

## Inpatient rehabilitation services for the frail elderly

- Vale of York CCG and City of York Council are looking to work with York Hospitals NHS Foundation Trust to improve inpatient rehabilitation care for the frail elderly.
- There is a reasonable body of evidence to suggest that specialist inpatient rehabilitation services have the potential to improve patient outcomes compared to general care in a hospital setting.
- A number of key characteristics of inpatient rehabilitation services for the frail elderly can be identified. These include the use of specially designated geriatric units, involvement of multidisciplinary teams and a system of comprehensive geriatric assessment to inform treatment and discharge.
- Very limited data are reported for costs making it difficult to make informed judgments on the potential benefits of specialist inpatient rehabilitation services. As direct hospital costs appear broadly similar for specialist inpatient rehabilitation and usual care, it may be reasonable to assume that the potential for any cost reduction is likely to fall on social care.
- From a CQUIN point of view, there is scope for incorporating a range of measures into the proposed framework. Functional improvement, readmission, nursing home avoidance and living at home were measured in most studies; length of stay used in isolation doesn't appear a reliable indicator of quality.
- Consideration needs to be given to whether the patient populations represented in the evidence are truly reflective of the frail elderly presenting in practice; although aged over 65 years, none had dementia and all had potential for functional improvement.

This evidence briefing has been produced for the Vale of York CCG by the Centre for Reviews and Dissemination (CRD). Full details of methods are available on request ([paul.wilson@york.ac.uk](mailto:paul.wilson@york.ac.uk) or [duncan.chambers@york.ac.uk](mailto:duncan.chambers@york.ac.uk)).

CRD is part of the National Institute for Health Research (NIHR) and is a department of the University of York. The Centre aims to provide decision makers with research-based information about the effects of interventions used in health and social care.

The contents of this evidence briefing are believed to be valid at the time of publication (January 2013). Significant new research evidence may become available at any time. The views expressed in this publication are those of the author(s) and not necessarily those of NIHR or the University of York.

## Background

Vale of York CCG and City of York Council are looking to work with York Hospitals NHS Foundation Trust to improve inpatient rehabilitation care for the frail elderly. The CCG is looking to identify possible outcome measures that could be incorporated into a CQUIN payment framework which would link a proportion of the providers' income to the achievement of locally agreed quality improvement goals. To inform the development of this framework, Vale of York CCG have requested an evidence briefing from CRD that focuses on the following questions:

What are the attributes of an effective inpatient rehabilitation facility for the frail elderly?

What outcome measures should be used to monitor the effectiveness of frail elderly rehabilitation services?

Stroke rehabilitation services are not the focus of this briefing. NICE is currently developing joint clinical and social care guidance on the long term rehabilitation and support of stroke patients.<sup>1</sup> The guideline is currently out for second consultation and will now include recommendations on service delivery, care planning and assessment and multidisciplinary team roles and responsibilities; aspects that were deemed to be lacking after the first consultation process. The guidance is scheduled for release in June 2013.

## Methods

This briefing is a rapid appraisal and summary based mainly on existing sources of synthesised and quality-assessed evidence, primarily systematic reviews and economic evaluations. It is not a systematic review and we have not carried out exhaustive literature searches.

Systematic reviews and economic evaluations have been identified by searching the following sources:

- DARE
- Cochrane Database of Systematic Reviews
- NHS HTA Programme Reports
- NHS EED
- HTA database

For the sections on implementation and health equity, we have followed the methods in our published framework,<sup>2</sup> but these sections are not based on systematic literature searches.

## Evidence for effectiveness

The search identified a number of potentially relevant systematic reviews<sup>3-12</sup> but few focussed exclusively on inpatient rehabilitation. One systematic review relevant to the focus of this briefing was identified.<sup>3</sup>

### *Inpatient rehabilitation specifically designed for geriatric patients<sup>3</sup>*

This well conducted review assessed short-term and longer term effects of inpatient rehabilitation specifically designed for geriatric patients compared to usual care. Patients were aged 55 years or over and outcomes of interest included functional improvement,

admissions to nursing homes and mortality. Rehabilitation was defined as inpatient multidisciplinary programmes with active physiotherapy, occupational therapy or both (WHO international classification of functioning, disability and health framework).

The review included 17 RCTs (4780 patients) half of which assessed general geriatric rehabilitation programmes, the rest assessed hip fracture specific geriatric rehabilitation programmes. No trials of stroke rehabilitation met the inclusion criteria.

The review found an overall benefit for functional improvement, reducing nursing home admissions and mortality at discharge (combined OR 1.75; 95% CI: 1.31 to 2.35). In the longer term (3 and 12 months), evidence of benefit was sustained though the effects were more modest (combined OR 1.36; 95% CI: 1.07 to 1.71).

Compared with those receiving usual care, length of hospital stay was longer in patients allocated to general geriatric rehabilitation (24.5 v 15.1 days) and shorter in patients allocated to orthopaedic rehabilitation (24.6 v 28.9 days).

In relation to the attributes of effective inpatient geriatric rehabilitation programmes, key features were use of specially designated units, involvement of multidisciplinary teams and a system of comprehensive geriatric assessment to inform treatment and discharge. In the inpatient review, most of the studies are reported to have included courses of physiotherapy and or occupational therapy; individual studies also report consultations with psychologists, social workers, speech therapists and dieticians. However, the frequency, duration and intensity to which these therapies were provided is not reported.

From a CQUIN point of view, functional improvement was assessed most commonly with the Barthel Index and Katz Index of Independence in Activities of Daily Living scales. As both these indexes are validated and routinely used in practice, we have not searched for evidence of their comparative effectiveness in measuring functional improvement.

### *Comprehensive geriatric assessment*

Comprehensive geriatric assessment was a key feature of the inpatient rehabilitation review and is defined as a multi-level assessment of medical, psychiatric, functional and social aspects to ensure that problems are identified, quantified and managed appropriately. Comprehensive geriatric assessment includes the development of a management plan that includes rehabilitation. A multidisciplinary team is then responsible for delivering the recommended treatment or rehabilitation plan (such as physiotherapy input or occupational therapy, diagnostics or medical treatment).

Our search identified three potentially relevant reviews assessing effects.<sup>7-9, 11</sup> The most relevant and up to date of these focuses on evaluating comprehensive geriatric assessment in relation to unplanned hospital admissions. This review, published in both the BMJ and Cochrane Library<sup>9</sup> examines comprehensive geriatric assessment in relation to frail elderly people admitted to hospital as an unplanned emergency in comparison to routine or general medical acute care in hospital.

The review which was well conducted, investigated whether comprehensive geriatric assessment is better for patient outcomes than usual care in a hospital setting. The review included 22 RCTs (10,315 patients aged 65 years or over) of moderate quality and outcomes of interest included living at home, length of stay, functional improvement, and mortality.

The review found that patients who received a comprehensive geriatric assessment were more likely to be alive and in their own homes at six months (combined OR 1.25; 95% CI: 1.11 to 1.42). In the longer term (median 12 months), evidence of benefit was sustained though the effects were modest (combined OR 1.16; 95% CI: 1.05 to 1.28).

Patients were less likely to be admitted to a nursing home and were more likely to experience improved cognitive functioning. Subgroup analysis suggested that the effects were consistently seen in trials of dedicated geriatric wards but were not replicated where patients remained in a general ward and received assessment from a visiting specialist multi-disciplinary team.

## **Evidence for cost-effectiveness**

In the inpatient rehabilitation review,<sup>3</sup> six of the included RCTs reported brief costs of inpatient geriatric rehabilitation but lack of detail in the reporting makes it difficult to make overall judgments on service costs. Three RCTs reported direct hospital costs only while the other three appear to have included both health and social care costs. Of these, only one of the RCTs included an evaluation of cost effectiveness; conducted in this instance by the York Health Economics Consortium.<sup>13</sup>

The well conducted evaluation assessed the cost-effectiveness of inpatient rehabilitation for older people in community or 'cottage' hospitals (20-50 beds) compared with usual post acute care delivered in a general hospital setting. All the major relevant NHS and social care costs were included. Costs and benefits were appropriately combined using an incremental cost-effectiveness ratio (i.e. the additional cost per quality of life year gained). Compared with care in a general hospital, community hospital care was associated with an additional cost of £16,324 per QALY gained. The authors concluded that the cost-effectiveness of post-acute rehabilitation for older people was similar in both community and general hospitals. This conclusion appears reliable.

Our searches failed to identify any economic evaluations relating to comprehensive geriatric assessment. In the Cochrane review,<sup>8,9</sup> 12 of the included RCTs reported costs associated with comprehensive geriatric assessment; eight of which reported direct hospital costs only. Again the limited reporting makes it difficult to make judgments on service costs. From the data available, it appears that comprehensive geriatric assessment does not appear to result in increased costs to hospitals; the authors report that any differences in costs were due to differences in length of stay, multidisciplinary staff costs, prescribing or variations in diagnostic test requests.

## **Implementation**

In our evidence briefings we normally attempt to assess the likely ease of implementation of any changes to practice or service delivery. This usually involves consideration of issues such as the time and resources required to implement change, the numbers of services and staff affected, and the likely attitudes of relevant stakeholders. In this instance, we haven't completed this section as we have insufficient information on the nature of the service currently provided by the Trust.

## Health equity

Consideration needs to be given to whether the patients included in these reviews are representative of the frail elderly. In the inpatient rehabilitation review, although most of the included patients were aged over 65 years none had dementia, all had potential for functional improvement and those in the orthopaedic studies had good function before fracture. Patients in the comprehensive geriatric assessment review also shared these characteristics and despite all being acute presentations, most appear to have been living at home prior to admission.

## Implications

There is a reasonable body of evidence to suggest that specialist inpatient rehabilitation services have the potential to improve patient outcomes compared with general care in a hospital setting.

From the available evidence, a number of key characteristics of inpatient rehabilitation services for the frail elderly can be identified. These include the use of specially designated geriatric units, involvement of multidisciplinary teams and a system of comprehensive geriatric assessment to inform treatment and discharge.

The benefits for comprehensive geriatric assessment were not replicated where patients remained in a general ward and received assessment from a visiting specialist multi-disciplinary team

Very limited data are reported for costs making it difficult to make informed judgments on the potential benefits of specialist inpatient rehabilitation services. As direct hospital costs appear broadly similar for specialist inpatient rehabilitation and usual care, it may be reasonable to assume that the potential for any reduction in costs is likely to be found on the social care side (i.e. reduced care costs arising from functional improvement and delayed nursing home admission and prolonged independent living).

From a CQUIN point of view, there is scope for incorporating a range of measures into the proposed framework. Functional improvement, readmission, nursing home avoidance and living at home were measured in most studies; length of stay used in isolation doesn't appear a reliable indicator of quality.

Consideration needs to be given to whether the patient populations represented in the evidence are truly reflective of the frail elderly presenting in practice; although aged over 65 years, none had dementia and all had potential for functional improvement.

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