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The interface between acute hospitals and community care for older people presenting to acute medical units: a mapping review

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Workstream 2: Development and evaluation of interface geriatrics for older people attending an AMU

Workstream 3: Development and evaluation of improvements to health care in care homes

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MCOP discussion paper: Interface geriatrics: a mapping review

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The interface between acute hospitals and community care for older people presenting to acute medical units: a mapping review

Summary

Introduction

In the United Kingdom, acute medical units (AMUs) have developed over the last 10-15 years to provide rapid assessment and triage of patients attending with medical emergencies. We observed that for frail older patients discharged rapidly from the AMU, outcomes were poor, and wanted to identify and evaluate interventions that might improve them. This mapping review was undertaken as a preliminary step to examine the evidence for interventions for older people at this interface between the community and acute hospital.

Method

A wide range of searchable databases was examined for relevant systematic reviews. Reviews were included if they addressed older people (aged 65+) being discharged rapidly (<72 hours) from hospital and assessed health, function, institutionalisation or cost-related outcomes, including length of stay and readmissions.

Results

300 individual reviews were identified, 7 of which were relevant and of adequate quality. Three meta-analyses reported evidence in favour of comprehensive geriatric assessment (CGA) for frail older patients in acute hospital and, to a lesser extent, community settings. None of them directly assessed the interface for the group of patients discharged from AMUs. Two meta-analyses addressed alternative locations of care, including hospital-at-home schemes. Both confirmed evidence in favour of CGA, though none was specific to the interface of interest. Two further reviews addressed the community-hospital interface, although not solely the group of

patients attending AMUs. These reviews found evidence in favour of schemes working across the acute hospital-community care interface (for example, in reducing falls, support for hospital at home, and some evidence for community geriatrics). However there was uncertainty about the role of services based in emergency departments.

Conclusions

This mapping review showed that there is evidence to support the benefits of comprehensive geriatric assessment (CGA) in general, with strong evidence for in-patient CGA, and weaker evidence for community-based CGA. No reviews specifically focussed on patients discharged from AMUs or emergency departments, but sufficient material was identified to justify a systematic review of primary studies directly referable to "interface geriatrics".

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Background

One of the workstreams of the NIHR Medical Crises in Older People Programme concerned old and vulnerable patients seen on an acute medical unit and discharged home. The plans for the workstream comprised:

- a literature review
- a cohort study
- a RCT of the introduction of a geriatrician working across the interface between the acute medical unit and the community - a role for which we have coined the term "interface geriatrics" [1].

This paper describes a "mapping review", undertaken to prepare the research team for a systematic review in this area. The term "mapping review" (synonym "systematic map") refers to a review whose purpose is to map out existing literature with a view to planning a more detailed review. If this review were to be described in terms of its methodology, it would be an "umbrella review", a term used to refer to a review of reviews [2].

The National Health Service in the UK has responded to ever increasing numbers of patients presenting as an emergency [3] by developing specialist units – acute medical units* - designed to assess rapidly patients presenting in this way, and to triage those who need immediate care, those who need to be admitted for on-going care, and those who do not need admission. In the UK, this function is only partly dealt with by Emergency Departments (also sometimes called Accident and Emergency or Casualty Departments). This is because the NHS requires patients in Emergency Departments to be discharged or transferred from these clinical areas within four hours, but triage and emergency care can take longer than that to perform. One of the many reasons to have acute medical units working in this way is to ensure that patients who do not need to be admitted to hospital are recognised immediately on

* (or similar synonyms such as clinical decision units, medical admission units)

presentation. This is important to the NHS, where there is considerable pressure on medical beds bed and staffing, concerns about iatrogenic complications, a preference for patients to be managed outside of hospital if possible, and strong policy initiatives over several decades to locate as much NHS care as possible in community rather than hospital settings.

Many people presenting to acute medical units have geriatric conditions such as falls, reduced mobility, confusion or incontinence, and some of these people are not admitted to hospital. Preliminary data from our group indicated that these patients were at high risk of early re-presentation at hospital, and had a relatively high mortality rate [4]. We argued that they might best been seen as patients with an exacerbation or complication of their multiple long term conditions, rather that patients with a single and acute problem that could be resolved by simple diagnostic and therapeutic measures undertaken taken on an acute medical unit. Aware of the benefits of geriatric medicine as delivered in hospital, we postulated that these patients might benefit from a style of geriatric medicine that straddled the acute medical unit and community. We coined the phrase "interface geriatrics" to describe this service, in which frail older people being discharged from acute hospitals within a short period of time (72 hours), are assessed by a geriatrician prior to discharge, and then followed up with a view to addressing ongoing issues relating to the patient's long term conditions and care.

We were aware of a few research studies that had already evaluated this approach [5] [6] and also aware that geriatricians were already working in this way in some NHS settings. However, we were not confident that there was sufficient evidence to support the commissioning of services, and this uncertainty was the rationale for this research workstream. In preparation for a RCT to evaluate interface geriatrics, we decided to review the relevant literature systematically. In preparation for this we examined existing reviews in relevant, related, areas.

Method

Search

A systematic approach was taken to the mapping review, in part to pilot a subsequent systematic review. The following databases were searched, by a researcher with librarianship skills, from inception until September 2009:

- OVID MEDLINE(R) (1966+)
- EMBASE (1980+)
- BNI (1985+)
- HMIC
- Cochrane Library
- CINAHL
- AGEINFO (http://www.cpa.org.uk/ageinfo/ageinfo2.html)
- ASSIA: Applied Social Sciences Index and Abstracts
- The National Research Register (NRR) Archive (https://portal.nihr.ac.uk/Pages/NRRArchive.aspx)
- National Information Centre on Health Services Research and Health Care Technology (NICHSR)(http://www.nlm.nih.gov/nichsr/db.html)
- NHS CRD DARE/HTA/EED (http://www.crd.york.ac.uk/crdweb/)

The following search terms were used (adapted from previous relevant reviews [7 8]:

1. Acute care/sub-acute care/post-acute care/intermediate care/care continuum/integrated care/progressive care/transitional care (identifies the setting)
2. Frail/geriatric assessment/health services for the aged/(geriatric unit or specialist geriatric or acute geriatric).mp./ ((elder$ or older or geriatric$ or aged) adj3 (unit or specialist)).tw./acute care for elder$.ti./(acute care adj3 elderly).mp./elder$ unit$.ab./geriatric$ acute care.ab. (identifies the population/process)

3. Activities of daily living/cost/cost benefit/cost effectiveness/mortality/health status/length of stay/discharge/readmission/quality of life/satisfaction/carer strain/carer burden (identifies the outcomes)

The search terms were refined for each database, to conform to the appropriate syntax and searching strategy required. Searches were limited to review or review article using the individual database filters.

Selection

Studies were selected if they met the following criteria:

- Included participants aged 65+
- Addressed the care of older people who have developed a crisis, and attended, but were deemed not to require acute hospital care, or older people whose acute hospital care needs could be met within a very short time period (<72 hours), who were then directed back towards primary care.
- Reported any of the outcomes listed in ([3]) above at any time up to one year.

Exclusions:

- Reviews covering condition specific interventions only (stroke, depression, cancer care, COPD, CCF, dementia, intensive care), but reviews which included specific conditions in the context of a broader intervention were eligible
- Reviews relating primarily to psychiatric disorders
- Reviews relating to children or paediatric care.

Each paper was graded by two reviewers using the Critical Appraisal Skills Programme (CASP) tool for systematic reviews [9]. The CASP tool for systematic reviews consists of 10 questions, of which seven or eight (depending on whether or not the paper contained a meta-analysis) can be scored 0/1/2, giving a maximum score per paper of 14-16 marks. We assigned a percentage rating to each paper to

allow for differences in the scoring system, and papers scoring above 50% and meeting the selection criteria above were included review.

Results

Search

In the search stage, 303 abstracts, and 12 additional reviews identified following a hand search of references

Selection

Of these 315 reviews, 278 were deemed not relevant, and 15 were duplicates. Two reviewers (SC, TS) then assessed the remaining 22 papers in detail. Overall, 8 papers met the inclusion criteria, but only 7 were graded above 50% for quality by both reviewers (Figure 1). There was good agreement between the two reviewers for the quality assessment (85% concordance, kappa 0.68); disagreements were resolved by discussion. The overall quality of the retained reviews was good – the mean CASP score was 79%.

The final set of 7 papers are summarised in Table 1.

Findings

Three meta-analyses [8 10 11] were identified covering comprehensive geriatric assessment (CGA). Interface geriatrics forms part of CGA for a group of patients presenting in a particular setting. All three reviews showed benefits in favour of comprehensive geriatric assessment, most commonly in increasing the likelihood of patients living in their own homes at follow up. Two of these reviews [8 11] excluded community interventions (and hence interface geriatrics), but one published in 1993 [10] identified two studies for in-home CGA for patients recently discharged from hospital [12 13], which is similar to but not the same as interface geriatrics: these studies also showed an advantage of this form of CGA in terms of increasing the likelihood of patients living in their own homes at follow up. There were no reviews of

interface geriatrics as we have described it. The most relevant review [10] was not recent (undertaken 17 years ago).

Two meta-analyses of studies of alterative settings were found: one a wide-ranging review [7], and one focussing on hospital–at-home services for older people [14]. Whereas interface geriatrics is not aimed primarily at changing the setting in which care is given, the studies examined in these reviews compared alternative settings for care. Neither review covered interface geriatrics as we defined it, but community-based alternatives appeared promising, lending support to the community-based element of interface geriatrics.

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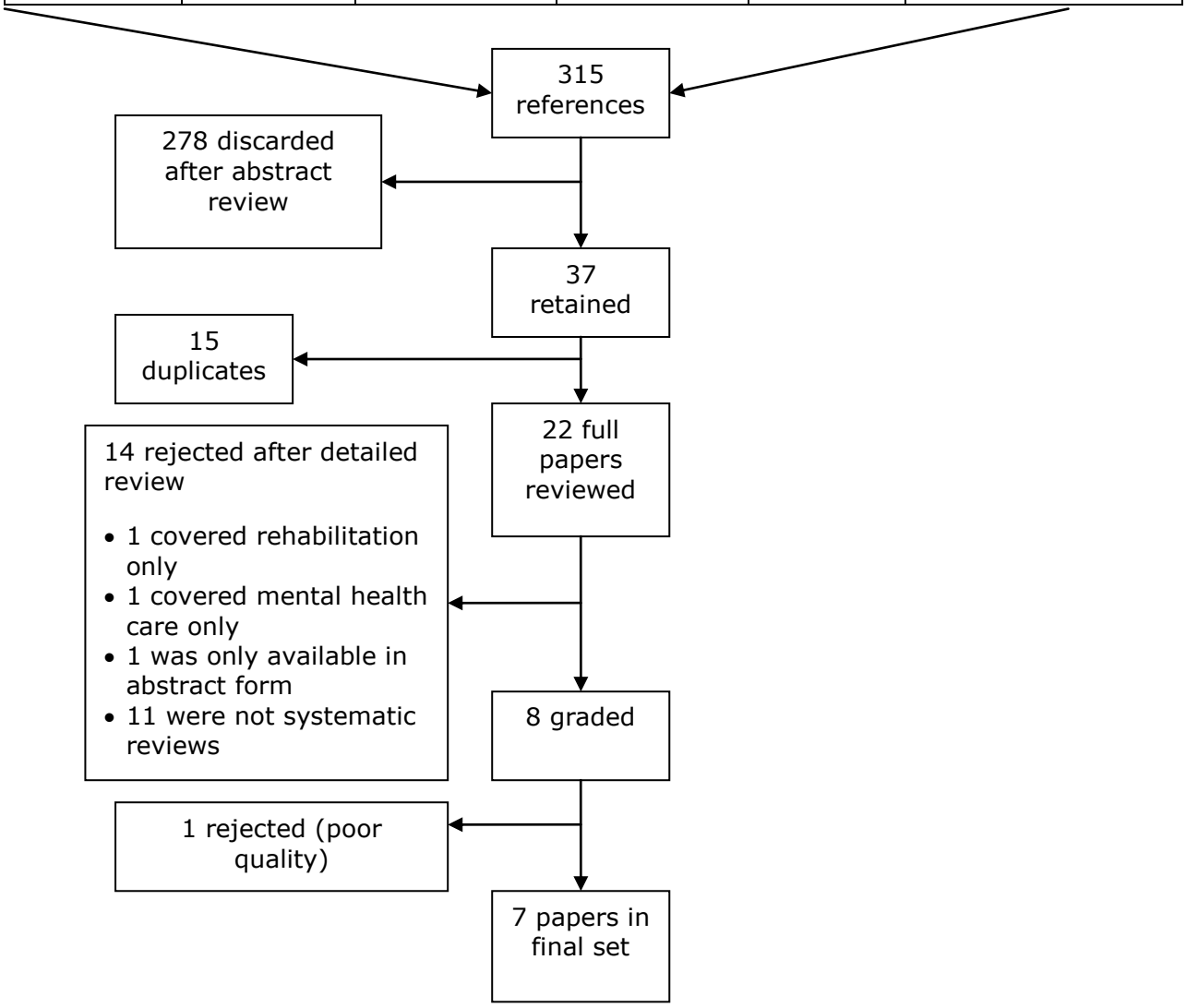
Figure 1 Selection of papers

NHS CRD DARE	NHS CRD EED	COCHRANE	ASSIA	HMIC	Hand search
49	64	14	5	29	12
NHS CRD HTA	BNI	EMBASE	MEDLINE	CINAHL	NRR/UKCRN/ NICHSR
1	3	18	49	71	No complex searching possible



Author, Year, Search period of review, Type of review, Population	Intervention examined	Results/conclusions	CASP quality rating
CGA reviews			
Stuck 1993 inception – 1993 meta-analysis population not specified	CGA, categorised into 5 different types depending upon setting and organisation of delivery compared to usual hospital or community care. Categories: 1. Geriatric Evaluation and Management Unit (GEMU – in hospital) 2. In-patient Geriatrics Consultation Service (IGCS – in-hospital) 3. Home Assessment Service (HAS – community) 4. Hospital Home Assessment Service (HHAS-patients recently discharged from hospital) 5. Out-patient Assessment Service (OAS)	3 "Hospital Home Assessment Service" studies (the category most similar to the concept of interface geriatrics) were identified, 2 of which had ambulatory follow up. The results for these are as follows: 12 month mortality RRR 0.89, 95% CI 0.65-1.23, living at home at 12 months RRR 1.49, 95% CI 1.12-1.98, readmissions RRR 1.03, 95% CI 0.56-1.90, physical function at 6 months RRR 0.98, 95% CI 0.59-1.63, cognition at ≥6 months RRR 0.97, 95% CI 0.63-1.48. When all forms of CGA were considered overall: 6 month mortality RRR 0.86, 95% CI 0.75-0.98, living at home RRR 1.26, 95% CI 1.1-1.44, readmissions RRR 0.88, 95% CI 0.79-0.98, cognition at 6 months RRR 1.41, 95% CI 1.12-1.77, physical function at 6 months RRR 1.10, 95% CI 0.89-1.36.	84%
Baztan 2009 inception-31/8/8 meta-analysis older people with acute medical disorders	Comprehensive geriatric assessment in acute medical units compared with conventional care units.	This review excluded 5 papers describing non hospital interventions. Acute geriatric units reduced activity limitation (OR 0.82, 95% CI 0.68-0.99) compared with conventional hospital care, and increased the likelihood of living at home after discharge (OR 1.3, 95% CI 1.11-1.52), but the survival advantage could have occurred by chance (OR 0.83, 95% CI 0.60-1.14).	88%

Ellis 2005[11] approx 1987 to 2004 meta-analysis older people in acute hospital care	Geriatric Evaluation and Management Units (GEMU) and In-patient Geriatric Consultation Services (IPGCS)	In-patient CGA increased the likelihood of returning home from hospital but did not significantly reduce mortality. Living at home: OR 1.16, 95% CI 1.04-1.30. Mortality: OR 0.95, 95% CI 0.87-1.05. Most of the benefit was seen in GEMUs and little was seen in IPGCS: interface with the community was not considered.	81%
Comparison of alternative settings			
Parker 2002[15] Meta-analysis patients ≥65 years, receiving acute, post- and sub-acute rehabilitation care.	To assess the evaluative literature on the costs, quality and effectiveness of different locations of care for older people. 1. Admission avoidance, nurse-led beds and early discharge schemes 2. Increased condition-specific expertise in hospital settings such as stroke units, hip units, geriatric assessment units (GAU), and acute care for elders (ACE) units 3. Rehabilitation (in-patient, community-based, and day hospitals).	The focus was on place of care, in particular a comparison of alternatives for similar patients. In-patient rehabilitation (usually compared to non-specialist in-patient settings) reduced mortality and increased living at home. Nurse-led beds and early supported discharge schemes increased the likelihood of living at home without any adverse effect on mortality. Mortality: Admissions avoidance OR 0.88, 95% CI 0.53-1.47, Nurse-led beds OR 1.00, 95% CI 0.62-1.60, Early discharge OR 0.97, 95% CI 0.71-1.32, GAU and ACE OR 0.98, 95% CI 0.78-1.23, In-patient rehabilitation OR 0.71 95% CI 0.56-0.90, Community-based rehabilitation OR 1.07, 95% CI 0.73-1.58, Day hospital OR 1.30, 95% CI 0.96-1.76. Living at home: Admission avoidance OR 1.10, 95% CI 0.63-1.93, Nurse-led beds OR 2.01, 95% CI 1.37-2.94, Early discharge OR 1.58, 95% CI 1.16-2.14, GAU and ACE OR 1.26, 95% CI 1.04-1.53, In-patient rehabilitation OR 1.61, 95% CI 1.20-2.15, Community-based rehabilitation OR 1.01, 95% CI 0.42-2.46, Day hospital OR 0.60, 95% CI 0.27-1.37	88%
Sheppard 2009 inception to Jan	Hospital at home schemes (including a multi-disciplinary team, the provision of 24 hour cover if required, with access to a doctor, and a safe home	Admission avoidance hospital at home can provide an effective alternative to inpatient care for a selected group of elderly patients otherwise requiring hospital admission, with a trend towards increased readmission: 3	94%

2008 meta-analysis older people contacting emergency care at home or in the emergency department	environment) compared with in-patient hospital care	month mortality adjusted HR 0.77, 95% CI 0.54-1.09, 6 month mortality adjusted HR 0.62, 95% CI 0.45-0.87, 3 month readmissions or hospitalisation HR 1.49, 95% CI 0.96-2.33. Other, health, outcomes were similar.	
General reviews			
Ali 2004 Patients ≥65 years with complex comorbidities who need services between general hospital and home support	To provide evidence for the effectiveness of any service managing patients across the hospital / community interface	The evidence reviewed concluded: Intervention programmes that provide services to reduce and prevent falls are effective in doing so. Discharge planning arrangements have some beneficial effects on subsequent readmission to hospital. Hospital-at-home schemes as an alternative to acute hospital care have good outcomes for selected patients. ED-based studies were insufficient in number and quality to comment upon. There is uncertainty over the effectiveness of nurse-led inpatient care for post-acute patients, and little known about community-based nurse-led units. Integrated post-discharge home care programs guided by a case manager showed benefits.	93%

Day 2004 ≥65 years with complex morbidities or at risk of deteriorating function who require rehabilitation following hospitalisation for an acute episode or have multiple chronic health conditions or changing disabilities or are frail or have unclear diagnosis, atypical presentation of illness or sudden unexplained decline in functional abilities.	Specialist geriatric services. To identify and appraise international evidence for the effectiveness of specialist geriatric services	Evidence generally supportive of specialist geriatric services in community settings – for prevention and supportive discharge. But benefits not consistent across all outcomes and not always clinically significant. Good evidence for integrated CGA services for orthogeriatric patients which cover acute care and supported discharge. Good evidence for in-patients CGA with 'medical control' and long term follow up of patients. Inconclusive evidence relating to in-patients CGA units (GEMU/GEU). Good evidence for CGA approach in the management of stroke and delirium. Lack of evidence for day hospitals or outpatient CGA. For patients as well as caregivers, targeted comprehensive services (including training and education in addition to assessment and treatment) provided by a multidisciplinary team, tailored to individuals' needs, appear to be the most effective specialist team service models.	93%

Two highly relevant and extensive New Zealand Health Technology Reviews with broad remit were identified, one covering the hospital/community interface in older people (but not solely interface geriatrics as we defined it) [16] and one on acute, post acute and sub-acute specialist geriatric services [17]. The first of these [16] concluded that:

- there is good evidence that falls can be prevented in people presenting to services serving the hospital community interface
- hospital-at-home services are popular and can give equivalent outcomes to traditional hospital care
- disease orientated and episodic models of care do not adequately respond to the complex needs of older people
- there is insufficient evidence to support or refute the value of emergency department based services and nurse-led units

The second review concluded that

- there is support for community geriatric services, although the evidence base is inconsistent
- the benefit of in-patient geriatric services is supported by robust RCT evidence
- the benefit of day hospital care is inconclusive

Furthermore, this review examined the nature of the type of services needed to obtain these benefits, concluding that the evidence-base supported many notions that are part of standard geriatric practice such as: attention to social and functional matters and not merely diagnoses; multidisciplinary working; and a focus on deinstitutionalisation.

Conclusions

This mapping review showed that there is good evidence to support the benefits of the process of comprehensive geriatric assessment (CGA) in general, with strong evidence for in-patient CGA, but weaker evidence for community-based CGA. There were no existing reviews of interface geriatrics as we have defined it, yet it seems likely that there are primary studies on this topic that could be reviewed. We therefore plan to undertake an up-to-date systematic review, focussing on studies directly referable to the acute hospital-community care interface.

The results of this review support our working principle, that a form of CGA could be helpful to frail patients who present to acute medical units but who are discharged quickly from hospital. They also confirm the notion that the cost-effectiveness of such services is not established, so ethically and scientifically justifying plans to undertake a RCT to evaluate such a service. The proposed systematic review should provide evidence helpful to those considering commissioning such services before the results of our trial are published.

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