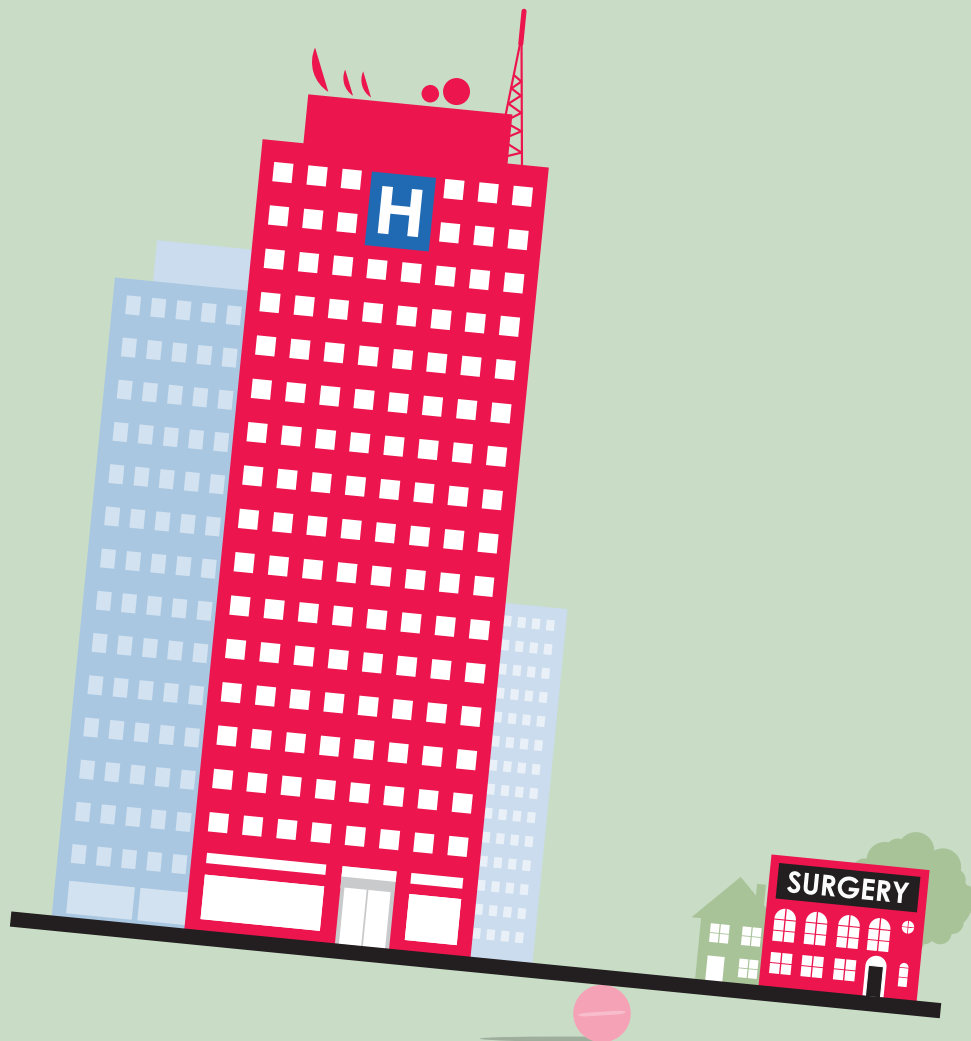


Evidence:

Getting out of hospital?

The evidence for shifting acute inpatient and day case services from hospitals into the community

June 2011



Identify Innovate Demonstrate Encourage

Acknowledgements

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Foreword

Given the number of policy initiatives that have attempted to encourage a shift of care out of hospitals and into the community over the last decade, it is remarkable what little progress has been made on the ground. The arguments for moving more care closer to where patients live are no less compelling than they have ever been. Hospitals are expensive, impersonal and risky places in which to deliver care that does not require a high tech and specialised environment. The challenge for healthcare leaders is a significant one: how exactly do we overcome a centuries-old trend of increasing centralisation of healthcare provision?

The impetus for the shift will not come from the many people who think that the current situation is acceptable. Instead, it will come from those responsible for improving quality and driving down costs by rethinking how services are designed and delivered. In pole position must be the new commissioning groups that are currently being established. The onus is on these groups to demonstrate that a strong and informed clinical voice can deliver the changes that previous incarnations of commissioning have found so difficult.

High-quality research evidence must underpin the hard decisions that have to be made. This report aims to summarise current evidence in a way that is relevant to commissioners and other decision makers working in the health service. Our conclusions are appropriately cautious but nevertheless practical and useful. We found that for some conditions and under the right circumstances, there is an alternative to hospital-based treatment, and patients often prefer these alternatives. Unsurprisingly, the quality of the care that is provided is the major determinant of success, not the place of delivery. We also found that costs are only reduced if the shifts are associated with active disinvestment in hospital-based services.

All health services are facing the enormous challenge of delivering better care while controlling costs. Rethinking traditional patterns of where and how care is delivered is fundamental to addressing these challenges. We hope that this report will make a useful contribution.

Martin Marshall
Clinical Director and
Director of Research and Development

Executive summary

Context

This Health Foundation report reviews evidence concerning the relative efficacy and cost-effectiveness of community-based treatment regimes. In particular, it focuses on the evidence for shifting acute inpatient and day case services from hospital into the community. It is a rapid evidence assessment (REA) which updates earlier systematic reviews in the light of more recent research.

In keeping with the Health Foundation's aim to inspire improvement, the review focuses on the implications the evidence has for GP commissioners and policy makers when making decisions concerning health provision.

Approach

The review team from Matrix Evidence carried out an REA to explore international evidence on the benefits and potential harms of shifting acute inpatient and day case services from hospitals into the community. Supported by the Information Retrieval Unit at King's College London, the review team searched the following sources:

- Medline
- Embase
- HMIC (a recognised source of 'grey' literature)
- SPP
- ASSIA
- Web of Knowledge.

The search revealed 26 studies reporting primary research or systematic reviews of primary research that compared the effects of community-based services with equivalent services for hospital inpatients.

The review team assessed each study for methodological quality using a standardised evaluation tool. The overall quality of the studies was high, with only two studies failing to reach at least the mid-level quality rating (see appendix 3). The team also conducted supplementary searches for additional reports and opinion pieces on the topic.

Results

The available evidence shows that, under the right circumstances and for some conditions, community-based services can be an effective alternative to hospital treatment. However, the effectiveness, cost-effectiveness and safety of admission avoidance associated with community-based services varies according to the characteristics of the patients being offered treatment and the quality of the community services on offer. This section summarises the main review findings under three headings:

- What was done?
- Was it successful?
- What did it cost?

What was done?

Under the terms of the review, the research literature we identified was primarily aimed at comparing the effectiveness of hospital-based care with community equivalents. It did not typically include details of how local community-based services have been established. Information that service commissioners might need, such as the level of infrastructure, planning and start-up costs needed to shift services into the community, is not usually reported in studies that evaluate the effectiveness or cost-effectiveness of these services compared with inpatient care.

The research review found some interesting examples of community-based services using multidisciplinary teams with a nurse and specialist practitioner or GP providing care, either at home or within community hospitals or rest homes. Services involving multidisciplinary teams often include nurses visiting at least daily and physicians every one to three days. Other examples from outside the UK provide a more resource-intensive model. For example, one study described a service in Italy involving a 14-person team that was able to care for 25 patients a day, or a total of 450 patients a year.

Was it successful?

In terms of health outcomes, most studies reported broadly similar findings for community-based services and inpatient care. The findings for length of treatment varied: some studies reported longer and some shorter durations than inpatient care.

The new studies we found suggested that there is particular potential for community-based services to help reduce NHS costs by promoting early discharge from hospital for patients who no longer need intensive acute care, but are not yet ready to fend for themselves at home. However, as with previous systematic reviews, the evidence is still not sufficient for us to be certain that shifting care into the community will always reduce costs.

The findings for patient satisfaction are less equivocal. When asked, patients expressed greater satisfaction with treatment-at-home regimes than hospital inpatient care. Similarly, patients were generally more satisfied with community-based minor surgery compared with hospital treatment, typically citing ease of access, travel and shorter waiting times.

As with many evidence reviews, care must be taken when attempting to base decisions about treatments for local patient groups on the findings from research studies, even when they are robust. We found that many of the studies that evaluate community-based interventions were highly selective in terms of who was offered the service. Based on the evidence review alone, it would be unwise to assume that community-based services would be as effective across a wider range of patients.

What did it cost?

The provision of detailed cost data was inconsistent in the studies we reviewed. We found no comparative studies that calculated the staff-patient ratios or the total number of staff needed to provide equivalent care to all relevant patients who are currently treated in hospital. We also did not find any calculations showing how the total cost of an entirely community-based service with a supportive infrastructure would compare to hospital-based care. Such evidence that does exist suggests that community-based services may be more cost-effective than inpatient services.

Any conclusions concerning relative cost-effectiveness should be considered with caution, as community-based services typically treat less severe and less complex cases, and may only be offered to patients who already have carer support at home.

Most of the costs of community-based services are staff costs. Daily costs tend to be lower, although some studies have found that after taking into account the longer durations of community-based care, the total costs are either lower than or no different to inpatient costs.

We need more evidence on the resources needed to deliver the kind of community-based services that are likely to prevent admission to hospital or facilitate early discharge from hospital. Evidence from practice examples would be particularly helpful in supplementing the sparse details reported in the existing literature.

On the other side of the cost-effectiveness equation, commissioners would no doubt benefit from more robust financial data on the savings that could be achieved by shifting services from hospital into community settings. The research literature did not reveal any examples where establishing community-based services had led to a reduction in, or decommissioning of, the corresponding acute inpatient service.

Key messages

Evidence from this review clearly suggests there are potential gains to be made from shifting at least some acute inpatient and day case services from hospital into the community. Those potential gains include better health outcomes for patients, greater patient satisfaction with services and more cost-effective delivery of treatment.

- Primary care can be an effective alternative to hospital treatment for some patient groups, in particular the elderly and those with complications arising from long-term conditions such as heart failure and chronic obstructive pulmonary disease (COPD).
 - Intermediate care from community hospitals may reduce mortality and lead to similar quality of life compared with inpatient care in elderly people with acute illness.
 - The effectiveness of primary care solutions is very much influenced by the quality of those services rather than simply the setting (primary or secondary) in which they are provided.
 - Patients seem more satisfied with treatment at home compared to hospital inpatient care.
 - Early discharge from hospital into community-based care settings is associated with better patient satisfaction scores and equivalent quality of life scores.
- Patients report high satisfaction with community-based minor surgery due to ease of access, shorter travelling times and reduced waiting times. However, in some cases, minor surgery delivered by GPs may be of lower quality than that done by surgeons in hospitals.
 - Because existing research has not consistently focused on collecting robust financial data, there is little evidence that discharging patients early to hospital-at-home care delivers cost savings to the healthcare system. The delivery of significant cost savings is likely to depend on inpatient services being decommissioned, yet there is little evidence that commissioners do this once a new service has been set up.
 - Studies evaluating community-based care are often highly selective in terms of who is offered the service. Consequently, it is difficult to generalise from the available evidence as to whether community-based care would be as effective when used across a broader range of patients.
 - Developing a consistent framework for research and analysis, identifying key factors that can be monitored and evaluated across interventions and settings, would help to inform commissioning decisions. A consistent analytical framework for summarising information would support the collection of comparable information that could show how to successfully implement systemic and strategic changes to service provision.

Chapter 1

Context

In recent years, health policy in both England and abroad has very clearly aimed to shift the provision of at least some elements of care out of hospitals and into community settings. While specific drivers for this change vary from country to country, the policy is generally associated with three common goals:

- improved health and wellbeing for patients
- more cost-effective provision of healthcare
- greater patient satisfaction.

This quote from a *Health Service Journal* article captures the rationale for change in typical fashion:

New treatments and technologies mean many services can move from hospital to community settings. Often, quality is better, and – without hospitals’ overheads – cheaper.¹

Proposed changes also need to be located in the context of what NHS Chief Executive David Nicholson has warned may include, ‘the possibility that investment will be frozen for a time’. His 2009/10 annual report went on to say that productivity gains would be achieved through quality improvements and innovation. This was reaffirmed in the pre-budget report and the *NHS Operating Framework for England for 2010/11* and has been termed both the quality and productivity challenge and the QIPP (Quality, Innovation, Productivity and Prevention) initiative.²

¹ Dash P. The eight ways to save cash and improve care. *Health Service Journal* 2010; p1 www.hsj.co.uk/5020764.article?referrer=e25

² QIPP is organised at a number of different levels which are meant to be mutually reinforcing and supportive. Jim Easton, National Director for Improvement and Efficiency at the Department of Health, is the overarching lead for QIPP.

This Health Foundation report sets out to test key assumptions in relation to explicit and implicit policy objectives. It updates earlier systematic reviews of the evidence on the efficacy and cost-effectiveness of community-based treatment regimes, with a specific focus on shifting acute inpatient and day case services from hospitals into the community.

The report supplements evidence from primary research by describing both published examples of how policy that shifts care from acute to community settings has been implemented, and some think-pieces on the key drivers and barriers to successful implementation. In keeping with the aims of the Health Foundation, the report has a strong focus on the practical implications of the available evidence for commissioners and service providers.

The move to shift acute services out of hospitals and into community settings started with the notion of *hospitalisation à domicile* (hospital-at-home) in France in the early 1960s. Since then, similar policies have been implemented in countries including the USA, the Netherlands and Australia (Bosna 1993; Leff *et al.* 2005; Montalto 1998).

For England, a key milestone in the development of policy to deliver more community-based care was the publication of the white paper *Our Health, Our Care, Our Say: a new direction for community services* in January 2006. In this white paper, the previous administration set out its vision of health services being built around perceived patient preferences for treatments, delivered at or as near to home as possible.

The white paper set out four clear goals:

- better prevention services with earlier intervention
- more choice for patients
- reducing health inequalities through improving access to community services
- providing more support for people with long-term needs.

Interestingly, it also set out plans that are perhaps now more closely associated with Conservative–Liberal Democrat coalition health policy, including ideas such as practice-based commissioning and payment by results. The reforms proposed were viewed as more than simply changing the location from where care is delivered: they were also about changing mindsets and behaviour across the whole system (Parker, 2006; Singh 2006). Similar proposals were developed elsewhere in the UK. For example, ‘shifting the balance of care’ has been a key theme in the work of the Scottish Government Health Directorates for a number of years.

The Conservative–Liberal Democrat coalition government initiated a well-publicised focus on what they have termed ‘big society’. This has clear implications for the delivery of healthcare, including:

- doing more in the community
- patients being more actively involved in decision making about their care
- the commissioning of services by relatively small GP consortia to suit local population needs.

The white paper *Equity and Excellence: Liberating the NHS* set out broad policy intentions such as GP commissioning, indicating a likely push to deliver more services in the community, partly to reduce costs and partly to make care more patient-centred.

Few would deny that the NHS has to find ways of delivering more with fewer resources, and hospitals are expensive to run. However, one of the key questions this report addresses is whether we have a consistent body of robust evidence to support the assumption that providing elements of healthcare in community settings is cheaper and more cost-effective than providing that same care in hospitals.

A systematic review of the evidence conducted five years ago by Bonnie Sibbald of Manchester University’s School of Medicine³ failed to find conclusive evidence that shifting services is cost-effective (or even safe and effective). That being said, making robust comparisons between hospital and community-based care provision is not entirely straightforward.

A key problem is the sheer complexity of trying to compare complex healthcare delivery systems across different patient groups in very different social and economic contexts. Because hospital-at-home has been introduced for many different conditions and in many different contexts, evaluating its general effectiveness and cost-effectiveness relative to hospital care is very difficult. Even where robust evaluations have been reported, they often involve select groups of both patients and providers. This makes it difficult to draw lessons that can be applied to more general populations.

Finding examples of good practice in the area is also difficult. A 2009 report from the Audit Commission⁴ suggested that the shift from acute to community-based care had been slower than many predicted. Despite a 6.8% increase in acute and specialist trust costs in 2008/09, available data suggest that there was no noticeable shift of care from hospitals during the same period, either in terms of investment or activity.

While recognising these issues in summarising the available evidence, this report updates the earlier systematic review with more recent findings, supplements those findings with examples of good practice and distils a set of key implications for both commissioners and providers of services.

³ Sibbald BS, McDonald ER, Roland M. Shifting care from hospitals to the community: a review of the evidence on quality and efficiency. *Journal of Health Service Research and Policy* 2007; 12:110–117.

⁴ The Audit Commission. *More for Less – are productivity and efficiency improving in the NHS?* London: The Audit Commission; 2009.

Chapter 2

Review methods

The research team carried out a rapid evidence assessment (REA) to explore international evidence on the benefits and potential harms of shifting acute inpatient and day case services from hospitals into the community. The REA methodology provides a systematic and rigorous process for identifying the best evidence on a particular question, without requiring the same degree of time and resources of a full systematic review.

The topic of shifting care from secondary to primary care is a large one, covering outpatient assessment and diagnosis, elective and emergency inpatient care, and subsequent follow-up. It was not possible to cover all aspects within the timeframe and resources available. We made a strategic decision to focus the review on the specific area of acute inpatient and day case services. The Health Foundation has commissioned a separate report on improving the quality of outpatient services. We also chose not to address questions about how primary care can best provide effective chronic disease management in order to prevent future need for hospital services.

We initially ran a broad and general search for studies on shifting, transferring and moving care from hospitals to primary or community care. This search identified several published systematic reviews on the topic and we decided to focus this review on updating one of these (Roland *et al.*, 2006), which had a search date of January 2005.

After discussions with Bonnie Sibbald, one of the authors of this review, we expanded our initial search to include the following keywords:

- elective surgery
- hospital-at-home
- intermediate care
- GPs with special interests
- outreach clinics
- telemedicine
- shared care.

From the results of this additional keyword search, we included relevant studies that were published in 2005 or later. The number of studies identified and flow of literature are given in appendix 2.

Our searches covered the following databases:

- Medline
- Embase
- HMIC (this database indexes a substantial amount of 'grey' literature¹)
- SPP
- ASSIA
- Web of Knowledge.

We entered studies identified through our search into a database and removed duplicate references. The studies were screened by one researcher for relevance based on the following criteria:

¹ Grey literature is generally defined as literature that is difficult to access as it is not published in peer-reviewed journals or the main biomedical research databases. It includes primary research, opinion-piece reports, data and conference proceedings.

- (1) the study was published in 2000 or later (original search), or 2005 or later (additional keyword searches)
- (2) the study is a report of research carried out in an OECD country
- (3) the study assesses the effect of moving care from hospitals into the community on quality and/or safety of care and/or cost-effectiveness of care
- (4) the study reports primary data or is a systematic review of primary data (including case studies but excluding opinion pieces)
- (5) the study is about moving acute inpatient and day case care into the community (excluding outpatient services, long-stay psychiatric care, prevention of future admission of people who are not in need of hospital care at the point of recruitment, and other improvements to primary care that do not involve shifting services from the hospital)
- (6) the study includes a comparator group (either usual hospital care, or an alternative service provision, or a before/after comparison of a change in service provision).

We extracted relevant data from the full text versions of all studies that met all the inclusion criteria and delivered a narrative review of the evidence.²

We targeted data extraction and synthesis on updating the conclusions on the effectiveness, safety and cost-effectiveness of strategies to shift acute care to the community. We also looked for details that would inform commissioners about the full implications of seeking to provide effective and safe community-based services.

The aims of the review are therefore to:

- identify for commissioners of acute healthcare services the areas where cost-savings might best be achieved
- identify what the risks of such a shift in service delivery might be
- explore the likely trade-offs between the different quality domains.

² Narrative reviews provide selective information on a specific topic to a very short timescale. Matrix Evidence uses narrative reviews to answer ‘what do we know about?’ questions. A narrative review can quickly synthesise current thinking across complex policy or delivery questions, providing a selective overview of key issues.

2.1 Quality and relevance of the research

We assessed all included studies for methodological quality and relevance to the review, using a tool developed by Boaz and Ashby (see appendix 3). The standard was high, with only two studies failing to achieve at least a mid-quality level.

We included 26 studies in the review. Of these, 13 scored high, 11 medium and 2 low for quality.

Throughout this report we use the following icons to identify the quality of studies:

- studies that score high on methodological quality are marked as **[++]**
- studies that score medium on methodological quality are marked as **[+]**
- studies that score low on methodological quality are marked as **[-]**.

2.2 Supplementary search for additional relevant reports

To supplement evidence from studies reporting primary data identified in the first screening process, the research team re-screened the original 1,583 search results. The aim of the re-screening process was to identify additional reports that had been excluded according to the original inclusion criteria (which specified primary research comparing community-based with hospital care).

The team also conducted a hand search of websites including The King’s Fund, the NHS Confederation, the Royal College of General Practitioners, the Royal College of Physicians and the Royal College of Surgeons.

Chapter 3

Analysis

The Health Foundation commissioned this report to provide healthcare commissioners with the knowledge they need to weigh up the benefits and associated risks of relocating services, while considering the capacity and capability issues this poses for primary and community providers. We asked commissioners and providers of services how best to summarise the available evidence. In response to their guidance, this section of the report summarises the review findings under three headings:

- what was done?
- was it successful?
- what did it cost?

The Department of Health's 2006 white paper *Our Health, Our Care, Our Say* identified 10 acute healthcare areas where it claimed effective implementation strategies have been shown to help shift care from secondary to primary care.

The following sections summarise the evidence relating to three of these ten areas:

- inpatient
- day case
- step-down (early discharge) care.

3.1 What was done?

This section of the report summarises information from the primary studies we reviewed on how new community-based services were configured in relation to two elements: starting up the service and running the service.

We deal in more detail with the specific question of costs in section 3.5. However, it is worth noting that while several of the studies we reviewed provided some analysis of the resources needed to run services transferred from hospital to community settings, resources were more commonly described in terms of either staff required to start up the service, or other fixed costs. Very few studies reported on the resources required to maintain community services, especially with regard to auditing performance and maintaining service quality.

Unfortunately, the primary research we found still provides only a partial picture. Most of the studies we reviewed reported pilot projects carried out on a relatively small scale, with no indication of long-term outcomes and no direct assessment of the likely outcomes were the service to be rolled out more widely.

3.2 Starting-up the services

The following studies provided some information about setting-up community-based services:

- hospital-at-home services:
 - one US study – Frick *et al.*, 2009 [+]
 - one Spanish study – Mendoza *et al.*, 2009 [++]
- minor surgery services:
 - one UK study – George *et al.*, 2008 [++]
- early discharge and intermediate care:
 - one Norwegian study – Garåsen *et al.*, 2008 [+] – which reported on setting up community hospital admission avoidance services
 - one UK study – O’Reilly *et al.*, 2006 [++] – which reported on setting up early-discharge community hospital services.

Hospital-at-home

In Spain, a hospital-at-home service for people with worsening heart failure was based at the local hospital and was staffed by six physicians and eight nurses (Mendoza *et al.*, 2009 [++]). The service was available from 8am to 9pm every day. In the USA, a service for people with worsening heart failure or COPD (Frick *et al.*, 2009 [+]) used independent contractors to provide equipment such as oxygen cylinders, home-based radiology, ECG, IV fluids, IV antibiotics and additional pharmacy support. MedicAlert devices were given to patients without a full-time carer at home.

We found no studies reporting on setting up hospital-at-home services in the UK. The authors of a systematic review (Roland *et al.*, 2006 [++]) concluded that hospital-at-home services require good organisation, communication and funding if they are to be successful. Only 25% of eligible patients are likely to be suitable for hospital-at-home care.

Minor surgery

In the UK, one randomised controlled trial (RCT) of GP-led minor surgery struggled to recruit acute hospital trusts to the study, suggesting that hospitals are resistant to the use of such services (George *et al.*, 2008 [++]). The study did not report any details of how the practices set up their minor surgery facilities.

It is important to note that minor surgery provision is a regulated activity and from October 2010 all providers of these services have been required to register with the Care Quality Commission (CQC) (as described in the Health and Social Care Act 2008 (Regulated Activities) Regulations 2009)¹. The CQC is responsible for assessing how well standards are being met by the provider and whether an inspection is necessary.

Early discharge and intermediate care

In one UK study of early discharge, the new service was based in an 18-bed community hospital. The service accepted patients who had recovered sufficiently after their initial acute care but were still in need of rehabilitation before going home (O’Reilly *et al.*, 2006 [++]). A Norwegian intermediate care service also converted 20 beds in a nursing home into a community hospital to care for elderly people who would otherwise need hospital admission (Garåsen *et al.*, 2008 [+]).

In general, there was only sparse reporting of information about how the community-based services were started up. The level of infrastructure, planning and start-up costs needed to shift services into the community has not usually been reported in studies that evaluate the effectiveness or cost-effectiveness of these services compared with inpatient care.

¹ Care Quality Commission
<http://www.cqc.org.uk/guidanceforprofessionals/introductiontoregistration/whoneedstoregister.cfm#3>

3.3 Running the service

We identified 17 studies that reported some information about the management and running of community services:

- hospital-at-home services:
 - two UK studies – Ansari *et al.*, 2009 [+]; Esmond *et al.*, 2006 [+]
 - two Spanish studies – Mendoza *et al.*, 2009 [++]; Rodriguez-Cerrillo *et al.*, 2009 [+]
 - one French study – Raphael *et al.*, 2005 [-]
 - three Italian studies – Ricauda *et al.*, 2008 [++]; Ricauda *et al.*, 2005 [+]; Tibaldi *et al.*, 2009
 - four US studies – Frick *et al.*, 2009 [+]; Leff *et al.*, 2009 [+]; Leff *et al.*, 2008 [+]; Leff *et al.*, 2005 [+]
- minor surgery services:
 - one study from England – George *et al.*, 2008 [++]
- early discharge and intermediate care:
 - one study from England – O'Reilly *et al.*, 2006 [++]
 - one study from Sweden – Patel *et al.*, 2008 [++] – which reported on running early discharge services
 - one study from Norway – Garåsen *et al.*, 2008 [+]
 - one study from New Zealand – Hanger *et al.*, 2005 [-] – which reported on running intermediate care services to prevent admission.

Hospital-at-home

Two studies reported on relocating specialist services to provide hospital-at-home care for people with acute exacerbations of COPD. In both cases, hospital-at-home services were as effective as inpatient care at improving patient outcomes. In England, Ansari *et al.* (2009) [+] ran the service with a nurse practitioner from an urgent care team, who visited the patient at home within 30 minutes of receiving a referral telephone call, and administered necessary medication every four to six hours under the authorisation of a patient group direction.

In contrast, Ricauda *et al.* (2008) [++] used a geriatric home-hospitalisation service in Italy, which involved 3 geriatricians, 13 nurses, 2 physiotherapists, a social worker and a counsellor. The team had 7 cars, worked every day of the week, was always available for urgent calls and was able to care for an average of 25 patients a day (450 patients a year). In this example, patients were sent for hospital-at-home services after presenting to the emergency department. Tests, including blood tests, ECGs, echocardiography and ultrasound, were done either in the hospital or later at home.

The team was able to provide surgical treatment of pressure ulcers, oxygen therapy, blood transfusions, physiotherapy, occupational therapy and counselling, all in the patients' home. Nurses visited the patients daily and the physician visited daily at first, then every 2 to 3 days. Patients received on average 14 nurse visits (range 3–38 visits) and 10 physician visits (range 2–28 visits).

Patients had a longer initial length of stay – 15.5 days compared with 11 days for inpatient care – but 11% of inpatients required care in a long-term facility after discharge. This was not needed by any of the hospital-at-home patients. This may, however, reflect the fact that patients with no carers at home, or who were more severely ill, were initially cared for in hospital rather than at home. A systematic review concluded that hospital-at-home and early discharges should be a priority for COPD management (Taylor *et al.*, 2005 [++]).

Ricauda *et al.* (2005) [+] also reported on the effects of this Italian geriatric home-hospitalisation service for patients with acute ischaemic stroke. Again, hospital-at-home patients had a much longer duration of care, with an average length of stay of 38 days, compared to 22 days for patients treated in hospital.

Two studies relocated specialist services to provide hospital-at-home care for people with worsening heart failure, with equivalent outcomes to inpatient care. In Spain, Mendoza *et al.* (2009) [++] ran a hospital-at-home service with six physicians and eight nurses. The nurses visited daily and the physician every one to two days. All staff were available from 8am to 9pm every day. Blood samples and ECGs or echocardiograms were done at the patient's home if necessary. In Italy, Tibaldi *et al.* (2009) [++] reported on the same geriatric home-hospitalisation service discussed by Ricauda *et al.* (2008) [++]. This multidisciplinary team cared for 25 patients a day (450 per year).

Specialist teams delivering hospital-at-home services have also been described for patients in England with cystic fibrosis who need intravenous antibiotics (Esmond *et al.*, 2006 [+]) and patients in France needing chemotherapy for cancer (Raphael *et al.*, 2005 [-]). In each case, specialist nurses administer treatment at the patient's home.

Esmond *et al.* (2006) [+] reported that hospital-at-home care lasted longer than inpatient care, with patients needing the nurse to visit for an average of 14 days (range 10–18 days), but that quality of life was better for patients treated at home.

The French cancer therapy team was made up of one head nurse, three registered nurses and two cancer specialist coordinators. The coordinator was constantly available and liaised between the patient, GP and specialist services. In this study, beds were also reserved at the hospital in case urgent transfer was needed (Raphael *et al.*, 2005 [-]).

Four studies (Frick *et al.*, 2009 [+]; Leff *et al.*, 2009 [+]; Leff *et al.*, 2008 [+]; Leff *et al.* 2005 [+]) reported on transferring services for patients with COPD, pneumonia, heart failure or cellulitis to a hospital-at-home team in the USA. The team was made up of a nurse who stayed with the patient for an average of 17 hours when the service was initiated and then visited at least once a day, and a physician who visited at least daily. Independent agencies provided radiology and oxygen therapy services at home.

Although care was intensive once started, the team was only available to take new referrals from 6am to 8pm. The service led to shorter lengths of stay and better quality of life, but only 8% of eligible patients were actually suitable for referral when the service was available.

One Spanish study (Rodriguez-Cerrillo *et al.*, 2009 [+]) found that hospital-at-home for patients with non-severe pulmonary embolism led to a reduced length of stay: an average of 9 days (range 7–14 days) compared to 11 days for hospital admission (range 6–20 days). All patients had laboratory tests, chest x-rays, ECG, lung ventilation-perfusion scans or helical CT scans, plus deep venous ultrasound if deep vein thrombosis was suspected. These procedures were carried out in the emergency department before referral to the hospital-at-home service.

Hospital-at-home services usually involve a multidisciplinary team, with nurses visiting at least daily and physicians every one to three days. Although outcomes are similar to inpatient care, length of stay is variable, with some studies reporting longer and some shorter durations than inpatient care. Hospital-at-home services tend to be more cost-effective than inpatient services, but treat less severe or complex cases, and may only be offered to patients who have carer support at home. A 14-person team in Italy was able to care for 25 patients a day, or a total of 450 patients a year.

Minor surgery

One UK study comparing minor surgery by GPs with hospital services (George *et al.*, 2008 [++]) found that patients were booked for half-hour appointments, with three to four patients scheduled for each operating list. The scheme assumed that GPs would be able to catch up on other duties between cases. Running costs in terms of the need for a minor surgery equipment pack were considered to be the same for GP-based and hospital-based minor surgery.

One systematic review (Roland *et al.*, 2006 [++]) concluded that shifting minor surgery to primary care increased the number of procedures carried out by GPs but did not reduce hospital referral rates. The review found that 30–40% of patients referred to ear, nose and throat specialists for tonsillectomy could be treated by GPs with special interests. It also found that patients treated by GPs were called back for fewer follow-up appointments than patients treated at the hospital.

The available evidence suggests that in some instances, shifting minor surgery to GPs may reduce the overall quality of care. It has not been shown to reduce referral rates to hospital services. However, the number of follow-up appointments required may be lower after GP-based surgery compared with services provided in hospitals.

Early discharge and intermediate care

One evidence review concluded that there is good evidence that early supported discharge with community-based rehabilitation for stroke and other patients, and rehabilitation in the community for a range of conditions, can contribute to shifting the focus of care from hospitals into the community (Johnston *et al.*, 2008 [++]).

Two UK studies reported on early discharge strategies. In the first, Patel *et al.* (2008) [++] used a specialist nurse from the heart failure clinic, supported by a cardiologist, to care for patients with heart failure who were sent home after being given initial care in hospital. The nurse visited the following day and every one to two days for up to seven days, discussing the patient's progress with a cardiologist after each visit and at other times as needed.

In the second, O'Reilly *et al.* (2006) [++] reported on a scheme that aimed to transfer elderly patients to a community hospital after initial hospital care. They found that the average length of stay in the community hospital was 22 days. Of 220 patients admitted to the acute hospital, 72 were transferred within the intended 2 days and 49 were transferred after 2 days. Garåsen *et al.* (2008) [+] in Norway found that the average total stay was 13 days for patients either staying in hospital or transferred to the community hospital. Multidisciplinary teams met while the patients were still in the acute hospital to plan their discharge.

Hanger *et al.* (2005) [-] reported on a similar use of care homes in New Zealand to provide intermediate care for older people who would otherwise have required admission to hospital, as they were unable to meet their own care needs at home. The rest homes had to be staffed by a registered nurse on duty during working hours and a nurse on call after hours. Patients were assessed within 24 hours by their usual GP or a community care nurse and GPs were encouraged to seek early secondary care advice by telephone.

Few details have been reported on resources needed to run community-based services to prevent admission or facilitate early discharge from hospital. Some examples have used multidisciplinary teams with a nurse and specialist or GP providing care, either at home or by transferring patients to community hospitals or rest homes.

3.4 Was it successful?

Our starting point for summarising the available evidence was the systematic review originally published by Roland *et al.* in 2006 and summarised by Sibbald *et al.* in 2007. To make sense of the material under review, Sibbald grouped studies of the shift of services from hospitals to community settings into five types:

- **transfer:** the substitution of services delivered by hospital practitioners for services delivered by primary care practitioners
- **relocation:** shifting the venue of specialist care from hospitals to primary care without changing the people who deliver the service
- **liaison:** joint working between specialists and primary care practitioners to provide care to individual patients
- **professional behaviour change:** interventions intended to change the referral behaviour of

primary care practitioners such as referral guidelines, audit and feedback, education and financial incentives

— **interventions not involving primary care.**

Under these five headings, Sibbald *et al.* included studies that looked at the impact of shifting a wide range of acute services into the community. Many of the studies examined were focused on outpatient care and chronic disease management and therefore fall outside of the intended scope of this report.

Our starting point for reviewing the latest evidence around the impact of community interventions can be seen in table 1. This table summarises the evidence about potential benefits of shifting acute inpatient and day case services that Sibbald *et al.* reported in their review. What is striking is that none were supported by unequivocal evidence of effectiveness in relation to either outcomes or costs.

Table 1: Summary of relevant findings of Sibbald *et al.* (2007) [+++]

| Type of Shift | Example of service | Impact |
|--|--|---|
| Transfer | Minor surgery | Reduced quality of care and safety |
| | Intermediate care – GPs with special interests (GPSI) | Early evaluation by GPSIs may be effective at improving access and reducing waiting times without decreasing quality of care. Cost-effectiveness depends on context, and needs support of consultants. |
| | Impact on primary care of increased day surgery | No studies evaluated this directly. Unknown effectiveness. |
| Relocation | Telemedicine | Unknown effectiveness: overall impact unclear and cost-effectiveness is highly context-specific – set up costs are high so small telemedicine clinics are unlikely to be cost-effective. Technology can improve communication between GP and specialist but unclear effect on referrals. |
| | Attachment of specialist | Effective at reducing outpatient attendance for physiotherapy but not effective for other specialities. |
| Liaison | Shared care | Joint working may improve quality of care but does not affect outpatient attendance. |
| | Consultant liaison | May improve appropriateness of care but no evidence of improved clinical outcomes and so unlikely to be cost-effective. |
| Interventions not involving primary care | Intermediate care eg community mental health teams, hospital-at-home | May be effective at reducing use of hospitals for more severely ill and improving patient satisfaction, but cost-effectiveness unknown. |
| | Private sector treatment centres | Unknown effectiveness. |

The rest of this section updates the Sibbald *et al.* review with a focus on interventions designed to shift acute inpatient and day case services from hospitals into the community. The evidence for impact on quality is described across four different types of community based interventions:

- admission avoidance hospital-at-home
- early discharge hospital-at-home
- community hospitals
- primary care-based minor or elective surgery.

The Sibbald *et al.* review provides a useful overview of the evidence. Where possible, commissioners and service providers are likely to benefit from more detailed analysis of impact. To get a more detailed understanding of the impact these four types of shifts in care provision may have, we took as our starting point the six domains of quality developed by the US Institute of Medicine of the National Academies. These are widely used and have been previously cited by the Health Foundation (Sutherland and Coyle, 2009).

- **effectiveness:** healthcare services should be based, as far as possible, on relevant rigorous science and research evidence
- **safety:** patients should not be harmed by the care that they receive or exposed to unnecessary risk
- **patient-centredness:** healthcare should be based on a partnership between practitioners and patients (and where appropriate, their families) and delivered with compassion, empathy and responsiveness to the needs, values and preferences of the individual patient
- **access and timeliness:** healthcare services should be provided at the time they are needed within an appropriate setting
- **capacity:** healthcare systems should be sufficiently well-resourced to enable delivery of appropriate services
- **equity:** healthcare should be provided on the basis of clinical need, regardless of personal characteristics such as age, gender, race, ethnicity, language, socioeconomic status or geographical location; and in such a way as to reduce differences in health status and outcomes across various subgroups.

Not surprisingly, the studies we reviewed typically define quality in ways that map directly onto these six domains. To make our summary of the evidence easily accessible, we took a strategic decision to combine the effectiveness and safety dimensions. Our rationale was that considerations of an intervention's effectiveness overlap with issues around safety – for example, outcomes relating to changes in survival or post-operative complications can be considered relevant to both effectiveness and to safety.

The sub-sections that follow look at the evidence on effectiveness and safety across the four different types of community-based interventions. These are followed by more general consideration of the other quality domains: patient-centredness, access and timeliness, capacity, and equity.

Admission avoidance hospital-at-home

Hospital-at-home interventions are often aimed at admission avoidance. They provide active treatment by healthcare professionals in the patient's home for a condition that would otherwise require acute hospital inpatient care.

Sibbald *et al.* concluded that, broadly speaking, hospital-at-home services led to no difference in health outcomes compared with inpatient care, but increased patient and family satisfaction. Studies included in the review showed no conclusive reduction in overall costs.

Table 2 summarises the key findings from more recent studies that have assessed the impact of hospital-at-home interventions implemented with the objective of avoiding hospital admittance for patients.

The extent of the effectiveness and safety of admission avoidance hospital-at-home care varies depending on the conditions. It is important to note that studies evaluating hospital-at-home were often highly selective of who was offered the new service, and mainly reported findings for elderly patients. It is unclear whether hospital-at-home would be as effective when used for a broader range of patients. Patients seem more satisfied with treatment at home compared with hospital inpatient care.

Table 2: Summary of results – admission avoidance interventions

| | | | Effectiveness/safety | | | | Patient-centredness | | | Access | Capacity | Equity |
|--|--|--------------------------------------|----------------------|-------------------|----------------|---------------------|---------------------|--------------|------------------|---|----------|---|
| | Service providers | Patients' condition | Mortality | Clinical outcomes | Length of stay | Hospital admissions | Quality of life | Satisfaction | Carers' outcomes | Distance to travel, travel time, waiting time, availability | Cost | Proportion of eligible people given service |
| TRANSFER | | | | | | | | | | | | |
| Leff <i>et al.</i> (2005, 2008, 2009) [++] | Physician, nurse | COPD, pneumonia, CHF, cellulitis | | | + | | + | | + | - | + | 8% |
| Sheppard <i>et al.</i> (2008) [+++] | GPs, community staff | Cellulitis | | = | | | = | + | | | | |
| Rodriguez-Cerrillo <i>et al.</i> (2009) [++] | Unspecified | Pulmonary embolism | = | = | | = | | | | | | 21% |
| Sheppard <i>et al.</i> (2008) [+++] | GPs, community staff | Pneumonia (community acquired) | | | | | = | + | | | + | |
| RELOCATION | | | | | | | | | | | | |
| Ansari <i>et al.</i> (2009) [++] | Urgent care nurse practitioner | COPD (severe) | = | = | | | = | | | = | | 93% |
| Ricauda <i>et al.</i> (2008) [+++] | Nurses and physicians, team | COPD; elderly | = | | - | + | | | | = | + | 20% |
| Esmond <i>et al.</i> (2006) [++] | Cystic fibrosis team | Cystic fibrosis, acute exacerbations | | - | | | = | | | | | |
| Ricauda <i>et al.</i> (2005) [++] | Geriatricians, nurses, physiotherapists, social worker, counsellor | Stroke acute ischaemic | | | | | | | | = | + | |
| Mendoza <i>et al.</i> (2009) [+++] | Physician; nurses | CHF, elderly | | = | | | = | | | - | = | |
| Tibaldi <i>et al.</i> (2009) [+++] | Physicians | CHF, elderly | = | | | = | = | | | = | + | |
| REVIEWS: TRANSFER AND RELOCATION | | | | | | | | | | | | |
| Sheppard <i>et al.</i> (2008) [+++] | Outreach and community staff | COPD | + | + | | = | = | | | | + | |
| Sheppard <i>et al.</i> (2008) [+++] | Hospital outreach team, community staff, GPs | Elderly, acute care | + | + | + | = | = | + | | | + | |
| Sheppard <i>et al.</i> (2008) [+++] | Hospital outreach team, community staff | Stroke patients | = | | - | | = | | | | + | |
| Sibbald <i>et al.</i> (2008) [++] | GPs, nurses, PwSIs | Multiple | | | | | | + | | + | + | |

+ Results significantly favour intervention = No significant effects found - Results significantly favour control group ? Results are inconclusive
 CHF: chronic heart failure COPD: chronic obstructive pulmonary disease PwSIs: practitioners with special interest.

Summary: avoidance interventions

Cellulitis: admission avoidance interventions as effective as inpatient care

A systematic review found one RCT which showed no major difference in terms of outcomes for patients with cellulitis managed at home or in hospital. In this trial, 200 patients who were thought to require intravenous antibiotic treatment for cellulitis and for whom home care was not contraindicated were selected from an emergency department in New Zealand. The patients were randomly allocated to either hospital admission or home treatment by GPs and community nursing staff (Leff *et al.*, 2005 [+]).

None of the outcomes differed significantly between the two groups (there was no difference in progression of cellulitis; days on intravenous and oral antibiotics; days in hospital or in the home care programme; complications; or degree of functioning and pain). However, patients' satisfaction was 27% greater in patients treated at home ($p < 0.0001$). Patients seem to prefer home treatment, but it should be noted that in this study, only about one third of patients presenting at hospital for intravenous treatment of cellulitis were eligible for home treatment.

Community acquired pneumonia: admission avoidance interventions lead to similar clinical outcomes

A systematic review (Shepperd *et al.*, 2008 [++]) found one RCT which compared home care with hospital care for 55 patients with mild to moderate community-acquired pneumonia in New Zealand. The study found that the average number of days before discharge was higher for people treated at home (4 days; range 1–14 days) compared with hospital patients (2 days; range 0–10 days; $p = 0.004$).

However, there was no difference in the number of days during which patients were on intravenous antibiotics or on subsequent oral antibiotics. Outcomes such as patient symptoms at two and six weeks, average change in symptom severity from baseline to six weeks, and general functioning did not differ between home and hospital patient groups. Patients treated at home were 40% more satisfied with their treatment than inpatients ($p < 0.001$).

COPD: admission avoidance interventions may be as effective as inpatient care for older patients

One systematic review (Shepperd *et al.*, 2008 [++]) and one study (Ricauda *et al.*, 2008 [++]) found older people with COPD could be treated at home rather than in hospital, with no major differences in terms of quality of care.

Three studies (Shepperd *et al.*, 2008 [++]; Ricauda *et al.*, 2008 [++]; Ansari *et al.*, 2009 [+]) suggested that physician-led hospital-at-home care is an effective alternative to inpatient care for elderly patients with acute exacerbations of COPD. Ricauda *et al.* (2008) [++] showed that hospital-at-home care can reduce the rates of hospital readmission at six months (42% versus 87%; $p = 0.001$) and improve quality of life. Shepperd *et al.* (2008) [++] suggested that the clinical outcomes and mortality rates at six month follow-up for older patients with COPD were better for those who were treated at home by hospital outreach and community staff, compared with those who received inpatient care.

Another study conducted in Sunderland (Ansari *et al.*, 2009 [+]) suggested that a hospital-at-home programme led by an urgent-care nurse practitioner could effectively treat patients with severe COPD. The study found no differences between patients who received treatment at home compared with treatment in hospital, in terms of clinical outcomes, mortality or quality of life.

A systematic review of nine RCTs concluded that nurse-led hospital-at-home or early discharge schemes for people with COPD living in the community should be prioritised over nurse-led models of chronic disease management (Taylor, 2005 [++]).

Cystic fibrosis: admission avoidance interventions are less effective than inpatient care for adults

One study (Esmond *et al.*, 2006 [+]) found that adults with cystic fibrosis who were receiving intravenous antibiotics for acute respiratory infections were better treated in hospital than at home. The study involved 30 adults with cystic fibrosis, with 15 choosing to be treated in hospital and 15 choosing home treatment. The study compared clinical outcomes and quality of life between both groups. It found that lung function improved significantly more for people who were treated in hospital. Quality of life improved for both groups, but more so for people treated at home.

Non-massive pulmonary embolism: admission avoidance interventions as safe as inpatient care

One non-randomised controlled trial (Rodriguez-Cerrillo *et al.*, 2009 [+]) compared the outcomes and clinical complications of 61 patients (average age 67) who had been diagnosed with pulmonary embolism at the emergency department of a hospital in Madrid, Spain. Patients were allocated to either treatment at home as outpatients (31 patients), or traditional hospital treatment (30 patients). All patients received low-molecular-weight heparin treatment. Warfarin treatment was started on the fourth admission day, unless it was contraindicated. Low-molecular-weight heparin treatment was maintained for patients with cancer.

Overall, no significant difference between the two patient groups was seen on any of the measured clinical outcomes (major and minor bleeding; re-thrombosis; clinical course; unexpected returns to hospital; and need for hospital readmission in the following three months).

Older patients with worsening heart failure: admission avoidance interventions lead to similar clinical outcomes as inpatient care

Two studies (Tibaldi *et al.*, 2009 [++] and Mendoza *et al.*, 2009 [++]) showed that hospital-at-home treatment for older patients with worsening heart failure led to comparable levels of safety and quality of care as inpatient care.

One RCT (Tibaldi *et al.*, 2009 [++]) showed that there was no significant difference between patients treated at home compared with those treated at hospital in terms of patient mortality at six months or number of hospital readmissions. However, the average time spent before first readmission was longer for people who were treated at home (84.3 days compared with 69.8 days; $p=0.02$). In addition, only the patients treated at home experienced improvements in depression, nutritional status and quality of life scores.

Another RCT (Mendoza *et al.*, 2009 [++]) compared the effectiveness of treating elderly patients with heart failure using hospital-at-home care compared with inpatient hospital care in a cardiology unit. The trial randomly assigned 80 patients aged over 65 with exacerbations of heart failure to inpatient or hospital-at-home care. Patients in the hospital-at-home group were visited at home by physicians and nurses. There were no significant differences in clinical outcomes, functional status and health-related quality of life.

Stroke patients: admission avoidance interventions lead to similar clinical outcomes but a longer duration of stay

Evidence from Italy suggests that treating patients with acute ischaemic stroke at home can be a safe and effective alternative to care provided in a general medical ward.

Ricauda *et al.* (2005) [+] compared a geriatric home hospitalisation service (GHHS) to treat people with a first acute ischaemic stroke, with treatment in a general medical ward. The mean length of hospital stay was 22.2 days on the general ward, compared to 38.1 days in the GHHS. It should be noted that all patients discharged from GHHS had completed their rehabilitation programme at home, whereas 50% of inpatients continued their programme in rehabilitation facilities after hospital discharge. Overall, the study found no difference in terms of mortality and quality of life between patients treated at home and hospital inpatients.

Older patients: admission-avoidance interventions can be as effective as inpatient care

A Cochrane systematic review (Shepperd *et al.*, 2008 [++]), which included 10 RCTs, found no evidence to suggest that admission avoidance hospital-at-home is less effective than inpatient care. Most of the studies identified were of elderly patients aged 70 or older. Overall, there were few differences in terms of functional ability, quality of life or cognitive ability between hospital-at-home and inpatient care. Patients reported increased satisfaction with admission avoidance hospital-at-home.

The review also found that admission avoidance hospital-at-home may reduce the chances of dying compared with hospital care (adjusted hazard ratio (HR) 0.62; 95% confidence interval (CI) 0.45–0.87; $p=0.005$). However, they also found a non-significant increase in admissions to hospital later on for patients treated at home (adjusted HR 1.49; 95% CI 0.96–2.33; $p=0.08$).

Early discharge

Early discharge interventions are designed to provide coordinated rehabilitation and specialist care for patients discharged early from hospital in order to relieve the pressure on acute hospital beds. Our review found one systematic review (Shepperd *et al.*, 2009 [++]) and two primary studies (Nissen & Jensen, 2007 [++]; Patel *et al.*, 2008 [++]) that evaluated such schemes. The main findings are summarised in table 3.

Hospital-at-home to facilitate early discharge may be a viable alternative to in-hospital care for various patient groups. In terms of effectiveness and safety, results were better or did not differ significantly for 12 out of 16 available outcome measures, although results in terms of length of stay, hospital (re)admissions and cost are not conclusive. Early discharge achieved better scores than inpatient care for satisfaction and equivalent quality of life.

Table 3: Summary of results – admission avoidance interventions

| | | | Effectiveness/safety | | | | Patient-centredness | | | Access | Capacity | Equity |
|------------------------------------|---|----------------------------------|----------------------|-------------------|----------------|---------------------|---------------------|--------------|------------------|---|----------|---|
| | Service providers | Patients' condition | Mortality | Clinical outcomes | Length of stay | Hospital admissions | Quality of life | Satisfaction | Carers' outcomes | Distance to travel, travel time, waiting time, availability | Cost | Proportion of eligible people given service |
| RELOCATION | | | | | | | | | | | | |
| Nissen and Jensen (2007) [++] | Respiratory nurses | Exacerbation of COPD | = | = | + | = | | | | = | | 11% |
| Patel <i>et al.</i> (2008) [++] | Specialist nurses, cardiologist | Worsening CHF | | = | | | = | | | = | + | 4% |
| REVIEWS: TRANSFER AND RELOCATION | | | | | | | | | | | | |
| Sheppard <i>et al.</i> (2009) [++] | Hospital outreach service, community services, hospital-based stroke team with community services | Older with a mix of conditions | = | | = | - | = | + | | | ? | |
| Sheppard <i>et al.</i> (2009) [++] | Hospital outreach service, community services | Recovering from stroke | = | | + | = | = | + | | | | |
| Sheppard <i>et al.</i> (2009) [++] | Hospital outreach service, community services | Recovering from elective surgery | | | - | ? | = | = | ? | | = | |

+ Results significantly favour intervention = No significant effects found - Results significantly favour control group ? Results are inconclusive

Summary: early discharge interventions

Elderly people: early discharge is as effective as inpatient care and may reduce the need for residential care

Shepperd *et al.* (2009) [++] conducted a systematic review and meta-analysis of the evidence on the effectiveness and cost of managing patients with early-discharge hospital-at-home compared with inpatient hospital care. In the studies included in the review, care was provided in the patients' homes by a hospital outreach service, by community services, or by a hospital-based stroke team or physician in conjunction with community-based services.

The review included 26 trials (with a total of 3,967 participants), of which 13 studies contributed data for the meta-analysis. The authors found that for patients recovering from a stroke and elderly patients with a mix of conditions, there was no significant difference in mortality between groups. For 494 patients with stroke there was an adjusted HR of 0.79 and 95% CI 0.32–1.91. For 978 elderly patients in general there was an adjusted HR of 1.06 and 95% CI 0.69–1.61.

For the hospital-at-home patients, readmission rates were significantly higher among elderly patients with a mix of conditions (adjusted HR 1.57; 95% CI 1.10–2.24). The risk of being in residential care at follow-up was significantly reduced for patients recovering from a stroke and elderly patients with a mix of medical diagnosis. For stroke the relative risk (RR) of residential care was 0.63; 95% CI 0.40–0.98. For elderly people in general the RR of residential care was 0.69; 95% CI 0.48–0.99.

Patients expressed increased satisfaction with early discharge hospital-at-home compared with hospital admission. Although results varied for different groups of patients, the results seemed to be consistent within these different patient groups. This suggests that the type of patient groups selected and the degree to which they rely on inpatient acute care and rehabilitation is important.

COPD: early discharge as effective as inpatient care

Nissen and Jensen (2007) [++] conducted a prospective RCT in Sweden. Patients with an exacerbation of COPD were randomised to early nurse-supported discharge (22 people) or to conventional inpatient care (22 people).

In the home-treatment period, two patients (9%) were readmitted. One patient (4.5%) died two weeks after discharge from the home treatment. In the follow-up period three patients in the home-treated group were readmitted seven times (31.8%) and seven patients in the conventional inpatient group were readmitted nine times (40.9%).

There were 14 patients with complications (63.6%) in the home-treated group and 15 (68.3%) in the conventional inpatient group. The length of hospital admissions in the supported discharged group were shorter (1.3 versus 3.7 days; $p = 0.002$). After discharge a respiratory nurse visited discharged patients at home over 5.1 days (range 2–13 days) with 2.6 visits per patient (range 1–6 visits). The study showed that nurse-supported discharge is a well-tolerated and safe alternative to hospital admission for a proportion of patients referred to hospital for admission for COPD.

Heart failure: early discharge as effective as inpatient care

Patel *et al.* (2008) [++] conducted an open, randomised controlled pilot study in Sweden. In this study, 31 patients with worsening heart failure were randomised after 24–48 hours to either early discharge to home care under the direction of a specialist nurse, or to ongoing hospital admission and conventional care. Both groups received follow-ups for 12 months after inclusion in the study. No significant difference in clinical events, adverse events or in health-related quality of life were found between the groups, although there were some differences in baseline characteristics which may have had an impact on the results.

Community hospitals

Community hospitals represent an existing and well-developed resource in many healthcare systems. Their potential to provide intermediate care has been highlighted as a way of shifting care into the community. Two of the studies included in our review evaluated their effectiveness compared with ongoing acute hospitalisation for older patients. Table 4 summarises the results of these studies.

O'Reilly *et al.* (2006) [++] evaluated the cost-effectiveness of post-acute care for 220 older people in a community hospital, compared with care in a district general hospital in Yorkshire. The study used a cost-effectiveness analysis within an RCT which compared clinical and service use outcomes for two settings: early discharge to a community hospital once medically stable; and ongoing care on a ward for the care of elderly people in a district general hospital.

The community hospital group had no significantly different health outcomes (measured as quality-adjusted life years (QALY) scores) than the district general hospital group six months after recruitment. The groups had a similar mean length of hospital or community hospital stay after being assigned to either one of the groups: 22 days for the community hospital group compared with 23 days for the district general hospital group.

In Norway, Garåsen *et al.* (2008) [+] conducted an RCT comparing the outcomes of care for 142 patients aged 60 years or over with acute illness or exacerbation of a chronic disease, who were randomly assigned to either intermediate care at a community hospital (intervention group, 72 patients) or to further inpatient care (general hospital group, 70 patients). Significantly fewer patients died within 12 months in the intervention group compared with the general hospital group (13 patients (18.1%) compared with 22 patients (31.4%); $p=0.03$).

Intermediate care from community hospitals may reduce mortality and lead to similar quality of life compared with inpatient care in elderly people with acute illness.

Table 4: Summary of results – community hospital interventions

| | Service providers | Patients' condition | Effectiveness/safety | | | | Patient-centredness | | | Access | Capacity | Equity |
|------------------------------------|-------------------|---|----------------------|-------------------|----------------|---------------------|---------------------|--------------|------------------|---|----------|---|
| | | | Mortality | Clinical outcomes | Length of stay | Hospital admissions | Quality of life | Satisfaction | Carers' outcomes | Distance to travel, travel time, waiting time, availability | Cost | Proportion of eligible people given service |
| TRANSFER | | | | | | | | | | | | |
| O'Reilly <i>et al.</i> (2006) [++] | Nurse, physician | Older people in need of post-acute rehabilitation | | | = | | = * | | | = | = | 33% |
| RELOCATION | | | | | | | | | | | | |
| Garåsen <i>et al.</i> (2008) [+] | Nurse, physician | Older people with a mix of conditions | + | | = | | | | | = | | 89% (of those randomised) |

+ Results significantly favour intervention = No significant effects found - Results significantly favour control group
 ? Results are inconclusive * This study reports QALYs

Primary care-based minor or elective surgery

Roland *et al.* (2006) [++] found nine studies on the effects of transferring minor surgery to primary care, of which seven were published before 1999. The quality of studies was generally poor. Patient satisfaction was higher with primary care services, but baseline differences make it difficult to interpret the findings.

One study found that more patients could walk to their appointment at the GP clinic than the hospital, and waiting times tended to be shorter for primary care services. The studies did not report completely on infection rates and complications. The studies suggested that GPs may not be able to recognise and adequately treat serious skin lesions, as they missed diagnoses of skin cancer and were less likely to send pathology specimens or completely excise malignant lesions.

One additional study (George *et al.* 2008 [++]) compared the levels of safety, quality and cost of care between GPs and hospital doctors when performing a range of elective minor surgical procedures. The study, in the south of England, compared outcomes in 568 patients who presented at general practices and needed minor surgery.

The quality of outcomes of minor surgery carried out in general practice was not as high as that carried out in hospital, although the difference was not large. GPs were less able to recognise malignant lesions and were less likely to have removed the whole lesion when compared with hospital doctors. Patients preferred to be treated in primary care, largely because of convenience. The authors concluded that models of provision need further testing before widespread introduction.

Minor surgery delivered by GPs may be of lower quality than that done by surgeons in hospitals. Patients report high satisfaction with community-based minor surgery due to better access to the venue and reduced travel and waiting times.

Table 5: Summary of results: primary care-based minor surgery

| | Service providers | Patients' condition | Effectiveness/safety | | | | Patient-centredness | | | Access | Capacity | Equity |
|----------------------------------|-------------------|------------------------------------|----------------------|-------------------|----------------|---------------------|---------------------|--------------|------------------|---|----------|---|
| | | | Mortality | Clinical outcomes | Length of stay | Hospital admissions | Quality of life | Satisfaction | Carers' outcomes | Distance to travel, travel time, waiting time, availability | Cost | Proportion of eligible people given service |
| TRANSFER | | | | | | | | | | | | |
| Roland <i>et al.</i> (2006) | GPs | Primary care needing minor surgery | | - | | | + | | + | | + | 8% |
| George <i>et al.</i> (2008) [++] | GPs | Primary care needing minor surgery | | - | | | + | | + | ? | | |

+ Results significantly favour intervention = No significant effects found - Results significantly favour control group ? Results are inconclusive

The rest of this section summarises key findings across all four types of community intervention for the remaining four dimensions of quality:

- patient-centredness
- access and timeliness
- capacity
- equity.

Patient-centredness

One of the fundamental reasons for shifting care into the community is to offer patients a greater choice of services. Every study included in this review addresses these issues, at least indirectly, as they all reported on the effects of providing additional or alternative services either in the patient's home or local community.

However, a proportion of patients who are eligible for the new service may decline to use it. For example, hospital-at-home care was refused by:

- 19 out of 286 patients (7%) with non-severe pulmonary embolism (Rodriguez-Cerrillo *et al.*, 2009 [+])
- 78 out of 529 elderly patients (15%) with an exacerbation of COPD (Ricauda *et al.*, 2008 [++])
- 116 out of 786 patients (15%) with heart failure (Patel *et al.*, 2008 [++]).

This may be because these studies were RCTs and participation in the trials required a high level of patient input in terms of evaluation and feedback. It is unclear how many patients would be willing to accept community-based care if this were the only service offered, or if it were one of a range of mainstream services. However, it suggests that not everyone wants to be offered care at home. Making community-based services the only option may therefore detract from patient-centredness.

Access

Another of the underlying principles behind shifting care into the community is to improve access to services (defined as shortening waiting times and increasing service availability, as well as ease of getting to the venue). We found a number of studies reporting directly on access to care, in particular George *et al.* (2008) and Roland *et al.* (2006). There is an assumption that any service provided in the patient's home will improve at least some aspects of access. However, few studies we identified directly assessed the effect of the new service on how easily patients were able to access it.

It seems likely that services delivered in the community would be easier for people to access than those involving a visit to the district hospital. However, improved access depends on decentralisation of services more than on locating them at non-hospital sites. Shifting a service from a local hospital to a local clinic will improve access for people who live nearer the clinic, but may worsen access for people living closer to the hospital.

One study (George *et al.*, 2008 [++]) reported that people preferred community-based services because parking was difficult at the hospital. However, shifting the care of substantial numbers of people to a community clinic may increase parking difficulties there, unless adequate provision is made for the increased demand. Improving parking availability and public transport links at the hospital may therefore be a cheaper way of increasing access to care than building new community clinics.

Equity

The studies we identified pose a problem for equity of services. Seven studies reported on the proportion of patients eligible for the new service who actually received it. This proportion ranged from 4% to 93%. Although most of the patients were excluded for clinical reasons that do not directly relate to personal characteristics, some patients considered for hospital-at-home or other home-based services were excluded from participation because they did not have a carer at home with them 24 hours a day. In one study, 12 out of 286 eligible patients (4%) with non-severe pulmonary embolism were refused hospital-at-home care because they did not have full-time carers at home, although all were eligible for inpatient care (Rodriguez-Cerrillo *et al.*, 2009 [+]).

Patients in other studies were excluded because they lived outside the catchment area for the new service, especially those services which involved the relocation of hospital-based staff to provide care in the patient's home. At one hospital in Italy, 148 out of 529 (28%) eligible patients with COPD were refused hospital-at-home care because they lived outside the catchment area (Ricauda *et al.*, 2008 [++]). Patients in more remote rural areas and those without full-time family support are therefore likely to have less equitable access to services in the community.

Capacity (cost-effectiveness)

Using the Health Foundation's definition of capacity as adequate resourcing to enable delivery of appropriate services, we have assessed the likelihood that the interventions studied would increase capacity by being more cost-effective than the alternative services.

We found nine studies that reported comparative costs of the new service, (reported in more detail in section 3.5). Few included all relevant costs in their analyses, such as costs borne by the patient and their family (including transport, accommodation and food costs). Few studies that reported data on costs carried out an economic analysis based on effectiveness of the service. One study that did such an analysis (George *et al.*, 2008 [++]) reported that the unit costs of minor surgery carried out by GPs were less than for surgery in hospitals. However, it also reported that the overall cost-effectiveness was similar after adjusting for the lower overall quality of surgery done by GPs compared with surgeons.

In order for the introduction of new services in the community to contribute to efficiency savings, they must replace hospital services and not add to them. There are two main reasons why shifting services into the community might not lead to cost savings, at least in the short term.

First, there may well be a start-up period while the new service is being established and staff are trained to perform new tasks. This may require resources to set up the infrastructure and equip a team, as well as needing both services to run in parallel for the handover period.

Second, the studies we found indicated that even where new services are cost-effective, not all patients are eligible or willing to receive care at home. In the trials we have included in this report, between 4% and 93% of patients initially considered appropriate for the new service actually received it, with most studies excluding up to 80% of patients from participation in the study. Although clinical trials tend to exclude more patients than would happen in real life, this still suggests that in most, if not all cases, a hospital-based service is necessary to manage more complex cases or the more severely ill patients. If it is not possible to close down the specialist service, then the overall cost savings of setting up the community service may be substantially lower than planned.

3.5 What did it cost?

None of the studies we identified reported any rigorous audit of community-based services from the perspective of assuring adherence to quality indicators, or the need for and provision of ongoing staff training.

One study (George *et al.*, 2008 [++]) reported on the baseline level of training received by GPs carrying out minor surgery.

We found eight studies that reported on comparative costs or cost-effectiveness of community-based services compared with hospital-based care:

- hospital-at-home services:
 - one systematic review
 - Shepperd *et al.*, 2008 [++]
 - one study from Spain
 - Mendoza *et al.*, 2009 [++]
 - one study from France
 - Raphael *et al.*, 2005 [-]
 - three studies from Italy – Ricauda *et al.*, 2005 [+]; Ricauda *et al.*, 2008 [++]; Tibaldi *et al.*, 2009 [++]
 - all of the above studies reported on comparative costs and cost-effectiveness
- minor surgery:
 - one systematic review – Roland *et al.*, 2006 [++] – which reported on the cost-effectiveness of GP-led minor surgery in England
- community hospital/intermediate care:
 - one study – O’Reilly *et al.*, 2006 [++]
 - which reported on comparative costs of community hospital-based intermediate care for early discharge in England.

Most of the costs of community-based services are staff costs. Daily costs tend to be lower, but different studies have found that total costs are either lower or no different to inpatient costs, once longer durations of community-based care are taken into account.

We found no comparative studies that calculated the different staff-to-patient ratios or the total number of staff that would be needed to provide equivalent care to all relevant patients who are currently treated in hospital. Nor did we find calculations for how the total cost of an entirely community-based service with a supportive infrastructure would compare with hospital-based care.

Hospital-at-home

Staff salaries account for 60% of hospital-at-home costs for cancer treatment (Raphael *et al.*, 2005 [-]); 62% of costs for patients after a stroke (Ricauda *et al.*, 2005 [+]) and 80% of costs for COPD patients (Ricauda *et al.*, 2008 [++]). Costs of medication, tests and equipment comprise between 21% and 28% of total costs (Raphael *et al.*, 2005 [-] and Ricauda *et al.*, 2008 [++]). Transport only accounted for an estimated 3% of total costs for home-based chemotherapy (Raphael *et al.*, 2005 [-]).

One systematic review, one study in Spain and three studies in Italy found that daily costs of hospital-at-home were lower than daily costs of inpatient care (Mendoza *et al.*, 2009 [++]; Ricauda *et al.*, 2005 [+]; Ricauda *et al.*, 2008 [++]; Shepperd *et al.*, 2008 [++]; Tibaldi *et al.*, 2009 [++]).

However, as duration of stay may be longer, the studies were inconclusive about whether hospital-at-home led to reduced overall costs (Mendoza *et al.*, 2009 [++]; Tibaldi *et al.*, 2009 [++]) or similar total costs (Ricauda *et al.*, 2005 [+]; Ricauda *et al.*, 2008 [++]). One study excluded food and housekeeping costs which were borne by the patient from the overall calculation.

Minor surgery

One UK study (George *et al.*, 2008 [++]) found that no specific additional training had been offered to GPs who were carrying out minor surgery. None had passed the Fellowship of the Royal College of Surgeons examinations. Only 54% had worked for six months or more in a surgical post and 46% had no specific training in minor surgery. GPs in the Southampton area performed an average of 20 excisions per year. It is unclear whether this volume of cases is adequate to maintain expertise. The quality of surgery completed by GPs was assessed as inferior to that done by hospital-based surgeons; this suggests that the training and expertise of the GPs in the study may not have been optimal.

A systematic review (Roland *et al.*, 2006 [++]) concluded that primary care minor surgery is cheaper per case than hospital surgery, after accounting for overheads. However, evaluations of GP costs have not usually included the overhead costs of hospital supervision, training and managing the scheme.

Community hospital/intermediate care

O'Reilly *et al.* (2006) [++] concluded that the daily costs of community hospital early discharge care for older people in England were similar to acute inpatient costs. The mean costs per patient in terms of health and social services resources used were similar for both groups: £7,233 for the community hospital group, compared to £7,351 for the district general hospital group.

3.6 Supplementary search for additional relevant reports

Given the nature of the evidence available from purely primary research studies, we went back over the 1,583 articles found in our initial searches to see what additional information might be useful for commissioners of services. We also conducted hand-searches of relevant websites, including The King's Fund, the NHS Confederation, the Nuffield Foundation and the Royal Colleges for General Practitioners, the Royal College of Physicians and the Royal College of Surgeons.

After screening for relevance on the basis of abstracts and then full texts, we reviewed a further nine articles, which we discuss below.

Two strands of work stand out from the additional grey literature. The first comes from the NHS Institute for Innovation and Improvement, and the second from The King's Fund.

The University of Birmingham Health Services Management Centre has been contributing to the NHS Institute for Innovation and Improvement Primary Care/Long Term Conditions Priority Programme. Started in 2006, the Making the Shift programme aimed to examine the most effective strategies for shifting specialist care into the community. The project engaged with local NHS test sites to look at how shifts in care delivery worked on the ground and what lessons could be learnt from the experience.

One element of the work was a systematic review of evidence that we included in our initial sweep of the literature. Singh (2006) concluded that good leadership, a culture of quality improvement and supportive attitudes of healthcare staff are essential for successful shifting of services into the community. If the aim is to substitute for secondary care rather than to increase capacity, then it is important that secondary care services cease and are not just doubled up (Singh, 2006 [++]).

These conclusions are broadly consistent with the additional evidence our review has identified. In particular, the new studies we have found suggest that there is potential for community-based services to help to reduce NHS costs by promoting early discharge from hospital for patients who no longer need intensive acute care, but are not yet ready to fend for themselves at home.

As part of the same work programme, another systematic review identified the following common features in initiatives that have successfully supported a shift of care into the community (Parker, 2006 [+]):

- empowering people to take responsibility and manage their own care
- involving all key stakeholders and users in planning and development
- focusing on changing professional behaviour and training staff for new roles

- adequate investment in services, with additional resources for primary care
- adequate timeframes in which to test services and realistic targets
- whole system approaches and phased introduction of changes
- providing care based on levels of need and acknowledging the impact of unmet need
- not running (competing) services in parallel
- not assuming that shifts will reduce costs.

Our additional searches found a series of five case studies conducted by the Health Services Management Centre to supplement a process evaluation of key factors associated with successful implementation of community-based care initiatives. The work, published under the title *Beyond Projects*, looked in detail at five projects:

- back pain care in Birmingham
- Derbyshire COPD care
- Derbyshire end of life care
- Manchester gynaecology care
- Torbay diabetes care.

A great strength of the *Beyond Projects* work is that it assessed each project using a consistent set of 12 key factors:

- (1) receptive organisational and policy contexts
- (2) a clearly defined focus for projects
- (3) organisational leadership and sponsorship of service improvement
- (4) competent project management capacity within a skilled team
- (5) analysis of appropriate stakeholders to involve in change initiatives
- (6) engagement of and, where appropriate, leadership by clinicians
- (7) action to overcome cultural barriers to change and improvement
- (8) aligned incentives that demonstrate the benefits of participation to stakeholders

- (9) training and support to develop skills and competencies among staff
- (10) expertise in developing measures of progress and analysing data
- (11) sufficient time to make shifts, particularly during periods of organisational change
- (12) planning to sustain and scale up shifts, including developing business cases.

Data from the case study projects were collected and analysed between June 2006 and April 2007.

The report concluded that across the five case studies, change was delivered with varying levels of success. This reflects the points made earlier in this section about the difficulties inherent in compiling robust and consistent evidence of effective implementation. However, the real value of the work was to demonstrate how each project faced similar challenges with regard to change management, strategic context and a capacity to link factors in change processes.

Each of the case studies illustrated how success was linked to the capacity to access time, resources and expertise in project management and change management. Finding the necessary time to allocate was a particular problem for clinicians. Similarly, projects were much more likely to be successfully implemented where they formed an element of a more strategic plan to deliver service improvement.

Change at the level of individual projects was more likely to succeed where it was linked to change across a whole organisation or system of care. Finally, using a consistent framework of key success factors showed just how change needs to be managed on a system level if it is to be successful. It was the interplay of several factors over time that predicted success rather than any individual or small subset of elements.

Much the same as with our review of primary research, this detailed analysis of case studies concluded that the shift from hospital to community-based care is not a silver bullet capable of dealing with the issues that face health and social services. Above all, it showed that success requires investment in both people and projects that form part of strategic change implementation, aligned with effective project and change management.

The theme of strategic change is reflected in a brief report published by Northern Ireland's Eastern Health and Social Services Board (EHSSB). The report outlines some of the key lessons learnt from implementing a strategic approach to moving £4.2 million from hospital services to community-based care. The change involved the closure of 109 acute medical and geriatric medicine beds, with the resources released used to provide the equivalent of 114 beds in the community. Services shifted into the community covered a range of chronic conditions including COPD and heart failure, a range of rehabilitation schemes designed to promote early discharge and an extension of nursing support. They also provided better accessibility outside of normal working hours to reduce unnecessary admissions.

Interestingly, EHSSB implemented a monitoring and analysis project as part of the strategic initiative. Its purpose was to develop a consistent framework for monitoring the use and impact of individual schemes in a way that would allow them to assess the extent to which they were delivering the desired outcomes, as well as how to measure key outcome variables such as the numbers of people not going to hospital.

The list of best features of EHSSB's approach to shifting care into the community includes several of the points raised in similar reports, including:

- collaborative working across health and social care
- effective strategic leadership
- committed clinicians who acted as champions
- the effective use of evidence and information to monitor development and delivery.

A second stream of work, known as the SeeSaw project, was published by The King's Fund in 2008. Commissioned by the Department of Health and delivered in conjunction with specialists Loop2, the SeeSaw project used behavioural simulation models to examine what was needed to accelerate the shift from hospital to community care. The aim was not to examine clinical or cost outcomes, but to answer two key questions of interest to commissioners:

- How can shifts in care closer to home be achieved on a large scale and in a consistent way using the current range of resources, incentives and information in the system?
- What changes in policy, incentives and information would help the health and social care system make shifts that would provide a better patient experience and more productive use of resources?

The SeeSaw report highlighted eight key messages arising from the simulation exercise and discussions with participants both during and after the process. Each message provides insight into how the shift to community-based care might best deliver improvements in patient outcomes and realise financial gains:

- (1) **Communicate the rationale for service change:** service providers need to reassure the public that change will deliver better access, greater convenience for patients and carers, and improved service quality. Communication should address specific concerns that change is being driven by financial necessity, will add to the burden of informal carers, and will not be supported by sufficient numbers of staff with the necessary skills.
- (2) **Make better use of technological innovations:** uptake of technological advances that could improve care at home is patchy. Where new procedures are used, they tend to be bolted on to existing service models rather than being a catalyst for shifts in treatment pathways. Commissioners and service providers should ensure they optimise use of technological innovations.

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- (3) **Reshape primary care:** building new clinics in community settings is not the only way of shifting primary care services. Commissioners should consider a broad range of alternatives in primary care provision, many of which may not involve capital builds.
 - (4) **Improve commissioning:** a key challenge for commissioners is to deliver change through effective programme planning, effective procurement and sensitive risk management. Lessons might usefully be drawn from the experience local authorities have of market management and commissioning.
 - (5) **Improve integrated working between health, social care and housing:** existing barriers between sectors need to be broken down. Strong working partnerships should provide clarity concerning respective responsibilities, a process likely to be enabled by the introduction and expansion of individualised budgets.
 - (6) **Manage health and social care supply chains effectively:** commissioners should be aware that effectively managing supply chains calls for improvements in both relationship management and supply chain integration.
 - (7) **Improve levers and incentives:** a key barrier to shifting services into community-based settings are the real and perceived risks of service destabilisation faced by commissioners. Changes needed include clear political leadership as to the direction of change; greater emphasis on and specification of health outcomes; the introduction of tariff and productivity measures for community services; incentives for innovation; and financial headroom and flexibility to manage financial surplus and deficit over longer timescales.
 - (8) **Invest in workforce and organisational development:** the shift to community-based services requires new ways of working. Implementing these changes needs to be underpinned by significant workforce development, organisational development and education and training.

An interesting conclusion drawn in the report is that a key barrier to shifting care into community-based settings are concerns commissioners have about the potential for change to destabilise local healthcare systems. Commissioners are not only concerned about the impact on the continuity of patient care, but also on their own reputations.

While not always specifically focused on acute inpatient and day case services, the remaining reports covered in our supplementary search tend to reinforce several of the themes reflected in the initial review.

A postal survey of respiratory healthcare professionals (Candy *et al.*, 2006) looked at the nature of specialist nurse provision for patients in the community with COPD in England and Wales. The survey aimed to examine the extent to which existing provision is supported by evidence of effectiveness. The most common type of provision identified in the survey was chronic disease management. The findings suggested there were significant mismatches between what existing evidence has to say around effectiveness and the services that are being provided. The authors concluded that the interactions between healthcare practice and evidence in this area need to be improved. In particular, research needs to be designed in such a way as to allow for the multiple components of service interventions to be evaluated.

A research update on the use of telehealth systems in community settings (DePalma, 2009) concluded that the uptake of new technological advances in this area could be broadened to more patient groups. Although no differences in health outcomes are evident, the report concluded that patients may be more satisfied with telehealth approaches compared with more traditional approaches. However, because evaluations typically do not include adequate economic analysis of telehealth systems, there is a lack of good evidence as to their relative costs and benefits.

An older study from Finland (Harno *et al.*, 2002) echoed the same points, concluding that while evidence has been found to support the view that telemedicine can be as effective as face-to-face consultation, evidence on cost-effectiveness is comparatively weak.

A scoping study of services for carers of people being discharged from hospital (Borthwick *et al.*, 2009) included a review of the UK literature on service provision in this area. Again, the review concluded that there is gap between what the evidence suggests is effective and what is actually being provided. Research and evaluation is not being implemented consistently. Where it has been done, it has found only limited evidence of a positive impact on the experience of carers. The same study included a mapping exercise of current services. Themes consistent with other work we have reviewed included the value of effective communication with stakeholders, the value of joint working between health, social services and voluntary organisations, and the importance of training for carers.

Sampson *et al.* (2008) reported the findings of a qualitative study looking at the key barriers and challenges to delivering palliative care to patients with advanced dementia. Although not directly relevant to the shift of acute inpatient and day case services into the community, the study placed great emphasis on the need for effective communication between healthcare professionals and relatives/ carers when deciding whether care should be provided in hospital or community settings. The study found that different stakeholders' lack of understanding about the natural history of dementia was a major barrier to improving care for patients with advanced dementia.

Chapter 4

Key messages

This report has sought to review and summarise the latest evidence on shifting acute inpatient and day case services from hospitals into the community.

The research team searched first for new primary research studies, to update previous reviews on the impact of interventions designed to shift acute inpatient and day case services from hospitals into the community. We found 26 studies, including the original review we are updating. Most of the new studies evaluated hospital-at-home services designed to prevent admission or facilitate early discharge from hospital.

Shifting services from hospitals into the community is seen by many as a good opportunity to improve patient satisfaction, reduce costs and improve access to services. This may turn out to be the case. However, on the basis of the available evidence, we are still not able to conclusively say that shifting any one service into the community will inevitably meet these aims.

The key message from our analysis of the most recent primary research is very much consistent with the findings from previous reviews. Sibbald *et al.* (2007) concluded that shifting services into the community should prove effective in improving access to specialist care for patients and could reduce demand on acute hospitals. They identified a risk that the quality of care may decline, because community practitioners may not be sufficiently skilled to undertake the work previously done by hospitals.

Transferring services may also generate increases in the overall volume of care, by increasing supply. There is also a risk that savings from reduced volumes of hospital care will be insufficient to meet the costs of additional care in the community.

Similarly, our review of more recent evidence still indicates that community-based services can, under the right conditions, provide a quality of care that is as good as that provided in hospitals and at a lower cost. However, the evidence for consistent and robust differences is still not strong. The best that can be said is that community-based services in general seem to be as effective as hospital-based care and that while the cost per day is lower, the duration of care can often be longer.

It may of course be the case that the lack of consistent and robust evidence for the relative efficacy of community-based interventions in acute inpatient and day case services is an inevitable consequence of both the approaches to evaluation in this area and the nature of the services being delivered.

Approaches to evaluation do often create difficulties when it comes to generalising findings across heterogeneous patient groups. Many of the studies designed to compare hospital with community-based care alternatives include a selective group of patients. As a consequence, it is often difficult to make robust generalisations based on their findings.

The primary research studies we identified typically excluded most initially-eligible patients from participation. Those who were more ill, who had other diseases making their care more complicated and those who refused to participate, were all treated in hospital as usual. Outcomes for the select few who made it into the trial were as good for those treated in the community as for those admitted to hospital.

The body of research that currently exists leaves a key unanswered question for service commissioners: at what point do the numbers of patients with the particular problem or illness suitable for community-based care justify the organisational and start-up costs? There are inevitably many examples where starting a community-based service is worth doing. However, on the basis of existing research evidence alone, it would be unsafe to assume that shifting care into the community will inevitably be easy, cost-effective, or improve outcomes for patients and care quality.

It may seem logical to assume that sending healthcare staff into the community, for example to provide hospital-at-home care for individual patients, will increase the staff-patient ratio needed to care for all patients with the problem. Small-scale pilot projects have reported reduced costs from a small team delivering care to a small number of patients. In most studies, the total number of patients looked after at any one time, or over a year, is unstated. It is therefore difficult to calculate how many nurses, doctors and other healthcare professionals might be needed to provide community-based care for the number of people currently looked after in hospitals.

Scaling up such projects to provide care for all eligible patients is also likely to require capital costs, such as a team to coordinate the service, an office for them to work from, and even human resources and finance teams to recruit and pay them. Without consistent and robust cost data, we simply do not know whether the service will still be cost-effective once these overheads are added in.

Commissioners will still need to provide back-up for patients who are too ill to be managed at home. If acute hospital-based services are still needed for more complex cases, the question still remains of whether community-based services that run alongside them are affordable. It will be important to maintain the skills of both community providers and specialists in hospitals who will need to use their greater expertise to manage more complex cases. Maintaining skills requires ongoing interaction with patients with these problems and spreading services too thinly may risk de-skilling practitioners at different sites.

The policy of shifting care into the community is likely to have a high political profile in the resource-limited NHS and, in some ways, the lack of a solid evidence base is disappointing. However, the failure to find robust evidence that can be generalised across a range of community-based services is perhaps an inevitable consequence of the complex characteristics of those services.

The approaches to research and analysis in this area developed by the NHS Institute and The King's Fund may indicate a promising way forwards for the use of evidence to inform decisions on commissioning. Rather than relying solely on synthesising results from single evaluations of community-based interventions, a consistent framework of key success factors could be used to show how to manage successful systematic and strategic change. Our review has shown that this approach has the potential to demonstrate how the interplay of several factors over time can predict success – important information for those commissioning community-based services.

Chapter 5

Knowledge gaps

This review has focused on one area of acute hospital care, namely acute inpatient and day case services. While there is a moderate evidence base comparing community-based and hospital services in terms of clinical outcomes in the short to medium term and on a small scale, we found few details about how these services have been set up and maintained.

Our inclusion criteria meant that we excluded any non-comparative studies so that we could evaluate the effects of a shift in services to primary care. This may mean that we missed studies that reported more details about the starting-up and organisation of community-based services. Supplementary searches looking for reports of this kind found very little additional material.

Our initial search was a general one for studies shifting or moving care from hospitals to primary or community care. We identified some studies, but had to expand the search by using specific keywords to find additional relevant studies. Although our keyword selection was based on the experiences of authors of a previous systematic review, choosing to search for some keywords and not others may have introduced bias into the report towards reporting on certain services.

We deliberately did not include studies that evaluate how primary care can be improved to reduce the need for hospital care for patients who are currently not in need of specialist services. Many of the interventions studied in previous reviews have included these areas, in particular studies on how to improve outpatient services.

The scope of our review is therefore much narrower than previous reviews. This means it is less able to guide commissioners of the whole range of clinical services. The Health Foundation has commissioned a report on improving outpatient services and we hope that the two reports might be used together by clinicians and commissioners who want a broader set of information.

We identified several high quality systematic reviews and a number of additional studies, most looking at hospital-at-home services to prevent admission or facilitate early discharge. We found no high quality economic analyses that included all costs to the NHS and social care of a shift in services in the long term, and no studies that reported the resources needed to set up a large-scale community-based service. Most of the studies that we identified were highly selective of the patients who were offered the community-based service. In several cases fewer than 10% of initially eligible patients were finally included in the study. This creates considerable uncertainty about whether large-scale implementation of these services would be as effective for people with more severe illness or concurrent diseases.

The authors of one systematic review (Shepperd *et al.*, 2009 [++]) concluded that early discharge hospital-at-home schemes have the potential to reduce costs and that a rigorous evaluation should be undertaken of these schemes for patients recovering from a stroke, those with COPD and older patients with a mix of medical conditions requiring an acute hospital inpatient stay. They recommended that:

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- trials should be large enough to rule out important differences in mortality and readmission rates
 - patient outcomes and satisfaction should be measured in standardised ways
 - studies should include a formal, planned economic analysis using costs that are sensitive to the different resources used during an episode of care.

Enough work has been done by bodies such as the NHS Institute and The King's Fund to demonstrate the practical usefulness of having consistent evaluation frameworks that can be applied across case studies. There is clearly merit in looking at how more detailed frameworks could be developed and used to compile a consistent body of evidence on what works in delivering effective strategic implementation of community-based health interventions.

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Other references

Supplementary search for additional relevant reports

Appendix 1:

Methodology

Initial primary care search: 6 July 2010

Search strategies:

- (transfer* or move* or change* or shift* or relocat*) and ((primary or community or intermediate or transitional) and care)
- ((transfer* or move* or change* or shift* or relocat*) and ((primary or community or intermediate or transitional) and care)) not (sex* or educat* or train* or drug*)

Databases searched

- Medline
- Embase
- HMIC
- SPP
- ASSIA
- Web of Knowledge.

1,583 studies identified.

Inclusion criteria

- date: published in 2000 or later
- research in OECD country
- study assesses effect of moving care from hospitals into the community on quality and/or safety of care and/or cost-effectiveness of care
- study reports primary data or is a systematic review of primary data (including case studies but excluding opinion pieces)
- study is about moving acute inpatient and day case care into the community (**excludes** outpatient services, long-stay psychiatric care, prevention of admission and other improvements to primary care that do not involve shifting services from the hospital).

Additional keyword searches: 1–3 September 2010

- elective surgery
- elective surgery and (intermediate adj1 care or transitional adj1 care or community adj1 care)
- (elective surgery and (intermediate adj1 care or transitional adj1 care or community adj1 care)) not (sex* or educat* or train* or drug*)
- “hospital at home”.

Databases searched

- Medline
- Embase
- HMIC
- SPP
- ASSIA.

1,248 studies identified.

Additional keyword searches – PubMed, 21 September 2010

- GPSI/ GP with special interest/ GPwSI limited to controlled trial, RCT, meta-analysis: 5 identified studies; none included
- telemedicine and (community OR primary care) limited to controlled trial, RCT, meta-analysis: 131 identified studies; none included
- outreach and (community OR primary care) limited to controlled trial, RCT, meta-analysis: 135 identified studies; none included
- “shared care” and (community OR primary care) limited to controlled trial, RCT, meta-analysis: 17 identified studies; none included.

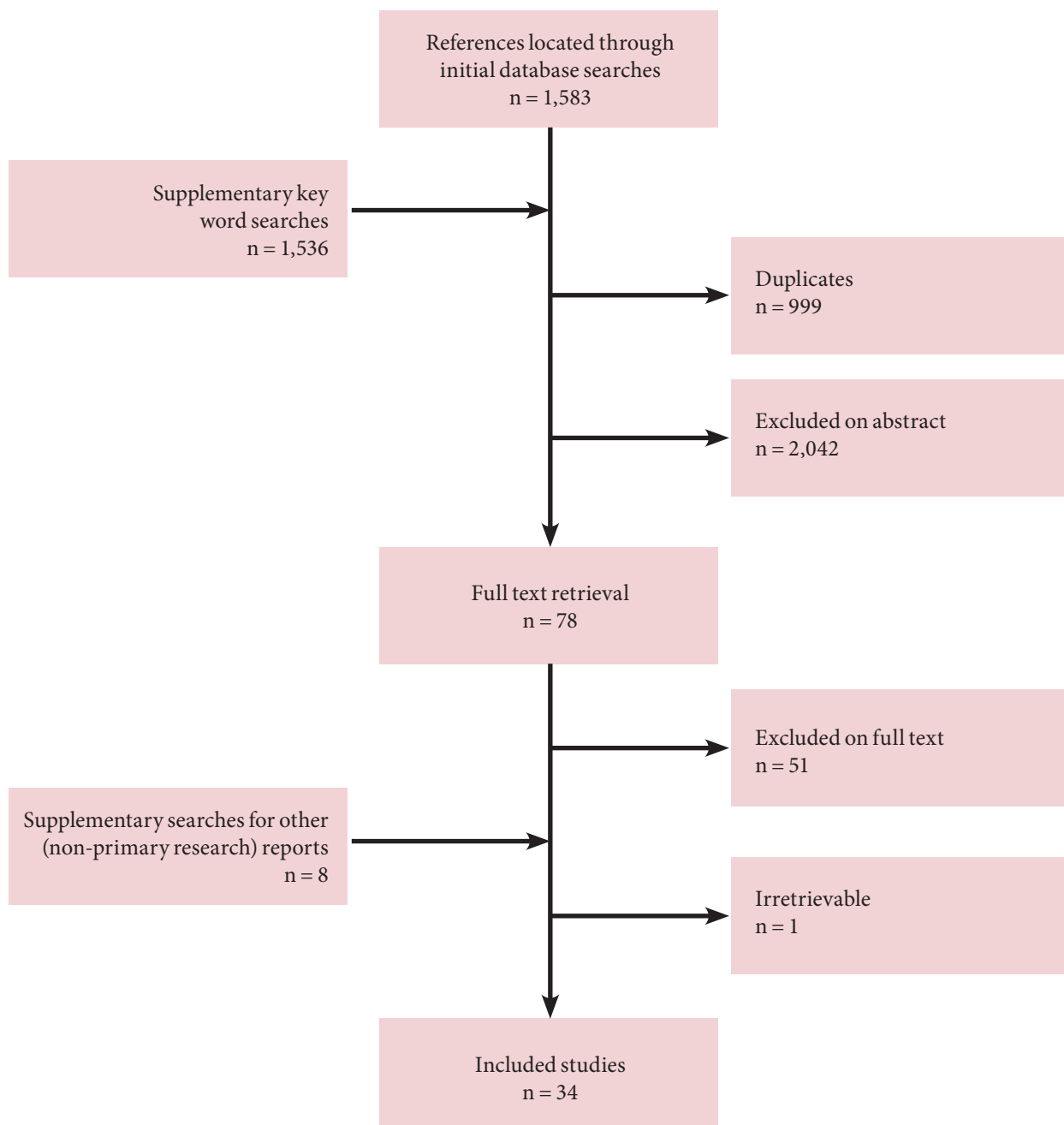
Inclusion criteria

- published in 2005 or later
- research in OECD country
- study assesses effect of moving care from hospitals into the community on quality and/or safety of care and/or cost-effectiveness of care
- study reports primary data or is a systematic review of primary data (including case studies but excluding opinion pieces)
- study is about moving acute inpatient and day case care into the community (**excludes** outpatient services, long-stay psychiatric care, prevention of admission and other improvements to primary care that do not involve shifting services from the hospital).

Appendix 2:

Flow of literature

Figure 1: Flow of literature



Appendix 3:

Quality assessment

All included primary research studies were assessed for quality and relevance using a tool based on Boaz and Ashby (2003). In our version of this tool, studies receive a high/mid/low score in each of the following dimensions:

- (1) **quality and transparency in reporting:** is the research presented in a way that can be appraised by others? Is there enough information to replicate the study?
- (2) **appropriateness of the research design:** is the research approach suited to the aims and questions of the study
- (3) **quality of execution:** is the study technically well executed?
- (4) **relevance:** does the study address questions that are useful for the current review?

This tool was chosen because it responded to our two main concerns regarding quality assessment (QA):

- (1) suitability to assess a heterogeneous body of research without privileging a particular research design or method
- (2) ability to combine the assessment of the rigour of the study in its own terms and its utility to the review.

Additional reports that we included after the second additional search were not subjected to this quality appraisal, as it applies only to research studies.

Table 6 presents the results of the QA exercise. Studies are grouped in three colour-coded categories:

- green for high-quality/relevance studies
- yellow for mid-quality/relevance
- red for low-quality/relevance.

Table 6: Quality assessment

| | Reporting, transparency | Appropriateness of study design | Quality of execution | Relevance |
|---------------------------------------|--------------------------------|--|-----------------------------|------------------|
| George <i>et al.</i> 2008 | High | High | High | High |
| Johnston <i>et al.</i> 2008 | High | Mid | High | High |
| Mendoza <i>et al.</i> 2009 | High | High | High | High |
| Nissen <i>et al.</i> 2007 | High | High | Mid | High |
| O'Reilly <i>et al.</i> 2006 | Mid | High | High | High |
| Patel <i>et al.</i> 2008 | High | High | Mid | High |
| Ricauda <i>et al.</i> 2008 | High | High | High | High |
| Shepperd <i>et al.</i> 2008 | High | High | High | High |
| Shepperd <i>et al.</i> 2009 | High | High | High | High |
| Sibbald <i>et al.</i> 2007 | High | High | High | High |
| Singh 2006 | High | High | High | Mid |
| Taylor <i>et al.</i> 2005 | Mid | High | High | Mid |
| Tibaldi <i>et al.</i> 2009 | High | High | High | High |
| Ansari <i>et al.</i> 2009 | Mid | Mid | Mid | Mid |
| Esmond <i>et al.</i> 2006 | Mid | Mid | Mid | Mid |
| Frick <i>et al.</i> 2009 | Mid | Mid | Mid | Mid |
| Garåsen <i>et al.</i> 2008 | High | High | Mid | Mid |
| Leff <i>et al.</i> 2009 | Mid | Mid | Mid | Mid |
| Leff <i>et al.</i> 2005 | High | Mid | Mid | Mid |
| Leff <i>et al.</i> 2008 | High | High | Mid | Mid |
| Parker 2006 | Mid | Mid | Mid | High |
| Ricauda <i>et al.</i> 2005 | Mid | Mid | Mid | High |
| Rodríguez-Cerrillo <i>et al.</i> 2009 | High | Mid | High | Mid |
| Sibbald <i>et al.</i> 2008 | High | Mid | Mid | High |
| Hanger <i>et al.</i> 2005 | Mid | Low | Low | Mid |
| Raphaël <i>et al.</i> 2005 | Mid | Low | Low | Mid |

Table 7 provides examples of our interpretation of these criteria in this review.

Table 7: Quality assessment criteria used in this review

| | Reporting, transparency | Appropriateness of study design | Quality of execution | Relevance |
|-------------|--|--|--|--|
| High | <p>The aims of the study are clearly stated; information about methods and participants is complete; analytical strategy is made explicit.</p> <p>For example, Ricauda <i>et al.</i> (2008) gave a full description of the methods and participants.</p> | <p>The methods and sampling strategy used to answer the research question are adequate.</p> <p>For example, Ricauda <i>et al.</i> (2008) used a prospective RCT design to compare the effects of their hospital-at-home service versus standard inpatient care.</p> | <p>The methodological strategy is soundly carried out.</p> <p>For example, O'Reilly <i>et al.</i> (2006) carried out a cost-effectiveness analysis as part of their randomised controlled trial of an early discharge service, which included a long term follow-up of quality-of-life outcomes.</p> | <p>The study addressed the spread or scaling-up of an innovation in a way and in a context that is directly relevant to this review's research question.</p> <p>For example, George <i>et al.</i> (2008) randomised patients to GP or hospital minor surgery and independently assessed the quality of surgery. The report reported cost-effectiveness of the service as well as absolute costs.</p> |
| Mid | <p>Some of the above are missing, but the study is still broadly recognisable and an evaluation is possible.</p> <p>For example, Esmond <i>et al.</i> (2006) were unclear about the people involved in providing the service and the timing of the intervention.</p> | <p>A better alternative approach could have been deployed, certain decisions remain controversial, or insufficient information is provided.</p> <p>For example, Taylor <i>et al.</i> (2005) did not report data on comparative resources for their service.</p> | <p>The study is sufficiently reliable, although there are some quality issues.</p> <p>For example, Frick <i>et al.</i> (2009) may have been at risk of bias from non-randomisation, missing data, and study site differences.</p> | <p>The study addresses the topic in a way or in a context that is not directly relevant to this review's research question.</p> <p>For example, Leff <i>et al.</i> (2005) reported a study carried out in the USA, which is of limited relevance to UK services.</p> |
| Low | <p>Most of the above are missing, severely limiting the possibility of evaluating the study. This necessarily has a negative impact for the rest of the appraisal.</p> <p>None of our included studies scored low for reporting transparency.</p> | <p>There is a serious mismatch between the aims and the methods or no information is provided about key decisions.</p> <p>For example, Hanger <i>et al.</i> (2009), seeking to identify the impact of the service on a range of outcomes, compared data from the community service over time, rather than comparing the service with standard hospital-based care.</p> | <p>There are serious flaws in the execution, or not enough information is provided.</p> <p>For example, Raphael <i>et al.</i> (2005) compared actual costs of home-based cancer therapy with theoretical costs of inpatient care.</p> | <p>The focus or the approach of the study bares little relevance for the review, though it meets the inclusion criteria.</p> <p>All of our included studies were selected for relevance, so none scored low in this area.</p> |

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