

# Subacute care and rehabilitation

LEN GRAY

Len Gray is Professor in Geriatric Medicine at the University of Queensland

## Abstract

*Subacute and rehabilitation services are likely to play an increasingly important role in the health and long-term care systems, as population ageing increases the prevalence of chronic disease and disability. The role and scope of these services is difficult to assess in the Australian context due to the paucity of standardised definitions and administrative reporting systems. This paper appraises the role of these services and reflects on principles and evidence that might underpin their future development.*

## Introduction and definitions

The development of modern hospital care has been associated with progressive introduction of inpatient systems that respond to patient care needs other than those conventionally described as “acute”. Initially, wards and programs were established that focussed on promoting functional recovery in patients with acute illnesses that were associated with disability – rehabilitation services. More recently, the emergence of geriatric medicine, dating from the early 1950s, has been associated with the establishment of specialised wards variably focussing on acute care and assessment of patients with multiple illnesses, “frailty”, associated disability, and often psychosocial problems. These units have been termed acute geriatric units, geriatric assessment units and geriatric evaluation and management (GEM) units. Other case types in the sub-acute care environment are palliative, psycho-geriatric and maintenance care (Eagar 1997).

A working description of subacute care has been provided by Levenson (Levenson 2000). His definition is characterised as much by what subacute care is not, as by its own characteristics. He describes it as “providing care for patients with conditions of moderate or low acuity who require specific packages of medical, nursing, and related services.” It is time-limited care that centres around one or more treatment goals. It is not acute care, as the focus is not around treatment of highly acute medical problems, nor is it residential nursing home care, which is for the most part permanent care.

Similar approaches to classification are emerging in western nations. In Britain, inpatient services that operate at a different level to acute or long term care are being described as “intermediate care” (MacMahon 2001; Steiner 2001). The Canadian definition of subacute care is “comprehensive inpatient care...rendered immediately after or instead of acute hospitalisation to treat one or more specific, active complex medical conditions.... Subacute care is generally more intensive than traditional nursing facility care and less than acute care.” (Flintoft, Williams et al. 1998)

In the Australian context, Eagar and Innes suggested that “...the term acute hospital is a misnomer; and few, if any, Australian hospitals ...can be exclusively defined as acute” (Eagar and Innes 1992). They proposed that patients undergo episodes of treatment in hospital that can be classified as acute, sub-acute and non-acute.

Subacute care, within this framework, encompasses periods of care that may be offered in and outside of acute hospital environments, but which focus primarily on aspects of care other than typical acute care requirements. As such, services like rehabilitation and a large proportion of hospital based aged care fall within this definition. Similarly, wards or sites that offer primarily subacute care may be described as subacute care facilities.

This paper considers the contemporary provision of these services and reflects on possibilities for future development.

## Role and function

Taking these definitions into account, subacute services encompass a range of functions within the hospital system. They include medium and low intensity medical care, comprehensive geriatric assessment (CGA), rehabilitation, psycho-geriatric assessment and management and palliative care. Technically, subacute care can be offered in the context of an acute care treatment environment, or alternatively in designated wards or facilities located within an acute hospital facility or at a separate site. Although relatively infrequent in Australia, in other countries, notably the United States of America, such care is often offered on the site of a long-term care facility.

There appear two major reasons to define subacute care as a separate program. These are to create programs that:

1. enhance patient outcomes over and above those that can be achieved in a traditional acute care setting or
2. better match the level of resources to the treatment program goals being sought.

These goals might also be described as “patient focussed” and “organisation focussed” respectively (Steiner 2001). Programs might be offered either in a separate ward or facility or within the environment of either an acute or long term care unit. The merits of each of these approaches will be discussed below.

## Enhancing treatment outcomes

Inpatient rehabilitation services have been widespread in Australia for many decades. The primary focus of rehabilitation is to enhance functional recovery of patients following an acute illness, although some patients may be admitted to such units directly. Typical patient groups include stroke, fracture, spinal and head injury and limb amputation. The level of recovery sought depends on the pre-morbid condition of the patient and ranges from attempts to return individuals to an active role in the workforce to more modest goals which enable the patient to return to a community setting in spite of a considerable degree of residual disability. As with acute hospital services, there are ongoing endeavours to replace traditional inpatient care with community alternatives, probably driven by attempts to reduce overall costs.

Subacute geriatric programs occupy a less certain role in health systems. Lack of clarity around the objectives of such programs has spawned a complex, continuing debate around their efficacy. Geriatric programs (including those based in Australia) operate along a variety of guidelines. Some offer direct admission from the emergency department or community, to varying degrees substituting for general medicine or other specialties. The admission criteria, in some instances, include a lower age limit, typically 75 or 80 years. Alternatively, admission may be based on selection criteria that reflect the likelihood of the geriatric service improving outcomes. These units might be defined as subacute if the level of medical acuity supported in the unit is not “high”.

Other units admit only post acute patients, transferring individuals who require extended stays and would benefit from further assessment or rehabilitation. Patients awaiting permanent residential care would not be transferred to such units unless there was a possibility of materially altering ultimate functional status or discharge disposition.

Combinations of these approaches are frequent, with many units accepting a mix of low or medium acuity direct admissions and post-acute transfers. This model is the most prevalent in Australia (Dorevitch and Gray 1993).

In 1984, Rubenstein reported the results of a randomised controlled trial of a post-acute geriatric assessment unit conducted in a Veterans Hospital in Los Angeles (Rubenstein, Josephson et al. 1984). Patients transferred to this unit were shown to have improved medium term outcomes including reduced mortality over a two year follow-up period. Similar results have been obtained in several subsequent studies, and although the results are not uniformly positive, aggregate analyses (of some 28 studies) demonstrate overall strong impact (Stuck, Siu et al. 1993). The ability to produce sustained improvements in function is doubtful, but several studies have shown at least short term gains (Cohen, Feussner et al. 2002). Careful patient selection is a critical factor in program effectiveness, with patients that are either too well, or severely ill (eg advanced dementia and terminal cancer) appearing to gain no benefit (Winograd 1991). Other success factors include the necessity for full decision-making control to rest with the geriatric team, and the ability to provide post-discharge follow-up (Reuben, Borok et al. 1995).

Few of these studies demonstrate a reduction in index admission length of stay. Often, the initial length of stay increases. However, reductions in subsequent readmissions and hospital stays, and transfers to nursing homes at discharge, appear to result in a nett reduction in institutional care and costs. This observation has implications for the issue of service efficiency.

## Improving service delivery efficiency

The assembly of patients with like care requirements in one unit provides the opportunity to closely match resources (inputs) to service outputs. Allocation of wards to subacute activity thus becomes feasible from an efficiency perspective when sufficient numbers of patients require this form of care concurrently. Allocation of part of a unit to this activity would be somewhat less effective.

Decisions around bed allocation probably need to be made on a local or regional basis, and would depend on detailed analysis of demand for subacute care. Numerous published international analyses suggest that a considerable proportion of hospital beds are being used by patients with non-acute care requirements. However, these studies tend to classify patients into one of two groups only – acute or non-acute (DeCoster, Peterson et al. 1999). A large scale study conducted in Ontario, Canada, encompassing 105 hospital sites, did include the subacute category (Flintoft, Williams et al. 1998). At admission, it was found that among patients in six common diagnostic groups, 62% were acute, 20% subacute and 18% non-acute. Of all bed days utilised after admission by the study cohort of 13,242 patients, 40% were classified as subacute.

While these findings cannot be directly translated to an Australian context, it does suggest the need to investigate whether the current allocation of beds to acute, subacute and non-acute activities is appropriate.

The introduction of prospective payment systems for admission episodes based on Diagnosis Related Groups has intensified the propensity of hospitals to reduce episode length of stays. Efforts to identify casemix systems in subacute care that explain episode costs have been less successful (Lee, Kennedy et al. 1996) (Eagar, Cromwell et al. 1997). Payment systems for subacute care therefore are mainly based around per diem costs. It might be argued that many subacute episodes of care are aimed at prevention of readmission or transfer to long term care rather than to shorten the index episode length of stay, and thus powerful incentives to reduce episode length should be avoided.

## Current provision

Because of lack of conformity on definitions and reporting arrangements at state level, there is no routine information available at national level on either provision or evidence of demand for subacute services, other than aged or “geriatric” services. The National Survey of Hospital Geriatric Services, conducted in 1992, provided some insight into the range and scope of services available (Dorevitch and Gray 1993). This survey was repeated in 2001, as a component of the Australian Health Ministers Advisory Council investigation into issues at the acute aged care, but results of this study had not been released at the time of writing. A brief overview of the results of the 1992 study is therefore provided.

One hundred and fourteen (or 12%) of responding hospitals operated some form of bed based geriatric acute or assessment service of which 71 operated a ward or unit exclusively dedicated to for the purpose. These units tended to be located in large hospitals, comprising over 300 beds, of which 36% operated dedicated units. Aged rehabilitation services, separate from the assessment beds were operated by 13% of hospitals. Overall, there were 3979 geriatric assessment and rehabilitation beds, at the time representing approximately 5% of hospital beds. Relative to the aged population, this represented approximately 3.2 beds per 1000 population aged 70 years and older. The level of provision varied considerably among States, from 4.27 in Western Australia to 1.16 in Tasmania. Unfortunately, comparable information is not currently available for other sub-acute services.

## Interim care for residential care applicants

In strict terms, interim care is classified as “non-acute” rather than subacute care. However, in many quarters this distinction is not clearly drawn, and thus the subject deserves some consideration in this paper. Hospitals are the major source of applicants for nursing home (or high) level care in Australia (AIHW 2002). Typically, rehabilitation and GEM units do not admit patients explicitly for interim residential care, although in the author’s experience, the latter are a major source of applicants. This is because they target patients who are at high risk of requiring residential care in an attempt to restore the patient sufficiently to return home. Some “failures” are inevitable if targeting is precise. The capacity of these units to fulfil the interim care function is limited by the availability of beds, or by the view of practitioners that such patients benefit little from this treatment environment.

On the other hand, it might be argued that the aged-friendly approach of geriatric units would be both more appropriate to the needs of these individuals and more efficient in terms of matching resources to care needs. Currently, interim care units are being sporadically opened in Australia, where sufficient numbers of patients wait long enough periods to justify congregating them in a designated service. The place of such units in the overall design of the hospital and long term care systems warrants careful scrutiny. Their relationship to GEM and rehabilitation units and the extent to which they offer care that is restorative rather than custodial, need consideration. A restorative approach might offer some additional capacity to reduce demand on the residential care system that is currently showing signs of exceeding supply (Gray 2001).

## The future

The development path for subacute services in Australia would be best informed by information drawn from routine administrative systems supplemented by formal research that refines our understanding of the efficacy of interventions offered in these environments. However, as can be seen from the discussion above, current information is very limited. In some States, more robust data is likely to be available. There would seem to be a case for implementation of standard definitions and consequent reporting structures, at least to inform the development of the interactions between the subacute and long term care sectors, the latter being administered at a national level.

Further, the future development of subacute services must be informed by developments in both acute and non-acute care, as there is considerable overlap of activity. The rationale for expansion of subacute services, assuming that such delivery environments can enhance patient outcomes, rests on appraisal of the level of demand. Studies that simply identify the number of bed days that can be classified in each of the aforementioned categories only provide an indication of likely demand. Establishment of separate wards or facilities can only be justified when individual patients require prolonged episodes of subacute care.

Subacute services appear to be an increasingly important ingredient of the health and long term care systems, associated with population ageing. Appropriate provision of such services will require considerable improvements in both formal research and administrative systems to enable more precise planning, development and effectiveness.

## References

- AIHW 2002. Residential aged care services in Australia 2000-01: a statistical overview. Canberra.
- Cohen H J & Feussner J R et al. 2002. “A controlled trial of inpatient and outpatient geriatric evaluation and management.” *N Engl J Med* 346(12): 905-12.
- DeCoster C & Peterson S, et al. 1999. “Assessing the extent to which hospitals are used for acute care purposes.” *Med Care* 37(6 Suppl): JS151-66.
- Dorevitch M, & Gray L 1993. National survey of hospital geriatric services: A Study of Hospital-Based Geriatric Services in Australia. Canberra, Commonwealth Department of Health, Housing, Local Government and Community Services. AGPS.

- Eagar K 1997. "Defining an episode of care: A study of five case types." *Australian Health Review* 20(3): 105-119.
- Eagar K & Cromwell D et al. 1997. "Classifying sub-acute and non-acute patients: Results of the New South Wales casemix area network study." *Australian Health Review* 20(2): 26-42.
- Eager K & Innes K 1992. *Creating a Common Language: The Production and Use of Patient Data in Australia*, Commonwealth Department of Health, Housing, Local Government and Community Services. AGPS.
- Flintoft V F & Williams J I et al. 1998. "The need for acute, subacute and nonacute care at 105 general hospital sites in Ontario. Joint Policy and Planning Committee Non-Acute Hospitalization Project Working Group." *Cmaj* 158(10): 1289-96.
- Gray L 2001. *Two Year Review of Aged Care Reforms*. Canberra, Commonwealth of Australia.
- Lee L & Kennedy C et al. 1996. "Does the NAIP classification predict length of stay in rehabilitation, geriatrics and palliative care?" *Australian Health Review* 19(2): 56-74.
- Levenson S 2000. "The future of subacute care." *Clin Geriatr Med* 16(4): 683-700.
- MacMahon D 2001. "Intermediate care—a challenge to specialty of geriatric medicine or its renaissance?" *Age and ageing* 30 Suppl 3: 19-23.
- Reuben D B & Borok G M et al. 1995. "A randomized trial of comprehensive geriatric assessment in the care of hospitalized patients." *N Engl J Med* 332(20): 1345-78.
- Rubenstein L Z & Josephson K R et al. 1984. "Effectiveness of a geriatric evaluation unit: a randomised clinical trial." *N Engl J Med* 311(26): 1664-70.
- Steiner A 2001. "Intermediate care—a good thing?" *Age Ageing* 30 Suppl 3: 33-9.
- Stuck A E & Siu A L et al. 1993. "Comprehensive geriatric assessment: a meta-analysis of controlled trials." *Lancet* 342(8878): 1032-6.
- Winograd C H 1991. "Targeting strategies: an overview of criteria and outcomes." *J Am Geriatr Soc* 29: 25S-35S.