review identified six types of strategy and concluded that interventions using multiple strategies were more successful than those using single strategies. These strategies included arrangements to improve communication between providers and provide support for patients. This conclusion echoes our assessment of the performance of integrated systems at the macro level and of integrated programmes at the meso level.

Implications for the NHS

In this final section of the paper, we summarise the implications of our review for leaders in health and social care and for policy-makers.

Messages for leaders in health and social care

Our review has shown that integration takes many forms and has been pursued at different levels. Organisational integration appears to be neither necessary nor always sufficient to deliver the benefits often claimed by advocates of integration, notwithstanding the achievements of integrated systems such as the Veterans Health Administration. Alternative approaches based on virtual or contractual integration, as in Kaiser Permanente and Geisinger Health System, hold just as much promise because the benefits of integration arise primarily when clinical teams and services are brought together and incentives are effectively aligned in support of service improvement.

Our review has shown that initiatives to integrate care at the macro or systems level must be linked to initiatives at the meso level for particular care groups and populations, and at the micro level for individual service users and carers. As integration evolves, attention must be given to a number of factors, including multispecialty group practice, aligned incentives, use of IT and guidelines, accountability for performance and defined populations, a physician–management partnership, effective leadership and a collaborative culture. Integration in the absence of these factors is unlikely to deliver benefits, which may explain variations in performance between integrated systems.

At the meso level, programmes to integrate health and social care for older people in Europe and North America have highlighted the importance of umbrella organisational structures to guide integration, multidisciplinary team care and case management, organised provider networks and financial incentives to promote downward substitution of services. These programmes make use of many of the initiatives that have been put in place at the micro level to strengthen the co-ordination of care for patients and carers. The evidence points to the need for multiple strategies to be pursued to achieve closer co-ordination of care at the micro level, including arrangements to improve communication between providers and provide support for patients.

To make these points is to underline the relevance of Donaldson's framework (*see p 6*) for thinking about the relationship between organisational form and care co-ordination. Effective co-ordination of care between providers working together in networks is likely to offer greater benefits than organisational integration that leaves professional, financial and other barriers to clinical and service integration untouched. However, as we argued earlier, the performance of systems based on virtual or contractual integration depends on effective leadership, the development of a collaborative culture, aligned incentives and many other factors.

These findings have clear implications for the policy on transforming community services and the transfer of services managed directly by primary care trusts to other organisations, such as NHS trusts running acute and mental health services.

Transforming community services is unlikely to result in improved outcomes for patients unless organisational integration is used as an opportunity to review how care is delivered and to develop new models of service provision. These new models need to overcome fragmentation between different providers through the use of teams that work across the primary and secondary care divide and of more effective means of co-ordinating patient care.

The experience of Torbay in improving care for older people reinforces this conclusion. The integration journey there started from a focus on how to meet the needs of older people in contact with a variety of health and social care professionals whose work was not always well co-ordinated. This was tackled by the creation of locality-based health and social care teams aligned with general practices. Having worked to establish clinical and service integration, and seen the benefits of so doing, a decision was taken to establish a care trust, bringing together responsibility for adult social care and community health services. As we noted earlier, provider integration was the main driver for service improvement, with integrated teams able to use pooled budgets to put in place packages of care and support for older people at risk.

The point to emphasise about Torbay is that organisational integration was a consequence rather than a cause of work to improve outcomes. The factors that made the biggest difference to patient care were the formation of integrated teams, the use of case managers and care co-ordinators within these teams, the introduction of a single point of access and a single assessment process, the pooling of budgets to better align incentives and the alignment of the work of integrated teams with general practices. Also important was the emphasis placed on integration as a means of improving patient care, exemplified by continuing reference to 'Mrs Smith' and how to ensure that her needs were kept to the fore in the integration journey.

Messages for policy-makers

Integration has been taken forward in a number of areas of England in recent years, even though the policy context has not always been supportive (Ham and Smith 2010). The coalition government's proposals for further reform are centred on extending patient choice and provider competition. This includes encouragement to any willing provider to deliver care to patients, and a complete separation of commissioning and provision within the NHS. Depending on how the reforms are implemented, the result could be a system in which there is commissioning from and choice between an increasingly fragmented array of competing public, private and voluntary sector providers. As a consequence, integration could become more difficult to achieve.

An alternative would be to explore how choice might be stimulated between systems in which responsibility for commissioning and some or all aspects of service provision are combined. One way of doing this would be to use GP commissioning as a platform on which to build integration. GPs have been asked to take the lead on commissioning because of their role as service providers in the NHS, and many are attracted to do this because of the opportunity offered by commissioning to develop new models of service provision in the community. GP commissioners are therefore well placed to act as both commissioners and providers.

If GP commissioners are to be in the vanguard of integrated care, then the practices involved in commissioning consortia need to be able to make as well as buy services. In so doing they would be analogous to integrated medical groups in the United States (*see pp 19–20*), taking on the risk of capitated budgets for their populations. Evidence from the United States points to the importance of specialists working alongside generalists in what one of us has termed 'clinically integrated groups' (Ham 2007,

2008b). These groups need to work at a large enough scale to make the capital and other investments (eg, in case management and data analysis) needed to leverage the benefits of integration. GP commissioners will also need to stimulate the emergence of integrated provider networks or alliances to link the work of constituent practices with that of specialists and staff working in the community health services and social care. Provider networks and alliances might involve real integration, virtual integration or a combination of the two.

Reflecting the evidence reviewed in this paper, GP commissioners and integrated provider networks would be linked together through contracts in arrangements similar to the strategic alliances found in sectors other than health care, including dynamic supply chains. The commissioning decisions of GPs would follow the approach set out by the government, both in being transparent and in offering opportunities for independent sector providers to bid for contracts of an appropriate size. Over time, integrated provider networks might develop long-term relationships with one or more hospitals, similar to the relationships developed by Kaiser Permanente in Colorado which does not own its own hospitals. As in the United States, specialists and nurses employed by integrated provider networks would take responsibility for much inpatient care, and this could include the use of acute physicians or hospitalists.

In urban areas, it is possible to envisage how competition might develop between clinically integrated systems comprising commissioning consortia and their associated provider networks. Competition would hinge on consortia being formed by *like-minded* practices that wish to work together, therefore covering a number of localities rather than being monopolies in their areas. The performance of these competing, clinically integrated systems could then be compared with that of integrated systems in rural areas where geographical constraints mean that it will be difficult for commissioning consortia to compete for patients. In this way, it should be possible to test empirically the argument that integration and competition may have a bigger effect when used in tandem rather than separately.

We have described how integration might evolve from GP commissioning mainly because the coalition government has set such store on this element in the health reforms in England. In concept, it is possible to envisage how providers might take the initiative in moving in this direction, especially in areas where GPs are relatively weak and specialist providers strong. Parts of London are a case in point, not least because of the concentration of academic health science centres in the capital and the potential that they present to extend high-quality care from hospitals into the community. In contexts such as these, it is possible to imagine how integration might be built on the strengths of academic health science centres working with GPs as providers and commissioners.

The argument for moving towards competing, clinically integrated systems that both commission and provide services is theoretical as well as practical. As health services tend to be complex, are difficult to define in clear contractual terms, exhibit marked information asymmetries between commissioners and providers, involve the exercise of professional discretion, require lengthy training to deliver, frequently rest on long-term relationships between patients and professionals, and, for some services, are subject to problems of local monopoly, there are major obstacles to the efficient operation of systems in which the roles of commissioners and providers are separated (Mays and Hand 2000). For these reasons, commissioning health services is inherently difficult, and in no country is it done consistently well (Ham 2008b). In these circumstances, institutional economics suggests that hierarchies rather than markets are likely to be preferable.

Robinson (1999) has drawn on institutional economics to analyse different approaches to integration in the United States. Although noting that vertical or real integration is

often viewed as a last resort by economists because of the difficulty of achieving the benefits that derive from specialisation and contracting relationships in the market, he nevertheless acknowledges the success of systems such as Kaiser Permanente and the emergence of different varieties of virtual integration as insurers and providers in health care have moved away from traditional forms of spot contracting. The example of Geisinger Health System, in which quality improvements have been most easily achieved when Geisinger is both commissioner and provider, underlines the advantages of this form of integration.

Likewise, Christensen and colleagues (2008), in their critique of health care in the United States, contend that, although more competition is required to promote desirable innovations in care, *disruptive competition* between integrated systems is likely to be more effective in producing this result than competition between fragmented systems. The point that they emphasise is that integrated systems have incentives better aligned to create disruption than non-integrated systems, based on traditional forms of reimbursement such as fee-for-service and case-based payments for hospitals. This is because integrated systems work within a capitated budget which creates incentives to keep people well. Often described as health maintenance organisations, integrated systems are able 'to create outpatient centres that disrupt hospitals, and... enable nurse practitioners to disrupt primary care physicians who themselves can be encouraged to disrupt the specialists – because the executive teams at the centre possess a systems view' (Christensen *et al* 2008, p 199).

If competition between clinically integrated systems evolves in England, patients would choose both their practice and the consortium that commissions their care. They would also have choice within the integrated provider network or networks under contract to the consortium. In addition, patients could be offered the choice of specialist providers outside these networks to create an incentive for network providers to offer care that is responsive and high quality.

Competition rules would need to be framed to support an evolution in this direction, for example to avoid commissioning consortia going through lengthy and bureaucratic procurement processes before being able to deliver additional services through partner provider networks. Within provider networks, it is possible to envisage the emergence of integrated models of care for older people and people with long-term conditions, drawing on the evidence summarised earlier about the benefits of this way of working. It would also be feasible and desirable for provider networks operating as virtually integrated systems to encompass an increasing role for independent sector providers able to offer innovative and cost-effective approaches to care delivery.

Where next?

In putting forward these arguments, the point that we would emphasise is that the application of choice and competition in the English NHS needs much more thought. Further progress in improving the performance of the NHS, building on the achievements of the last decade, is most likely to arise through commissioning consortia that are incentivised to deliver more integrated care through new ways of working with hospital-based specialists and community health service staff. Instead of insisting on a rigid separation of commissioning and provision, policy-makers need to recognise that health care is different and the unthinking application of models from other sectors is unlikely to bring benefits.

Exploration of how a market can be developed between clinically integrated systems in which aligned incentives will drive the changes needed should be the overriding priority. This means active exploration and encouragement for GP commissioners to work with other clinicians, including specialists, to develop innovative models of provision through their control over budgets, an unrelenting focus on clinical and service integration rather than organisational integration, and the development of market rules that demonstrate real understanding of the complexities of health care. It also requires that attention be given to the factors that enable high-performing integrated systems to deliver good results such as leadership, culture and partnership between physicians and managers.

The importance of these factors is underlined by research into lessons for network management in health care (Goodwin *et al* 2004). This research has described various network structures, challenges in network governance and lessons about how to manage networks. The complexities of working effectively through networks highlighted in the research is a timely reminder of the challenges facing GP commissioners in taking forward the ideas set out here, both in ensuring that practices work together effectively within commissioning consortia and in forging strategic alliances with providers. Successful examples in health care such as Kaiser Permanente have developed over many years and are embedded in a culture that is not replicated easily or quickly (The Economist 2010).

Policy-makers should ensure effective oversight of GP commissioners as the next stage of NHS reform unravels through the proposed National Commissioning Board. This includes providing patients and the public with information about the performance of GP commissioners to facilitate choice, and helping to address conflicts of interest arising from the role of GPs as providers as well as commissioners. It will also be important to avoid risk selection by commissioners through the adoption of a person-based resource allocation formula that adequately reflects the needs of different patients. If GP commissioners are formed by like-minded practices that cut across localities, it will be essential to ensure that the focus on the health of populations is not lost. Local authorities are well placed to do this through the proposed health and well-being boards.

Summary

In this final section of the paper, we have sketched the outlines of an alternative to choice and competition between a fragmented array of providers based on a rigid separation of commissioners and providers. Our arguments build on our previous work (Ham 1996, 1997, 2007, 2008b) and the work of commentators who have seen integration as central to meeting the challenges facing the NHS in the future (Donaldson and Ruta 2005; Dixon *et al* 2007; Smith *et al* 2009; Lewis *et al* 2010). In putting forward these ideas, it is not our intention that the NHS should embark on further structural changes. Rather, we have suggested how clinically integrated systems might evolve over time from reforms already announced. The evidence brought together here provides a compelling argument for clinical and service integration to be at the heart of moves to improve outcomes in the NHS.

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