An Evaluation of Intermediate Care Services for Older People

Summary Report

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Iain Carpenter,

Kathy Kotiadis, Mathew Mackenzie

Centre for Health Services Studies, University of Kent

Contents

Introduction

Intermediate care is defined as a range of integrated services designed to promote faster recovery from illness, prevent unnecessary admissions to hospital and long term care, support timely discharge and maximise independent living. It is a vital component of the programme to improve the health and well–being of older people and raise the quality of healthcare they receive. Evaluation of the extent to which intermediate care services (ICS) can achieve these objectives is important given the expectation for and investment in them.

Conventional wisdom is that the best approaches to service evaluation are randomised controlled trials and systematic reviews of the literature. However these methods are difficult to use for intermediate care services; because of the differences between the elements of health and social care services, the varying characteristics of the population they serve, the multiple problems and chronic disease of elderly people, and the problems of interaction with other services that may be changing.

The aim of the ICON project was to explore ICS using a whole systems approach to examine the relationship between different ICS and the use of hospital beds and intermediate care resources. To overcome the difficulties of evaluation computer simulation techniques were used. The goal was to develop a computer model that would provide a generalisable system for evaluating intermediate care services.

The project took place in the Shepway District of Kent, while ICS were being developed. They included hospital inpatient rehabilitation beds, a Community Assessment and Rehabilitation Team (CART), a recuperative care service and a Day Hospital. Rapid Response Teams have recently been introduced and are being evaluated separately from the ICON project.

To develop the computer model, all health and social care services relevant to older people in Shepway were mapped, along with the resources currently available to each. Interviews with service managers provided data on the numbers of staff and beds, admission criteria, and resource use. Patient information was gathered by health care assessments using assessment items from the inter*RAI* Minimum Data Set for Home Care Assessment system (MDS-HC). The assessments included structured health care data on patients, describing their medical, physical, psychological and social characteristics.

Key Findings

The underlying premise was that different ICS are intended to meet the needs of different patient groups. The study found that this was the case, and that admission criteria for these services could be defined in a structured manner. The resulting findings were:

- Patients admitted to different ICS have different characteristics.
- Some patients admitted to ICS did not seem to meet the criteria and some patients in rehabilitation wards could have benefited from being in community based ICS.
- High patient demand put rehabilitation wards under pressure. At the time of the project this was not the case for community based ICS.
- People with cognitive impairment are effectively denied access to intermediate care. Introducing community based ICS for the cognitively impaired could reduce pressure on rehabilitation wards.
- Community based ICS capacity could be increased, reducing pressure on hospital beds.
- Small changes to each service could increase the number of people catered for.
- A more precise focus with well defined admission criteria would enable existing services to tackle the needs of patients who best matched what they could provide. This would also
    - Help identify patients whose needs cannot be met with existing services (and support reconfiguration to address the gaps)
    - Help ensure that fewer people enter services which are not able to meet their needs

  This is an essential part of a whole systems approach to ICS.
- ICS within the wider context of a healthcare system can be effectively modelled using using operations research methods and computer simulation.

We have also identified that a comprehensive Single Assessment Process and clear criteria for each ICS target population should be in place to improve appropriateness of patient care and support service evaluation. These should be periodically reviewed and updated.

The diversity and depth of the findings of the ICON project provided new and useful insights into how Intermediate Care Services are implemented and how they interact with each other. The application of a standardised assessment process, operational research techniques and new developments in information technology can make a major contribution to health and social care policy and management.

Recommendations

The needs of patients with cognitive impairment should be addressed as they currently do not benefit from intermediate care services.

A coherent communication strategy for IC staff should be developed and the possibility of an identifiable IC headquarters considered

Local IC systems should provide information (e.g. leaflets) for both potential IC patients and people that refer to IC services i.e. bed managers.

Referral procedures need to be improved. This should include a single point of access.

A procedure for identifying patients in the acute hospital setting who would benefit from community-based ICS should be established.

The ability to predict the effect of change using simulation processes would be assisted by improvements in management and assessment processes. This would help produce efficient solutions to apparent resource limitations.

Criteria for admission to services should be clarified and directly linked to patient needs assessment.

The computer simulation model should be further developed alongside the development of ICS to maximise the benefits of ICS for the patients, service management and planning

Background

Intermediate care is a function concerned with the transition from medical dependency to personal independence and restoration of self care abilities [1]. In 1999 the Department of Health announced a major expansion of community health and social care services, to be termed intermediate care that in contrast to acute hospital services would be focused on rapid assessment, stabilisation and treatment. These would include "Hospital day units and community based services aimed at maintaining people in their home communities in good health, preventing avoidable admissions, facilitating early discharge and active rehabilitation post-discharge and supporting a return to normal community-based living wherever possible"[2]. Guidance published in 2001 clarified the underlying principles for these services and announced the investment of £851 million to support their development between 2000 and 2004[3]. It also stated that the NHS and councils should ensure that systems for evaluation were built into new intermediate care schemes from the earliest possible stage of planning and implementation.

Elderly people occupy two-thirds of general and acute hospital beds in this country, and account for over a half of the recent growth in emergency admissions. The length of stay in hospital is also significantly greater for older people[4]. For this age group, it has been estimated that 20% of hospital bed days were inappropriate and could have been avoided if suitable alternative facilities were in place[1].

Intermediate care services are also said to reduce admissions to institutional long-term care, by maintaining personal independence through rehabilitation, and through the provision of support packages tailored to the individual during periods of need. It is well recognised that most older people would prefer to remain in their own homes given suitable support. The current crisis in long-term care also reinforces the need for minimising the number people needing places in nursing homes.

Local health and social care services have been rapidly developing intermediate care but there are many difficulties with its evaluation. Evaluation using established research methods has a number of problems with respect to intermediate care because of the diversity of models and settings. In particular the use of randomised controlled trials and systematic review of all trials are particularly problematic. Problems include limited generalisability from well defined study samples to real life populations in which they will be applied, undertaking studies of adequate size to detect meaningful difference in outcome, variations in skill mix and staffing levels and many other confounders such as interaction with existing services in a changing environment[5].

Statistical evidence is becoming available which supports the idea that ICS as a whole reduce pressures on heavily over-subscribed hospital beds. The National Beds Enquiry reports that health systems with low bed utilisation have a large range of intermediate care facilities available. In the fourth quarter of 2000-1, 11.9% of patients aged over 75 had their discharge delayed. This is equal to approximately 5940 elderly patients being in hospital unnecessarily every single day. In the same quarter the following year there was a marked improvement, with 9.4% (4700) patients delayed[6].

However there remains a lack of evaluation of effectiveness, and therefore a shortage of evidence to guide future investment decisions and the most appropriate focus for service development [6]. How much and of which type of service should be developed remains unknown. "The evolution of intermediate care as a concept rather than a specific type of service has led to a very wide diversity of models based on local need, happenstance or opportunism".

Key types of service

Department of Health guidance Intermediate Care Services HSC 2001/001: LAC (2001) outlined that Intermediate care services should be:

> *Targeted* at people who would otherwise face unnecessarily prolonged hospital stays or inappropriate admission to acute in-patient care, long term residential care, or continuing NHS in-patient care
>
> Provided on the basis of a *comprehensive assessment*, resulting in a structured individual care plan that involves active therapy, treatment or opportunity for recovery

Have a planned outcome of maximising independence and typically enabling patient/users to *resume living at home*

Time-limited, normally *no longer than six weeks* and frequently as little as 1-2 weeks or less

Involve cross-professional working, with *a single assessment framework*, single professional records and shared protocols.

Services that prevent admissions

Rapid Response Teams (RRT): 24 hour short term rapid access service to prevent admissions for patients referred from GPs, A&E, NHS

'Hospital at Home': intensive support in the patient's own home,

Services that enable earlier discharge

Residential Rehabilitation (Step Down & Recuperative Care): short-term therapy and enablement in a residential setting

Supported Discharge (Community Assessment Rehabilitation Teams - CART): short-term nursing and/or therapeutic support in a patient's home

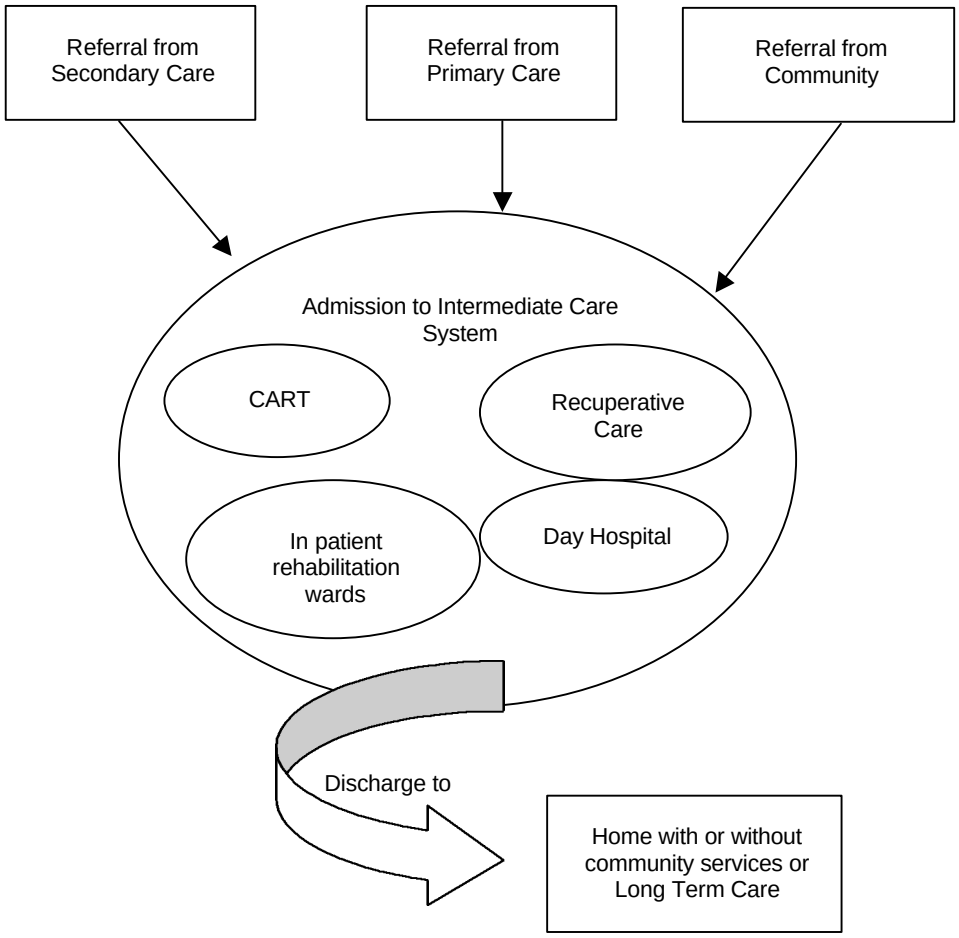
Day Rehabilitation (Day Hospital): short-term therapeutic support at a day hospital or day centre.

Intermediate Care Services in Shepway

In Shepway where the project took place, ICS were being developed, and included hospital inpatient rehabilitation beds, a Community Assessment and Rehabilitation Team (CART), a recuperative care service and a Day Hospital. Rapid Response Teams have recently been introduced and are being evaluated separately from the ICON project.

Figure 1 shows how patients enter rehabilitation wards (in a hospital separate from the acute hospital) and community based intermediate care services from acute hospital care, from primary health care referrals or by referral from Social Services.

Figure 1. **Patient flow through intermediate care**



Assessments are routinely conducted at admission to and discharge from each of these settings. By introducing a standardised component to the assessment processes and by discussion with service manager to identify the general characteristics of patients admitted, we developed a whole system model to understand better patient flows and the implications of making changes to numbers of beds and service staff.

Method

A computer simulation of the health care system in the Shepway District was built. It included rehabilitation wards in acute and non-acute hospitals, as well as intermediate care services and used health data from real patients (a diagram of the simulation is shown in figure 2). The computer model allowed different types of services including staffing levels to be safely tested away from the patient, in a 'virtual' environment.

To develop the computer model all health and social care services relevant to older people in Shepway were clearly mapped out, along with the resources currently available to each. Interviews with service managers provided the data on the numbers of staff and beds, the admission criteria, and resource use. Patient information was gathered by health care assessments incorporating components of the Minimum Data Set for Home Care (MDS-HC)[7]. The assessments allowed structured health care data to be collected from patients, describing their medical, physical, functional, psychological and social characteristics.

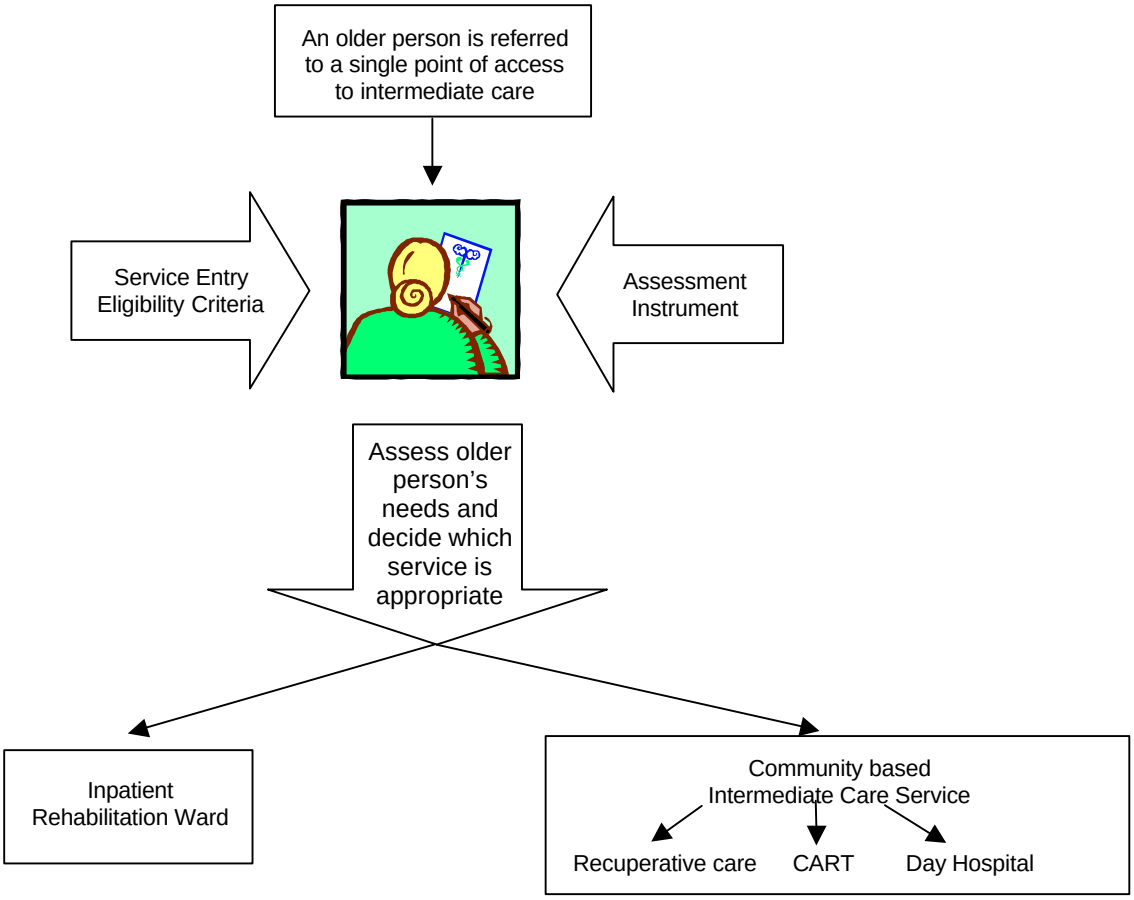
Patient assessment criteria

Patients were assessed with the following items from the MDS-HC assessment domains.

- Hospital / Social Services numbers
- Basic details (e.g. age, sex, marital status)
- Cognitive function
- Sensory function and Communication
- Mood and Behaviour
- Social functioning (e.g. interaction, isolation)
- Informal support services (caregiver)
- Physical function
- Continence (bowel and bladder)
- Skin condition (ulcers)
- Environmental assessment
- Service utilisation
- Disease diagnosis by category
- Health conditions (e.g. falls, preventative health measures, problem conditions)
- Medication

The assessment information was entered into a computer database and patients' health profiles were analysed using standard statistical techniques to compare patients admitted to each service. The results provide evidence of the importance of intermediate care, and an audit of the use of current resources in Shepway.

Figure 2. **Conceptual Model of the Simulation**



Clarification of eligibility and exclusion criteria

As part of the study the researchers clarified the criteria for admission to the ICS through discussion with service mangers in Shepway. The criteria included both eligibility and exclusion criteria. The criteria that applied to specific services differed in a way reflected by the type of patients whose needs could be met in each service. These service entry eligibility criteria (SEEC) included the following:

Examples of eligibility criteria:

The individual must be aged 65+,

Clinically fit for discharge and medically stable,

There should be an assessed potential to improve independence,

Motivation: be motivated to get better

Mobility: the person be able to transfer independently or with the assistance of one person,

Continence: managed continence is accepted (urinary and bowel),

Communication: the person must be able to communicate

Examples of exclusion criteria:

Complex nursing care must not be required,

Client is deteriorating rapidly eg final stage cancer patients.

Mental ability: people with cognitive impairment likely to impair cooperation with rehabilitation .

Mood and behaviour problems.

Table 1 demonstrates which of these criteria were applied in practical terms for the community base services. This shows that the criteria for each service differ in a way that makes it possible to distinguish how the different ICS are targeted at particular people. Comparing a patient's routine admission assessment with the criteria helps determine whether a particular service can meet the needs of that patient.

Table 1. Criteria for Community Intermediate Care Services

	CART	Recuperative Care	Day Hospital.
Behaviour	√	√	√
Cognition	√	√	
Communication	√	√	
Confidence	√		
Continence	√	√	
Rehabilitation potential	√	√	√
Motivation	√	√	√
Mobility	√	√	

MDS-HC assessment items that corresponded with these criteria were identified. In this way admission and discharge assessment information could be used for statistical analysis, matching against criteria and entering into the computer simulation.

Do patients differ between services?

Intermediate Care Services (ICS) are designed to provide an alternative to hospital admission for those losing independence, and a stepping-stone towards independence after an acute episode. It was expected that broad differences would exist in certain areas between the ward-based and ICS-based patient, and this was borne out by the study.

A total of 651 admission assessments and 525 discharge assessments were carried out during the study period. Patients admitted to and discharged from each location were analysed in terms of their age, functional and cognitive performance, continence and skin condition. Discharge data were used to profile patients returning home, and to suggest profiles on admission to long-term care. Changes between admission and discharge were measured. General comparisons were then made between hospital and intermediate care patients, between patients at each individual intermediate care setting, and between intermediate and long-term care patients.

ICS-based patients tended to be younger and more physically and cognitively able. Ward-based patients tended to be older, more physically and cognitively impaired and more commonly have other health problems such as bowel and bladder incontinence.

Physical Function

Physical function strongly affects social independence, the need for hospital admission, and the ultimate need for long-term care. Figure 3, presents physical function of patients in the study in terms of the Activity of Daily Living (ADL) score and compares ADL on admission to and discharge from hospital, intermediate and long-term care. On a scale of 0-6, 6 equals the most physical impairment (Morris et al. 1999).

Figure 3. Mean ADL Self Performance Hierarchy with 95% Confidence Intervals

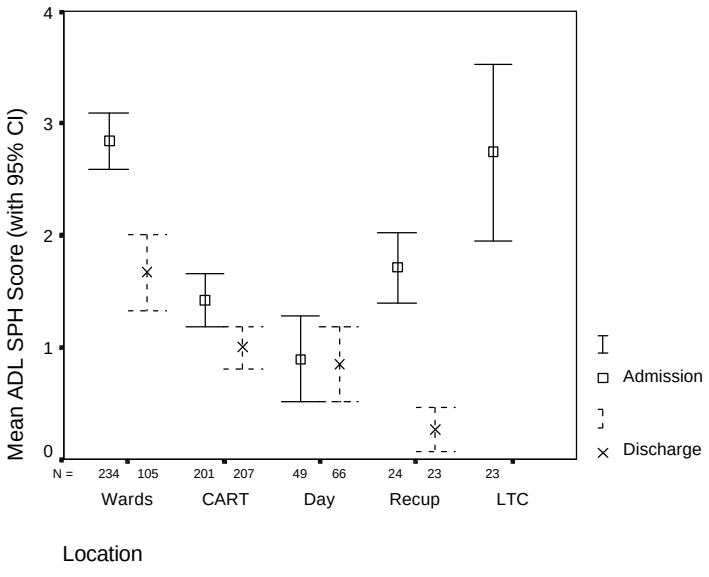


Figure 3 shows that patients admitted to the hospital wards had significant physical impairment and were discharged with a significant improvement in physical function. Other important features of the graph are:

- Physical function at discharge from the rehabilitation wards was similar to that at admission to the Community Assessment and Rehabilitation Team and Recuperative Care.

- Physical function improved most at discharge from recuperative care.
- The improvement seen at CART was less than that in recuperative care.
- Day Hospital clients had better physical function at admission and had not improved at discharge.
- Long term care (LTC) patients were admitted with physical function similar to patients on admission to hospital,.

The fact that physical function of patients entering intermediate care is very similar to that of those leaving hospital confirms the step-wise nature of the services. Given that medical stability is often reached before physical function is optimised, where ICS exist, people should be able leave hospital sooner.

Admission criteria to CART includes the need for 2 or more services (eg physiotherapy, nursing, occupational therapy). This may mean that CART clients have more complex needs than recuperative care clients and explain the smaller improvement in physical function at discharge.

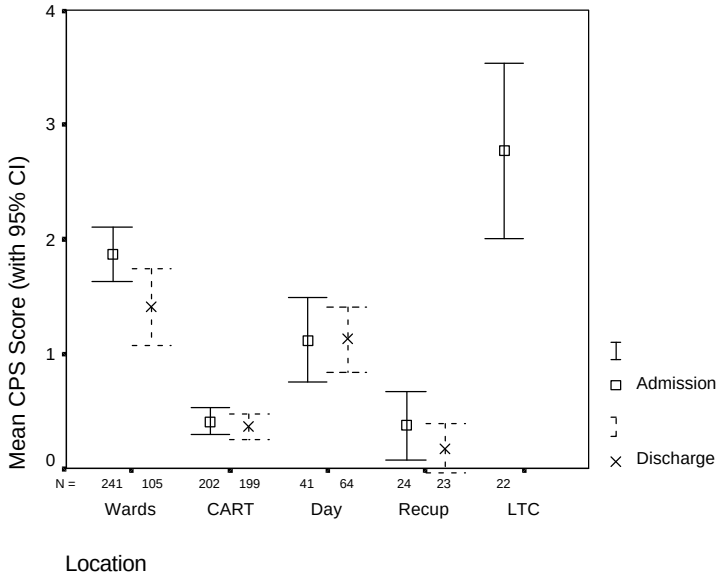
People admitted to long term care are quite different from ICS admissions This suggests that LTC patients are a distinct group, and ICS are not necessarily a real alternative for these people.

Cognitive Function

Along with physical function, an individual's cognitive function affects their need for on-going care. However, in contrast to physical function, a mild to moderate degree of cognitive impairment may make rehabilitation more difficult.

Figure 4 presents cognitive function of patients in the study scored using the MDS Cognitive Performance Scale. It shows the differences between locations on admission and discharge on a scale of 0-6 where 6 equals very severe cognitive impairment [8].

Figure 4. Mean Cognitive Performance Scale Scores with 95% Confidence Intervals



Cognitive function at each setting was significantly different, except between CART and recuperative care patients. Ward and LTC patients were the most impaired, with Day hospital then CART/recuperative care patients progressively less impaired. No significant differences in cognitive function were found between admission and discharge.

The most important feature of this graph is the significantly greater degree of cognitive impairment in LTC. This reinforces the suggestion that these patients are a distinct group, and that

intermediate care cannot ultimately act as alternatives in these cases. However it does not mean that cognitively impaired individuals are always best placed in LTC.

The data was incomplete but the indications are that the more impaired patients go to LTC, and the less impaired patients are either discharged home or receive intermediate care. People with cognitive impairment are effectively denied intermediate care/ rehabilitation, and although they attend a day hospital the function would appear to be “supportive”, rather than rehabilitative.

What increases the likelihood of a patient being admitted to one service rather than another?

The study found that physical function and cognitive performance most influenced to where patients were admitted or discharged. The results of the study shown in Figures 3 and 4 show that there are distinct differences in physical and cognitive status that allow patients to be categorised and that these characteristics determine which of the care locations patients are directed. Statistical analysis showed the following:

Characteristics of patients admitted to recuperative care

- Patients admitted to recuperative care were cognitively intact and with moderate physical impairment, returning to almost complete independence by the time of discharge.
- Mean improvement in physical function was greater in recuperative care and length of stay was shorter than for day hospital or CART (possibly because they had less complex needs than CART where entry criteria include a need for two types of care).
- It is likely that recuperative care enables early discharge from hospital.

Characteristics of patients admitted to CART

- CART patients were cognitively intact and statistical tests suggested that they were initially less physically dependent than those admitted to recuperative care.
- The more modest improvement in physical function during treatment may in part be a reflection of the more independent status of patients on admission and the more complex needs of these patients (CART entry criteria include a need for two types of care).
- Statistical analysis suggests that admission to CART rather than the day hospital is more likely with increased age, although reasons why this should be so remain unclear.
- It is likely that CART enables early discharge from hospital.

Characteristics of patients admitted to the Day Hospital

- Day Hospital patients did not in general have impaired physical function on admission and improvements in physical function were not demonstrated.
- 20% of admissions were cognitively impaired, with higher frequencies of depressed patients.
- In the presence of CART and recuperative care services patients may actually be admitted to the Day Hospital for maintenance rather than rehabilitation.

Statistically meaningful differences exist between patients admitted to each ICS. In practice this confirms that each service focuses on a separate, distinct group. If one service became unavailable, the characteristics of patients admitted to the other services would probably be different.

What increases the likelihood of patients being admitted to long-term care rather than ICS?

The question of whether intermediate care can prevent admissions to Long Term Care was explored by comparing admissions to each type of service. Statistically significant differences were found between the groups for age, physical and cognitive function, with LTC patients being older and more impaired both physically and cognitively. Further analysis supported these results, indicating that LTC rather than ICS admission becomes increasingly likely as age and impairment increase. This however contrasts with other recently published local research[9] that found that age was not a significant factor in discharge destination. The defining criterion is cognitive impairment; only 3 out of the 20 people admitted to long term care were not cognitively impaired, and they were very old.

It would seem that for the vast majority of patients intermediate care is unlikely to prevent many admissions to LTC, unless ICS can cater for people with cognitive impairment.

Computer simulation of changes to individual services

A computer model was built for each individual healthcare location included in the study. Each model was explored existing and preferred levels of resources, with 85% bed occupancy or occupied staff time found to be optimal. The simulation showed that for staffing, rates below 85% indicate that additional work could be undertaken without adverse effect, but above 85% indicated over-work and result in queues for people waiting to be treated. For beds, rates below 85% indicate free capacity. Rates over 85% indicate over-capacity and result in queues of people waiting for beds. These individual models were then used as a basis for a single combined model of the overall healthcare system for older people in Shepway District.

The relationship between resource use and waiting times

Results relating to bed usage

The number of available beds in the hospital wards and recuperative care were altered in the simulation to look at the effect of the time spent waiting for a bed, and the gender restriction on the beds was removed to see what happened to waiting times.

- As the number of available beds increases, waiting times are clearly reduced.
- The optimum bed usage rate is 85% and at this level the wait for beds would be 3 days, above this level queues for beds increase.
- Below 85% occupancy there was no wait indicating under-utilisation of resources.
- Waits differed markedly for male and female patients. When gender-specific differentiation of beds was removed, waiting times for women were dramatically reduced, on one ward by approximately 80%. This was associated with only small increases in waiting times for male beds.
- The shortage of beds across the 7 wards studied was virtually the same. Approximately 5 additional beds in each ward would be required to reduce average waiting times to 3 days or less.

Pressure on hospital beds is well recognised within the NHS. This simulation demonstrated how much change would achieve manageable levels. Increasing bed numbers is not really an option as government policy is aimed at reducing bed use to the minimum sustainable. Mixed wards (wards without gender specific beds) are contentious and it is not the purpose of this research to address ethical or social issues. However policy-makers and service providers may be able to explore the possibility of increasing the number of female beds without the use of mixed bays or wards.

Results relating to staff usage

It is the availability of staff time rather than the numbers of beds that limits the number of admissions to services such as CART and the Day Hospital,. The simulations of staff time were more complex as it takes a shortage in only one group of staff to create a bottleneck and queues for the whole service. In addition, severe bottlenecks for one staff type may mask problems in the distribution of the time of other staff types.

The use of staff and its effect on waiting times was explored. If staff are over-worked, they are unable to complete all their duties within their allotted time, and patients have to wait longer before they can be seen. 85% of time spent with patients was used as the ideal balance between maximising the use of staff and minimising waiting times. In this case 85% indicates that the time taken for a member of staff to perform all their duties in a given day amounts to 85% of their contracted working time. The remaining 15% is left free for other activities.

The Day Hospital

- Simulations for the Day Hospital uncovered pressures on nursing staff. A single nurse on duty works for nearly 100% of the time and as a result, queues to see the nurse are long. This creates a bottleneck resulting in the under-use of other multi-disciplinary team members.
- It was found that by providing 7 additional staff (from different professions) or one extra day of service the optimum of 85% of staff time use for all staff types was reached. In fact it takes just 3 additional members of staff to reduce queues to zero, but utilisation rate remained high, which suggests that queues could develop.

CART

- The simulations for CART found differences in staff usage, e.g. 69% for the nurses and 83% for the physiotherapist (PT). Reducing the number of nurses by one, meant that utilisation rises to 91% with minimal effect on therapist time. (The CART manager is a nurse who therefore had other duties that were not included in the model).
- The effect of increasing the number of admissions was also explored. An increase of 22% resulted in approximate 85% staff usage for all categories of staff except PTs, for whom utilisation rose to 93%. To correct this it was found that to reach staff usage of 85%, 14 staff (3 nurses, 3 physiotherapists, 3 occupational tehrapists, 5 generic rehabilitation workers) were required. This increased the CART capacity from 121 to 148 patients during the simulation period.

Recuperative Care

- During the period of the study the average bed usage over five months was just 35%, i.e. approximately 4 of the 6 beds were not in use at any one time. Staff were correspondingly under-utilised, with the occupational therapist (OT) at 43% and OT assistant at 59%. As could be expected with these figures there were no waiting times for recuperative care.
- If the number of admissions was increased from 13 to 27, 85% bed usage was reached and the average waiting time for admission would be 4 days. 20 admissions were sufficient to bring staff usage rates up to approximately 85% so at maximum bed capacity, staff would be over-utilised and waits for treatment inevitable. To run at optimum capacity, additional staff would be required. Simulations found that an additional 0.4 whole time equivalent OT would be the ideal.
- Recuperative care was distinct from the other services considered in this study, as it was not free at the point of entry with charges to patients after means testing. This may be part explanation of the apparent under utilisation.

Computer simulation of the whole system

The main purpose of this research was to develop a means for determining the extent to which availability of places in community based ICS can reduce the use of hospital beds. The simulations of individual hospital wards illustrated how increasing the number of available beds reduced pressure (waiting times) on hospital beds. A whole system model combining all the locations was developed to explore how intermediate care could achieve the same effect.

Scope and limitations of the system model

The whole system model was formed through interviews with IC employees as well as from relevant literature. The simulation is therefore one of a potential ideal for intermediate care in Shepway given current resources, rather than that of the actual system in place. Patients should be referred to the services most appropriate to their needs, and the decision-making process driven by both the Service Entry Eligibility Criteria and the patient's current status. In reality this was not always the case as some patients who could have benefited from community based ICS were not referred from the rehabilitation wards, and some who were, did not meet the criteria or benefit from the referral. The admission of some people who did not benefit was confirmed in interviews with service managers.

The whole system model examined IC system function. The system model used the position that best fitted the explanations of their service given by service managers and the characteristics of the patients who were being admitted to any of the services. It explored how changing the current position could have the greatest impact on reducing the use of hospital rehabilitation beds.

For the purposes of these simulations, resources were considered in terms of available beds/places. Whilst CART and the Day Hospital do not have a pre-specified number of potential places, admissions to them were dependent on the number of available staff and the number of patients that they could treat effectively. For these simulations both CART and the Day Hospital were said to have had 24 available places initially.

Existing criteria for admission to services.

There is currently substantial overlap between the scope of each service and the rehabilitation wards, as defined by the existing Service Entry Eligibility Criteria. This means that many patients may be apparently suitable for more than one of the services, and are simply placed where space is available, where queues are smallest or where there are no charges subject to means testing. The model suggested that many more people would normally use recuperative care than did in reality.

More selective admission protocols, coupled with sufficient resources to avoid large waiting times, would facilitate a more accurately targeted range of services for existing needs. In the model changes were made to the different services to look at the impact on the system as a whole.

Effect of changes to CART and the Day Hospital

Interviews with the CART service manager revealed that a potential 40 places could be made available given small organisational changes. Therefore a model was developed to explore the effect of this additional capacity by redirecting recuperative care patients to CART when the queue size for recuperative care reached 6 patients. The results were clear, with a dramatic reduction in the queue size and corresponding waiting times for recuperative care (see above paragraph).

If the Day Hospital opening times were extended to include a third day each week with existing daily staffing levels, with the effect that the number of places rose from 24 to 36, it was found that resource use dropped to 28 out of the 36 available places (78%).

Increasing CART and Day Hospital capacity together reduced the pressure on the rehabilitation wards.

Effect of adding New Intermediate Care Services

The simulation process was then taken a stage further, exploring the effects of adding entirely new services to the system. Discussions with service managers highlighted many issues pertinent to healthcare provision for this age group. Of particular importance was treating patients with cognitive or behavioural problems. In Shepway, the existing system does not include intermediate care services targeted specifically at these groups, and the data showed that people with cognitive impairment may be mixed with non-impaired patients (e.g. in the Day Hospital), or admitted to the wards. It is possible that this would be detrimental to patients in both groups, and indeed, problems were reported by service managers.

A new unit catering for up to either 50 cognitively impaired patients or a similar unit for patients with behavioural problems was added to the system. Whether the service was residential or non-residential was not specified as the purpose of the simulation was to find out the effect on the number of patients that could be treated.

In both models a large reduction in queues for admission to wards was visible, especially when the cognitively impaired unit was added. The impact on existing ICSs was smaller, as most patients admitted to the new units would instead have been admitted to the wards. (It would be appropriate to note that this affirms that most ICS referrals are cognitively intact, as admission protocols dictate.) These simulations illustrate that there is a large group of patients requiring a quite specific type of rehabilitation, but with no matching services.

The implementation of a theoretical policy to enable any patient with cognitive impairment to be provided for in community based ICS would result in a major reduction of the number of people who had to be treated in in-patient rehabilitation wards. Where those with cognitive impairment CANNOT go to community based ICS, 57.3% of cases are treated in ICS and 42.7% in rehab wards. Where those with cognitive impairment CAN go to community based ICS, the balance of activity is 75% in ICS and 25% in the rehabilitation wards, a 41% reduction on admissions to in patient rehabiliation.

Conclusions

The diversity and depth of the findings of the ICON project provide new and useful insights into how Intermediate Care Services are implemented and how they interact with each other. ICS effectiveness and efficiency could be greatly assisted if there were greater clarity about which patients would most benefit from specific ICS. This could be achieved by introducing an appropriate single assessment process, better specified service entry eligibility criteria and introducing an integrated referral processes. This could take the form of an ICS 'headquarters' to which all referrals were made. The way that this single point of access to ICS would operate must include well specified processes to ensure that it worked effectively and efficiently.

The application of a standardised single assessment process, Operational Research techniques and new developments in Information Technology can clearly make a major contribution to the development of intermediate care and evaluating the extent to which it can reduce the pressures on the use of hospital beds and admissions to long term care.

A full report of the ICON project is available from CHSS, George Allen Wing, University of Kent, Canterbury, CT2 7JU. www.kent.ac.uk/chss. Tel: 01227 827760.

Acknowledgements

The ICON project has been an enormous undertaking. It took place in an environment of change and very high demand which placed huge pressures on the managers and staff in the services that took part. This included not only those directly involved in the organisation, assessments and delivery of care but also many others who were not directly involved but who gave of their time to enable it to reach a conclusion.

While the implementation of the project created stress, resentment and exasperation for some, it has produced results of enormous value.

The project team is enormously grateful for the contributions that many people have made. We hope that it will contribute to better services, a better working environment for the staff and a better experience and outcome for the people who use the services.

References

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