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*Creating a viable service in the bush: a health case study in a Victorian town*

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This paper presents a practical example of how health services in a community can be maintained (or improved), based on a service planning case study in a rural setting.

In the rural sector particularly, a declining market and cost pressures can result in many local services being shut down and relocated to a distant regional centre. This is especially true of specialist services in a community hospital. When the time comes to update the hospital's infrastructure, planners (and bean-counters) may decide that the costs are too great to justify redevelopment in the face of a decreasing population when considering single components of health care services for a specific community.

When planning a hospital redevelopment the number of beds and other related health services are defined in a Needs Analysis and Service Plan. The number of beds in a hospital has a direct bearing on the capital and recurrent cost of the hospital.

A broader and more flexible approach to health service planning can result in an improved range of service to meet the health and related needs of the community in a manner that is consistent with current best practice. By projecting patient activity and identifying demographic trends, this paper shows how alternative services can be provided to gain better health outcomes for the community.

### **Hospital activity projections**

The starting point is the development of demand indicators for health services in a region. A forecasting tool, *Projection Wizard*, extrapolates trends in patient demand to the year 2016.

Projection Wizard needs two separate data files to forecast hospital activity for Victorian hospital(s). These are:

- population projections by age group, sex and statistical local area (SLA). The source of these projections is the Victorian Department of Infrastructure, *Victoria in Future*, population projections (February 2000); and
- hospital activity. This file is a subset of the Victorian Admitted Episodes Dataset (VAED) and must contain actual episode-level data for the latest period (e.g. 1999-2000). The file needs to include the following fields: age group, sex, patient's SLA, Diagnostic Related Group (DRG), patient care type, hospital-code(s), same-day status, number of separations and length of stay (LOS).

Projection Wizard matches age group, sex and patient's SLA from the two files. In the base period (e.g. 1999-2000), it calculates ratios of a particular characteristic (such as number of separations in a DRG) for each age/sex/SLA cell. It applies this ratio to the projected population in that age/sex/SLA cell to obtain the same number (of separations) in the forecast period.

The base-case projection described above assumes that the only changes over the projection period are due solely to demographic effects (that is, population growth/decline, ageing and population movement between SLAs). For example, if the male population aged 20–24 years in a SLA were to double over the projection period, then the number of separations for all persons in this category (that is, males, 20–24 years in the SLA) would also double.

In the base-case projection, other factors such average LOS, mix of DRGs and the ratio of same-day to multi-day stay are held ‘constant’ over the period. (In practice, these will change somewhat since ageing of the population generally results in a ‘sicker’ population, with increased average LOS and a shift to more complex DRGs.)

Once the base-case has been analysed, projections can be modified to take account of the effects of:

- changing technology;
- alternative organisational structures;
- different management practices;
- changes in service delivery policies; and
- variations in self-sufficiency and leakage rates.

These modifications need to be transparent and done in wide consultation with stakeholders. Put simply, any forecasts that cannot be explained or are seen to come out of a ‘black box’ are not likely to be accepted by those with a vested interest in the hospital community.

The level of detail of Projection Wizard output depends on the detail of the original hospital activity data. Typically, projections show separations and beddays by individual hospital(s) or DRGs for the base year, and for 2000–01, 2005–06 and beyond.

The data provided by Projection Wizard is then inserted into a summary table for the calculation of beds by patient type.

Specific patient types which can indicate a need for alternative services can be nursing home type (NHT) which can be indicative of the need for additional aged residential care beds and/or the need for greater access to rehabilitation, geriatric evaluation and management (GEM) and community based services in either the person’s home, or at community health and community rehabilitation centres.

The percentage of multi-day stay compared to same-day stay for hospitals which undertake surgical procedures can be indicative of opportunities to increase the level of same-day stay providing the DRGs which are currently being undertaken as multi-day stay are compatible for same-day stay. To support the shift to same-day surgical activity a pre-admission service may need to be implemented and this would also assist in a shift to day-of-surgery admission. This would reduce the number of multi-day beds required and decrease the length of stay in hospital for patients.

## **Area based needs analysis by DRG**

To identify areas of service need for a specific geographical area, it is prudent to identify all separations at all hospitals accessed by residents of the region at the DRG level. It is possible to identify specific DRGs which could be undertaken if appropriate services were provided locally. The analysis is usually undertaken at a SLA or local government area (LGA) level.

When the most appropriate suite of services has been determined, bearing in mind the need and capacity of the hospital to delivery the service with the available staff mix, the number of beds can be determined. The number of beddays is calculated by multiplying the number of separations by the average length of stay for each DRG. The number of beddays is then used to calculate the number of beds, by applying the appropriate occupancy rate.

Although the initial focus on beds in a hospital redevelopment can be seen as maintaining the status quo, in reality it can be an opportunity to identify the real needs of the community and provide alternative ways of delivering comparable or enhanced services for a local community.

It is important to consider the effects of an ageing population in defining the range and quantity of services in a rural setting. Specific factors affecting service demand are:

- a requirement for more health services per head of population;
- greater complexity of medical conditions with residual co-morbidities;
- greater need for rehabilitative and restorative care;
- longer lengths of stay for the same condition;
- lifestyle conditions, for example diabetes and respiratory disease requiring repeat inpatient episodes;
- need for maintenance as well as restorative care; and
- greater need for community resources to allow for discharge from inpatient episode.

## **Health and related services required by a small rural community**

A typical range of health services in a small rural community include:

- acute health;
- aged residential care (nursing home and hostel);
- doctors;
- community health centre focusing on health promotion and health screening;
- maternal and child health; and
- district nursing; and
- allied health (such as physiotherapy and podiatry).

These services are traditionally provided from the local hospital and sometimes by the local government authority. To access services patients are required to travel to the service and only a limited range of services (eg district nursing, home help and meals-on-wheels) are undertaken in the patient's home.

The needs of an ageing population is for services that provide a health focus with a view to maintaining independence, residential base living (rather than institutional care in nursing homes or hostels) and a promotion of lifestyle to minimising the effects of degenerative disease and chronic illness.

A focus on acute health services remains within local communities. However, the quantity and level of service can differ from that traditionally associated with a community hospital when the majority of medical care was provided by general practitioner, general physicians and general surgeons.

### **Birth services**

An analysis of the activity projections described above typically shows a significantly declining birth rate in the rural community. This, combined with the increased age at which women are having babies and the rise in specialisation for obstetric services calls into question the provision of birthing services at local community hospitals. General practitioners are either not providing obstetric services or only undertaking uncomplicated deliveries. To meet the needs of rural pregnant women, shared antenatal care between an obstetrician at a larger regional centre and the woman's local doctor can provide a service that minimise the need for repeated travel and providing a safe level of antenatal care. Although the woman then delivers her baby at a regional hospital, she can transfer back to the local hospital for postnatal care, thereby being closer to family and friends during this time. An alternative to a prolonged period in hospital can be the use of hospital in the home, post acute care and visiting midwifery services during the postnatal period.

### **Effect of ageing population on demand for services**

A general feature of rural areas is the ageing of the population. The activity projections outlined above usually show stable or falling demand for services provided to young people and a big rise in the number of elderly people requiring health services.

The provision of health planning in a rural setting is biased towards elderly people for another reason. Hospital services required by non-elderly patients tend to be single-episodic and non-chronic. They are typically of higher complexity and draw on specialised services. These services are frequently technology-based and often require theatre-based surgery. Consequently, they are more likely to be provided at a larger regional hospital than in a rural location.

### **Specific health related service for the elderly**

A category of patient found in acute hospitals is Nursing Home Type (NHT). These patients are usually elderly with a range of chronic medical disorders and may have some level of cognitive impairment. The patients are in hospital and receive accommodation, nursing care and a minimal need for medical and allied health services. The original admitting diagnoses in many instances has been resolved or the symptoms greatly reduced. However, the process of being hospitalised has resulted in the person losing some of his/her basic daily living skills and become dependent on nursing staff to undertake a progressively greater number of basic care activities. If rehabilitation and GEM services are provided in rural settings, the number of NHT patients can be

reduced and more people will return to their own homes rather than residing in either a nursing home or hostel.

An alternative to hospital care for some elderly patients, is an increase in district nursing services, the provision of hospital in the home and therapy in the home, day rehabilitation, attendance at day centres and respite care. Minimisation of the time elderly people spend in hospital can influence the potential for:

- hospital acquired infections;
- breakdown of social support structure (for example, ageing carers);
- deconditioning and general weakness associated with prolonged bed rest; and
- cognitive decline experienced by people with dementing illness in unfamiliar surroundings.

The elderly experience a range of disease which are chronic in nature with repeated acute exacerbations, typically these are respiratory and bone/joint conditions. These diseases are responsive to preventative management resulting in less acute exacerbations. Preventative management includes community based programs, in home services or regular short stays in hospital for “tuning up” rather than in-hospital stays only in times of crises.

Some elderly people require progressively greater level of support in activities of daily living. In the rural sector this support is usually provided in a nursing home or hostel once daily visits by the district nurse and/or home help become inadequate. There are other options for elderly people who require additional support to remain at home, these include:

- multiple visits by the district nurse per day;
- extended home help where the helper spends several hours in the elderly person’s home which can give carers a break and therefore sustain the caring relationship;
- Community Aged Care Packages (CACPs) which is funding to purchase in services equivalent to hostel level care; and
- regular out of home respite either during the day (day centre) or for several days (nursing home or hostel respite).

### **How can these services be provided in the smaller rural settings?**

The notion of providing services to people to address the issues of preventing illness or the recurrence of illness, delivering quality and safe services close to where people live and maintaining elderly people in their own homes for as long as possible are all desirable and in the larger regional and metropolitan areas usually achievable.

The problems of delivering these services in the smaller rural setting often relates to the individual service being small and unable to have the complement of required health disciplines available locally. Alternatively, the number of hours for the service may be so small that health professionals are not attracted to the positions.

To provide the range of health and community services required in smaller rural settings a number of options can be employed. All of the options have a central theme of

aggregating like service or skill requirements to achieve a critical mass to create a position which will attract applicants and a peer support structure which will promote clinical excellence and support. This will reduce staff turnover and providing continuity of service for the community.

The premise of aggregating services to meet community need and viability issues has two major thrusts: services which require the provision of bed-based facilities and services which require specific health care professionals (both institutional and community based).

Bed-based services in a small rural setting can include:

- low complexity acute;
- geriatric evaluation and management (GEM);
- palliative care;
- nursing home; and
- hostel accommodation.

All of these services require varying levels of input by nurses, doctors, allied health professionals, administration and hotel-type services. A comprehensive list of services required by rural communities and the disciplines required to deliver these services is shown in Table 1. For many of these services the level of input from any one discipline is very small.

In some communities even when all possible services requiring distinct health professionals are aggregated, the quantity by discipline is still so small that recruitment is nearly impossible. A method to address access issues is for subregional areas to form an administrative alliance to employ specific disciplines to serve the needs of several small communities.

For specialist services, in particular rehabilitation, psychiatry and GEM, telemedicine has the potential to deliver services on a regular basis with face-to-face consultation occurring infrequently.

The needs of small rural communities are able to be met if creative solutions are employed and there is a commitment to health needs for a whole community rather than just the provision of hospital beds in the institution of the hill.

Table 1. Services Required by Rural Communities and the Health Professions Required.

	Nurses	Doctors	Physiotherapy	Occupational Therapy	Podiatry	Dietetics	Speech Pathology	Pastoral Care	Administration	Catering	Cleaning	Personal Carers
Acute Health beds	x	x	x	x	x	x	x	x	x	x	x	
Geriatric Evaluation and Management beds	x	x	x	x	x	x	x	x	x	x	x	
Palliative Care	x	x	x	x	x	x	x	x	x	x	x	x
Nursing Home	x		x	x	x	x	x	x	x	x	x	x
Hostel	x		x	x	x	x	x	x	x	x	x	x
Community Aged Care Packages	x		x	x	x	x	x	x	x	x	x	x
Hospital In The Home	x	x	x	x	x	x	x	x	x	x	x	x
Post Acute Care	x	x	x	x	x	x	x	x	x	x	x	x
District Nursing	x								x			x
Community Health	x	x	x	x	x	x	x		x		x	
Health Promotion	x	x	x	x	x	x	x	x	x	x	x	
Community Rehabilitation Centre	x	x	x	x	x	x	x		x	x	x	x
Day Centre	x		x	x	x	x		x	x	x	x	x
Maternal and Child Health	x	x				x			x		x	
Respite								x	x	x	x	x
Meals on Wheels									x	x	x	x
Home Help									x		x	x