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Hospital payment arrangements to encourage efficiency: the case of Victoria, Australia

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Abstract

The casemix funding arrangements introduced in Victoria on 1 July 1993 represent a significant departure from the previous approaches to public hospital funding in Australia. They are designed to change the economic incentives on hospitals by linking payment to the number and case complexity of patients treated. The new funding arrangements include a combination of fixed and variable payments to hospitals for inpatient services. Outpatient services remain funded on a historical basis. Special payments are made for teaching and research functions. Total payments to hospitals are capped through operation of an 'Additional Throughput Pool' which allows price to fluctuate inversely with volume to ensure an expenditure limit. Because of operations of specific conditions on the Additional Throughput Pool, hospitals were given an incentive to reduce waiting lists. Despite the success in reducing waiting lists and budgets, there are a number of problems with the casemix approach including both technical issues (how are payment rates to be updated?; the failure to address problems of capital) and ethical issues. These are discussed in the paper.

Keywords: Diagnosis Related Groups (DRGs); Hospital funding

1. Introduction

Although cost containment has been on the policy agenda for almost 20 years, it is only in the last decade that the technology for systematic comparisons of hospital costs has been available. The first response of hospitals accused of being expensive was always that their patients were different and in the absence of methods to standardise for casemix differences, cost comparisons were fatally flawed. The situation

* [redacted].

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has now changed: hospital activity can be described using Diagnosis Related Groups (DRGs). Because of their design characteristics, in particular because patients in the same DRG are expected to consume similar amounts of resources, DRGs are able to be used to standardise for differences in the casemix of hospitals and thus allow comparisons of hospital efficiency.

DRGs were originally developed in the United States to assist in quality assurance programs [1], but their use as a description of treated patients for payment purposes in the U.S. meant that casemix standardisation for payment or budget purposes had become a reality. Victoria (population 4.2 million), one of Australia's six States, commenced using DRGs for hospital payment on 1 July 1993. Casemix funding was able to be introduced because of an unusual confluence of historical and contemporary factors discussed below, but required development of a funding system suitable for a public rather than a private oriented system.

2. The international context

The introduction of a fixed price Prospective Payment System (PPS) in the United States represented a watershed in the development of hospital funding policy. Enacted in 1983, under PPS, U.S. hospitals are reimbursed on a standard rate by DRG for treating Medicare patients. (U.S. Medicare covers the elderly and disabled persons.) PPS replaced a cost-reimbursement system and was implemented over a number of years under a blending system where an increasing proportion of reimbursement per case was on a national, formula basis, as the hospital-specific cost reimbursement was phased out. (For a full description and evaluation of the U.S. Medicare arrangements see Russell [2].)

The use of DRGs for prospective payment in the United States stimulated interest in Europe to use DRGs in budget setting. A number of DRG projects were developed, often involving Professor Bob Fetter, the U.S. developer of DRGs [3]. Although these projects were initially directed at testing the applicability of DRG definitions and applying the Yale Cost Model to cost hospital services at the DRG level [4,5], these projects often led into an interest in using DRGs for hospital budgeting [6], with an output based *funding* system being introduced in Portugal in 1987 [7,8] and in Norway in 1991 [9].

These European developments were more relevant to Australia than the U.S. PPS policy because of the similarity between the role of government in hospital funding in Europe and Australia. Knowledge of these European developments was accessible in Australia partly because of contact with Professor Fetter, who was a regular visitor to Australia, and partly through an international conference on DRGs held in Sydney in 1988 [10].

3. Australian developmental work

Early work on DRGs in Australia involved assessing whether the groups developed in the U.S. were appropriate to describe Australian treatment patterns. In this work, commissioned by the Victorian Government and using Victorian public

hospital data, Palmer et al. assessed the homogeneity of each DRG in terms of length of stay and whether the DRG surgical hierarchy used in the development of DRGs in the U.S. was maintained in the Australian data [11]. Initially, DRGs were simply used to compare length of stay, but their potential for cost comparison was also recognised [12]. A report on issues that needed to be addressed prior to using casemix for funding hospitals and charting some policy options was also commissioned by the Commonwealth Government [13]. Funds were then allocated by the Commonwealth Government to analyse ways in which DRGs could be used for casemix funding, resulting in a major report on this topic by economists [14]. A further report on casemix funding issues was also commissioned by the Commonwealth Department from Professor George Palmer of the University of New South Wales [15].

The three casemix funding reports adopted different approaches to the design of casemix funding arrangements including differences in terms of Commonwealth and State roles; use of marginal vs. average payment levels; and capping arrangements [13–15]. The reports all identified the need for further modelling of casemix funding and proposed strategies to deal with those areas of hospital activity which cannot be described using DRGs (especially outpatients and non-acute services).

4. Preparation for casemix funding

Victoria had a long history of DRG development prior to 1993: Health Department had published reports describing the activity of Victorian public hospitals in DRG terms from 1985, and had also provided a detailed report to each public hospital on its relative length of stay by DRG. The Department also published what became known as the 'Rainbow Book' (because different sections of the book were on different coloured paper) which provided data on comparative hospital efficiency — with the principal measure of hospital efficiency being cost per DRG weighted patient treated. (The resource weights in the Rainbow Book were U.S. Medicare weights.)

5. Policy context

The key trigger point for the transformation of DRGs from being simply a method of describing hospital activity and comparing hospital performance to a way of funding hospitals came with the election of the Liberal State Government in October 1992 (for a more complete description of the political issues involved in the implementation of casemix funding, see Lin and Duckett [16]). The new Government, which was elected with a strong political mandate and a large majority in both Houses of Parliament, was committed to substantial budget savings and major reform of the hospital system.

Although the previous Government had espoused program budgeting, the program structure did not follow the organisational structure within the Health Department Victoria nor was there clear accountability for the performance of the Hospital program [17]. Further, public hospitals provided a broad range of services cutting

across many of the new programs of the Department. A major task which took place simultaneously with planning for the introduction of casemix funding was the disaggregation of hospital budgets into the new departmental programs. This facilitated the introduction of casemix funding as many of the areas transferred out of the acute health programs (e.g. psychiatric services) were not well described with casemix measures and hence would not be amenable to casemix funding. The functions transferred to other programs were funded, in 1993–1994, on an historical basis.

6. Hospital funding prior to 1993

The policy environment within which Victorian public hospitals functioned in 1993 still bore the traces of the charitable antecedents of both the hospitals and the Government agency which regulated them, the Health Department Victoria. Although Boards of Management of public hospitals were appointed by the Governor-in-Council on the recommendation of the Minister for Health, public hospitals did not see themselves as part of Government, nor answerable for their activities to the Department.

Relationships between the 150 public hospitals and the Department were principally the responsibility of the Department's Regional Offices of which there were three in Melbourne (accounting for about 25% of the hospital budget each) and five in rural Victoria (together accounting for the remaining 25% of the budget). Metropolitan regional offices had a staff of about 20. In 1992–1993, the budget for Victoria's public hospitals was slightly over A$2000 million, with over 75% of this being allocated to the largest 30 hospitals. In all, public hospitals treated over 700 000 inpatients in that year.

In common with other countries, Victorian public hospitals have traditionally been funded on an historic basis. Prior to the 1980s, hospitals were subject to detailed input controls including specification of the number and type of staff to be employed, and detailed specification of various categories of non-salaried expenditure (pharmaceuticals, other goods and services, etc.). This detailed input control was slowly relaxed into two broad headings of salaried and non-salaried expenditure.

The mid-1980s saw the introduction of 'health service agreements' which provided more autonomy to hospitals and replaced detailed input control with broad specification of expectations of hospitals in terms of number of patients treated and provided funding to hospitals in a single broad category ('global budget'). The output orientation of health service agreements was seen by the Health Department and Government as a key method of improving hospital efficiency. However, a Parliamentary review in 1992 found that:

'while health service agreements may have contributed to overall efficiency gains there is little tangible evidence to indicate that they have tackled the problems of discrepancies in hospital performance. ... health service agreements have not achieved a significant move from historical patterns of funding' [18].

The introduction of casemix funding in 1993 represented a shift from global budgets to output-based funding, thus completing the transition from the input funding of the earlier period.

7. The objectives of output-based funding

As indicated above, the Government came to office with a commitment to a major reduction in Government expenditure, with the Health portfolio being required to make an effective 15% budget reduction over a 3-year period (1 July 1992–30 June 1995).

It was quickly realised both inside and outside the Health Department that if budget reductions of this size were inevitable, then the only way in which they could be fairly applied was to target the budget reduction at inefficient hospitals: a simple across-the-board flat cut would be unachievable in the efficient hospitals and generous to the inefficient ones. The leadership of the main industry group, the Victorian Hospitals' Association, supported the approach of targeting inefficient hospitals for larger budget reductions.

At the same time, the Government was concerned at the relatively large hospital waiting list (about 30 000 patients were on hospital waiting lists, about 5% of whom were in urgent need of care — so called Category 1 patients). The Government had made a pre-election promise to reduce waiting lists and was concerned to ensure that the budget reductions did not lead to an increase in the waiting lists.

Previous attempts to reduce waiting lists had demonstrated that simply increasing the number of patients treated was not enough to yield reductions in waiting lists [19] and therefore it was important to ensure that any increase in patients treated was targeted to give priority to patients who were on the waiting lists.

In summary therefore, the objectives of the reforms were:

- to reduce total hospital expenditure;
- to improve the efficiency of public hospitals; and
- to provide for an expansion in the number of patients treated and thus to allow a reduction in waiting lists.

The first two objectives were inter-related: the large budget cuts required targeting of inefficient hospitals which thus improved the overall efficiency of the system as a whole.

The government's budget reduction targets could not have been achieved in the absence of a significant change in the industrial environment in Victoria. Within weeks of its election, the government introduced legislation which abolished the pre-existing industrial relations framework, replacing a centralised system based on arbitration, with one based on individual employment contracts. The new legislation reduced the role and powers of unions and, conversely, increased the powers of individual employers. Despite widespread public opposition to the changes, and significant industrial action, the government pressed ahead with its proposals. The new industrial environment thus weakened the bargaining position of unions in the health sector and facilitated the staffing reductions necessary to achieve the health sector budget targets.

Despite its aggressive industrial stance, the government eschewed forced redundancies, relying on a program of encouraging early retirement and voluntary resignations. This program provided once-off funds to public hospitals to pay out employees according to centrally determined rates, with allocation of funds to hospitals being based on expected need for voluntary departures as measured by expected

budget cuts over the three financial years from 1992–1993 to 1994–1995. The voluntary departure program enhanced hospitals' staffing flexibility and ability to respond to the changed incentives associated with casemix. The program thus allowed cost *restructuring* in hospitals — changing the fixed/variable ratio — rather than simply cost reduction.

8. Identification of core acute health business

The sine qua non of output-based funding is the identification, definition and measurement of the outputs to be funded. As indicated about, the first step in introducing casemix funding in Victoria was to identify 'outputs' (or, at least, functions) to be funded by other departmental programs. The next step was to define what services provided by hospitals were appropriately funded from the Acute Health budget. This involved a detailed process of separating core business from non-core. Subsequently, core business was further categorised into separate, definable outputs.

Historically, many employee benefits had been subsidised from the core operating budget of the hospitals, most notably staff cafeterias and staff accommodation. In order to develop a coherent framework for identifying these subsidised activities, the concept of 'business units' was established. In brief, a business unit was an operating unit of a hospital which could legitimately be regarded as selling services to staff or providing (selling) services to private patients which could be recovered by fee-for-service arrangements. The implicit expectation was that such units would be run on 'business-like' lines possibly at arms length from the hospital board. Examples of business units included the staff cafeterias and also pathology services which provided tests for private patients.

Business unit costs and revenue were simply removed from hospital budgets: the recorded (funded) gross operating cost of hospitals were reduced by the amount of revenue that had previously been received and the revenue targets for the hospitals were reduced by an identical amount. The separation of business units from core functions was thus cost neutral to both government and hospitals, but these changes made hospitals accountable for the financial performance of these services which were then not funded as part of the ordinary operation of hospitals under the casemix funding arrangements.

9. Sub-programs

One of the common criticisms of casemix funding is that many activities (outputs) of hospitals could not be described in terms of conventional casemix measures and that casemix funding did not recognise that the costs of teaching hospitals were greater than non-teaching hospitals.

This criticism can, of course, be addressed in the design of the casemix funding arrangements. In a way analogous to the programmatic separation, it was necessary to identify each of the main types of output which hospitals produce. In particular, it was recognised that the increased costs of teaching hospitals were in part due to

the fact that those hospitals provide an additional 'product' in the form of training of nurses, interns and resident medical staff. These different types of output were recognised by dividing hospital activities into four main 'sub-programs' or categories of outputs:

- inpatient services;
- outpatient services;
- training and development activities (including some recognition of research activities in hospitals); and
- other specified programs.

Separate funding arrangements were developed for each of these sub-programs with the inpatient sub-program being funded on a casemix basis and the other sub-programs being funded on a mixture of casemix, historic and output bases. These separate funding arrangements are described below.

10. Casemix funding for inpatient services

The overall design of the inpatient funding arrangements involved a combination of fixed and variable payments for inpatient services. The use of a fixed and variable split is consistent with an 'economic' approach to resource allocation in the public sector and would ensure that hospitals would be encouraged to provide inpatient services up to the point where their marginal costs approximate the price (which is set roughly at average variable costs) paid to their patients [20].

As indicated above, the Department's 'Rainbow Book' included information on average cost per DRG weighted patient treated in each Victorian hospital. (This average cost was calculated simply as total inpatient cost divided by total DRG weighted patients, it thus did not require detailed costings at each hospital.) Given the budget context of a need to reduce overall hospital expenditure, a base payment price based on a 'benchmark efficiency level' rather than average cost across all hospitals was used as the payment basis.

The price was set by the Department so that a relatively small number of hospitals, of all sizes and types, was able to treat patients at a cost lower than this and therefore this price was seen as achievable and fair. It also enabled the budget targets to be achieved. The 'base efficiency level' used was $1950 per public DRG weighted case ($1650 per private DRG weighted case). Most hospitals had costs above this level and budget reductions were targeted towards these hospitals.

10.1. The unit of payment

The Australian National Diagnosis Related Group (AN-DRG) classification system was adopted for payment purposes. This system had recently been released following a Commonwealth Government project to develop an Australian modification and standardisation of DRGs. Prior to 1993, the Department had used a relatively dated U.S. DRG classification system (Health Care Financing Administration version 3).

Casemix funding relies on having credible resource weights to be used in funding. Since most of Victoria's major teaching hospitals had implemented patient level

costing systems or were in the process of doing so, relative resource weights were able to be based on data from these systems [21].

As with all case payment arrangements, an important issue was how to deal with exceptional cases or 'outliers'. Outliers are defined in Victoria using the following formulae for high and low trimming criteria:

Low stay trim point for DRG_i = 1/3 average length of stay for DRG_i

High stay trim point for DRG_i = 3 × average length of stay for DRG_i

(These simple, easily explained criteria were derived following an analysis of the distribution of length of stay in Victorian hospitals [22].)

Outlier payments are incorporated into the routine payment arrangements using the concept of 'inlier equivalent separations' based on a similar approach developed for use in Ireland by Dr James Vertrees of SOLON Consultants. Essentially, the payment for long stay outliers was folded into the inlier payment to create an inlier equivalent separation which in 1993/1994 was calculated as follows:

$$\text{Inlier equivalent separation} = \left(1 + \frac{\text{Total days above outlier trim point}}{\text{Average length of stay for the DRG}}\right)$$

An inlier, with zero days above the outlier trim point, thus has a value of one inlier equivalent separation. The longer the outlier stay, the greater would be the value of the case in terms of inlier equivalent separations. Implicit in this calculation is that the costs of an outlier day is related to the average cost per day of an inlier separation.

The definition of inlier equivalent separation was changed for 1994/1995 by using twice the average length of stay rather than average length of stay in the denominator of the inlier equivalent separation calculation. This approach yields a smoother transition in expected costs of long stay patients: if costs are expected to be higher in the first few days of stay and lower thereafter, the costs of the first high stay outlier day will be somewhat lower than the average cost of all inlier days.

The inlier equivalent separation is multiplied by the resource weight for that DRG to calculate a *weighted* inlier equivalent separation (WIES) which became the basic unit for payment.

10.2. The variable payments

Setting the appropriate level of the variable payments was one of the key policy decisions of the new casemix payment arrangements as the variable payment was expected to drive the desired change in hospital behaviour. In particular, the variable payment needed to be set to reflect marginal costs in an efficient hospital but not to provide too great an incentive to expand activity. It was assumed that variable costs were approximately 50% of average costs, an estimate supported by data from hospital costing systems [21].

As the 'benchmark efficiency price' was $1650 per private WIES, a variable payment of $800 per (private patient) WIES was used. The variable payment of $800 per case was only guaranteed up to a 'base amount' (number of separations), which

was the activity level of the hospital in 1992/1993. All activity above the base amount was to be reimbursed from an 'additional throughput pool'.

10.3. Modifiers

Unlike the U.S. Medicare Prospective Payment System where a complex range of modifiers are applied to the ordinary base payment arrangement, the only modifiers of the ordinary case payment in Victoria apply to rural and isolated hospitals and even here, a narrow range of cost differentials was recognised. This additional payment is simply based on the additional costs incurred relative to metropolitan hospitals, for ambulance services to transfer their patients for treatment to more sophisticated hospitals. (In Victoria, rural hospitals are defined as those hospitals in any of Victoria's five rural regions, and isolated hospitals are defined as hospitals in those regions which are more than 50 km from a hospital with specialist surgical facilities).

The modifier adds an extra $14 in the case of rural hospitals and $35 in the case of isolated hospitals to the variable payment for each WIES. The value of this additional amount was based on an analysis which showed that, on average, ambulance transfer of patients to other hospitals costs this amount.

10.4. Public patient supplement

In Australia, medical costs (including surgeons' fees, and pathology and radiology costs) for private patients are met by the patient and reimbursed through the Commonwealth Government's Medicare health insurance arrangements. On the other hand, similar costs for public patients are paid for by hospitals who employ medical practitioners on a variety of remuneration modalities (salary, part-time (sessional), fee-for-service). Treatment of a public patient thus involves provision of an additional product compared with treatment of a private patient in the same DRG.

In order to compensate for differences in public/private mix, the new funding system introduced a special supplement for each public patient to account for the increased costs incurred in providing medical services to those patients. The payment ($300 per WIES in 1993/1994) was based on an analysis of the average cost for medical services in Victorian hospitals. The payment was increased to $315 for 1994/1995.

10.5. Additional throughput pool

One of the difficulties with implementing casemix funding arrangements in a budget system is to reconcile the need to cap expenditure to that allocated by Parliament while providing incentives to allow hospital budgets to treat additional patients in response to changing demand. In Victoria, this was done through creation of an 'additional throughput pool' which was designed to pay for any increase in patients treated. In 1993/1994, sufficient funds were set aside to pay for a 7% increase in patients treated in the first year of casemix funding.

The size of the additional throughput pool was essentially a policy judgement and was based on anticipated elasticity of hospital activity. (Historically, there had been increases of 4–5% in patients treated in previous years.)

Allowing hospitals to receive additional funds for additional workload was also

a very politically attractive aspect of the new policy and represented a major change in the incentives applying to hospitals. Previously, hospitals had received a fixed (capped) budget regardless of whether they increased the number of patients treated. Hospitals responded to increases in patient demand (and increased ability to treat patients by reduced length of stay) by reducing beds either permanently or by temporary closures.

A capped additional throughput pool is similar to the approach to output-based funding advocated by Palmer et al. and the 'public competition' approach advanced by Saltman and Von Otter which provides a fair method of allocating funds between hospitals with incentives for improved efficiency without the transaction costs and other dysfunctional aspects of purchaser-provider arrangements [15,23,24]. The operation of the additional throughput pool is also analogous to the Volume Performance Standards which operate in U.S. Medicare, and similar arrangements have also been advocated as part of the U.S. Health Care reform proposals [25].

Funds from the pool are allocated to hospitals in proportion to their share of additional throughput and the price per additional patient treated fluctuates to ensure that total payments from the pool are capped. (Essentially, the funds available to the pool are determined in advance by Government, and the additional activity to be funded from the pool is determined during the relevant quarter by hospitals, leaving price per unit of activity as the only variable).

Algebraically, the additional throughput pool is allocated on a quarterly basis as follows:

$$A_i = K \left(\frac{W_i - b_i}{\Sigma_i (W_i - b_i)} \right)$$

where A_i = Additional throughput pool payments to hospital i (in the relevant quarter)
K = Funds released to the additional throughput pool (for the relevant quarter)
W_i = Total WIES in hospital i (in the relevant quarter)
b_i = Base WIES for hospital i (in the relevant quarter)

Fig. 1 shows a diagrammatic representation of the operation of the additional throughput pool.

The initial proposal was that the Department would guarantee at least $600 per case (and no more than $800 per case) for the first two quarters of the financial year, to be funded by reducing the pools in the third and fourth quarters of the financial year. The distribution of funds from the additional throughput pool takes place about 10 weeks after the end of each quarter when diagnosis and procedure coding, and assignment of DRGs, has been completed. (Timelines for such coding have been incorporated in Departmental policy statements and hospitals are penalised for failing to adhere to the timelines.)

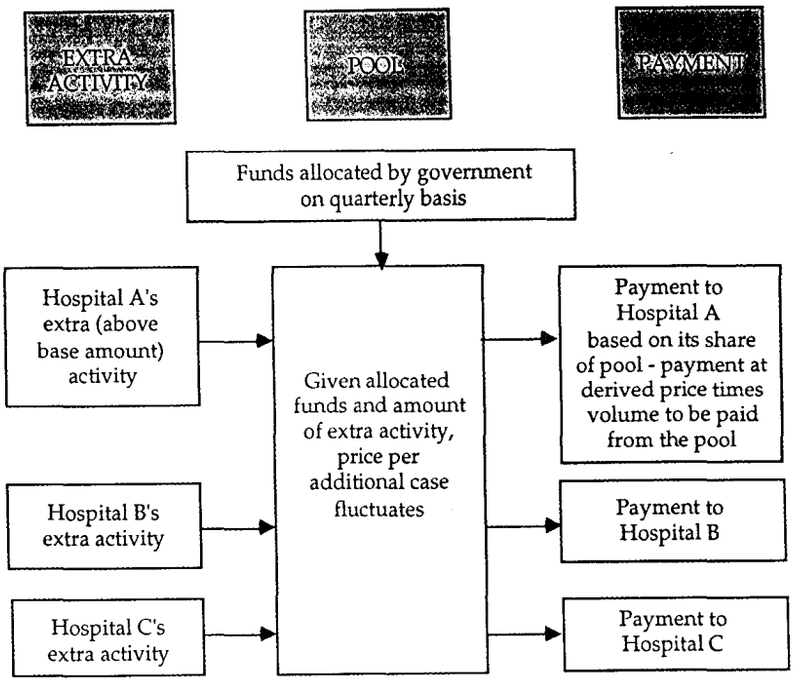

Fig. 1. Operation of additional throughput pool.

10.6. Conditions on access to the additional throughput pool

Access to the additional throughput pool is of significant benefit to hospitals: it transforms their budget from being a fixed allocation regardless of number of patients treated to one which increases, albeit at a marginal cost rate, with increased volume. Hospitals could thus use the additional revenue gained from the additional throughput pool to mitigate the effect of the budget cuts. As hospitals thus have a significant interest in obtaining access to the pool, the Department was able to use such access as a lever to ensure achievement of its policy objectives.

The single most important condition on access to the additional throughput pool relates to the size of waiting lists. Reduction of waiting lists was a major goal of Government, with previous policy experience indicating that additional funding (and volume) might not lead to reduction in lists. In order to give hospitals an incentive to manage their own waiting lists, and indeed, to give priority to waiting list patients, a condition was placed on access to the additional throughput pool for the third and fourth quarter of 1993–1994 (i.e. commencing 1 January 1994).

Hospitals which had any Category 1 (urgent) waiting list patient waiting more than 30 days on 1 January 1994 were to be denied access to the pool for subsequent (relevant) quarters until these lists were cleared. A similar restriction relating to Category 2 waiting list patients applied from 1 April 1994. This Category 2 restriction was subsequently modified to require a phased reduction in Category 2 waiting

list patients with an additional requirement of no Category 2 patient waiting more than 90 days by 1 January 1995.

Early evidence indicates that these constraints have had the desired effect and waiting lists have declined in line with the Government targets.

10.7. The fixed amount

As indicated above, about half the average $1650 cost of treatment was estimated to be variable (and is now funded under the variable payment arrangement outlined above) and the remainder was seen as representing the fixed costs of hospital operations.

In order to establish an appropriate fixed amount for each hospital, which reflected the costs of operating an efficient hospital, it was first necessary to establish an appropriate base activity level. It was decided to use activity in the calendar year 1992 as a base, partly because data for this year were generally available and it was close in time to the 1993/1994 financial year — the first year of casemix funding. A fixed grant to each hospital was thus established at $850 per WIES in the base year.

10.8. Transitional payment

The payment a hospital would receive under the revised funding arrangements was modelled and compared with historical budgets. Where historical payments were above the modelled payment, this difference was described as a 'compensation grant', i.e. this was the amount of funding that was needed to 'compensate' a hospital to bring it up to its historical level of funding. (The modelling was based on assuming that hospitals treated the same number of patients as they did in 1992/1993.) The concept of a compensation grant therefore provided a mechanism for a transitional payment to allow hospitals time to adjust from their historical budgets to the new formula-based funding. The compensation grant was only provided in 1993/1994 and thus provided a small, time-limited, 1-year transitional payment to facilitate the introduction of casemix funding.

11. Other hospital services

11.1. Outpatient services

The Department decided not to pursue an output-based funding arrangement for outpatient services principally because of the relatively crude data that was available for such a purpose. Accordingly, the outpatient budget for hospitals was based on the hospital's historical allocation.

11.2. Training and development: recognising the additional roles and costs of teaching hospitals

Teaching hospitals in Victoria, as in other countries, exhibit higher costs per patient treated compared with other hospitals, even after standardising for casemix using DRGs. However, some of the increased costs of teaching hospitals are the result of provision of a separate additional service, namely education and research. Implementation of casemix funding in Victoria recognised a separate teaching

product to be funded by a 'Training and Development Grant'. Importantly, training and development services are not solely the preserve of a small number of major teaching hospitals but rather a large number of hospitals are engaged in some form of teaching activity.

The range of teaching activities undertaken is also very broad, including medical undergraduate education, postgraduate training in medicine as well as training in a range of nursing sub-specialties and allied health therapies. The purpose of the Training and Development Grant was to ensure appropriate funding for these activities.

The approach adopted in the United States to addressing a similar problem is to provide an additional allocation for both direct medical education and indirect medical education, the latter reflecting the fact that there are a range of additional costs in teaching which cannot be directly attributable to the provision of educational services. In Victoria, it was decided to avoid as far as possible indirect measures, with the Training and Development Grants preferably based on direct measurement of training and development outputs which should be funded according to a formula. The Training and Development Grant includes a number of separate components for medical, nursing education, research, and a general supplement for the cost of undergraduate training (Table 1). The Training Development Grant thus does not provide any recognition of 'indirect medical education' costs. This is still a contentious decision with the major teaching hospitals advocating change to the formula to take such costs into account.

11.3. Specified grants

The specified grants are primarily designed to fund those activities of hospitals

Table 1
Basis for training and development grants

Activity	Basis of additional grant to hospital
Postgraduate medical education	Half salary costs of interns, residents in accredited training programs
	Recognition of greater role in teaching by salaried specialist medical staff by providing grant of half salary costs of staff and university employed full-time staff
Hospital based postgraduate nursing programs	$5000–$10 700 (depending on nature of program) for each student enrolled in hospital based post registration nursing program
New graduates	In recognition of the costs of employing new graduates in nursing and allied health disciplines (and providing 'Graduate Nurse Year' programs, etc.) grants of 50% of the salary costs of new graduates
Research	Fixed grant of $1.35 M in 1994–1995 to each of six major teaching hospitals; $0.45 M to smaller hospitals with university professors
Undergraduate education	Loading of 10% of total of above elements

which are neither inpatient nor outpatient but which are regarded as necessary parts of the State's provision of health services. Major teaching hospitals, especially, had developed a range of activities not directly funded through inpatient or outpatient programs.

A number of new grants were introduced as specified payments to recognise elements of the cost structure not in the payment arrangements or as an incentive to undertake particular activity. An additional grant, for example, was made to hospitals based on the proportion of separations of persons from non-English speaking backgrounds. These grants were specifically to recognise the additional costs incurred by hospitals (for example, related to interpreter services) involved in treating people of non-English speaking background.

The specified grants process was also used to address the problem of rehabilitation services. Rehabilitation is recognised as an area where DRGs are poor predictors of resource use and paying hospitals for rehabilitation services on a DRG basis would therefore not be appropriate, especially in those hospitals which had large rehabilitation units. A specified per diem payment for rehabilitation was introduced with a ceiling equivalent to the number of bed days provided in 1992–1993.

There were also a number of other anomalous programs which resulted in hospital-specific specified grants, including a prison ward and heart and liver transplant programs.

Finally, in some circumstances the total of the foregoing payments (inpatient, outpatient, training and development and specified), was not sufficient to provide for continued operation of some very small (usually less than 20-bed) hospitals. Where these hospitals were regarded as necessary to ensure adequate access, a minimum staffing level for such hospitals was derived and a 'top up' payment (minimum operating guarantee) was paid to ensure their continued viability.

12. Funding overview

The distribution of payments from the Acute Health Program, by category, is shown in Fig. 2. Taking the Acute Inpatient (Fixed and Variable), Public Patient Supplement and Nursing Home Type Payments together, it can be seen that over 70% of hospital budgets are now allocated on a casemix basis, with almost 50% of payments varying with activity. The overall levels of initial transitional payments are seen to be quite small, at 2% of total Acute Health payments.

13. Monitoring and promoting quality

One of the major criticisms of casemix funding in the U.S. has been that hospitals will achieve reductions in their costs by reducing quality (effectively transferring costs to consumers or other providers). Significant concerns about the implications of casemix funding for quality were voiced as part of the initial consultations on casemix funding in Victoria and as part of the implementation process. Accordingly, specific attention was paid to design features which would promote and protect quality.

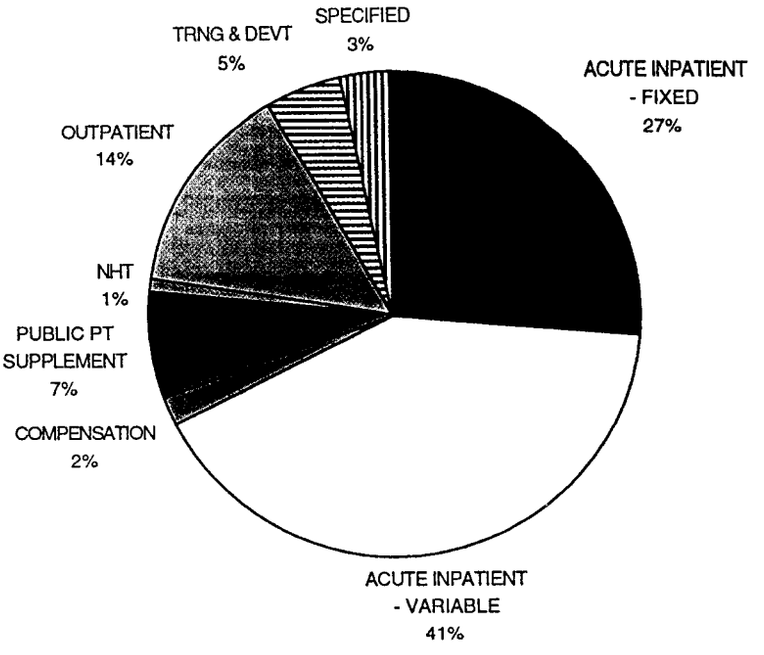

Fig. 2. Distribution of funding components.

In recent years, hospitals in Australia have sought legislative protection of their internal peer review and quality assurance processes so that the deliberations of quality assurance bodies are confidential and not revealed as part of negligence or other litigation. In Victoria, statutory protection for hospital quality assurance records is only provided after preparation of a quality assurance plan. The first element of the Department's quality strategy was a requirement that all hospitals, regardless of whether they sought statutory protection, would be required to produce a quality assurance plan annually and also to prepare a report on quality matters within the hospital on an annual basis.

A second element of the new quality processes was encouragement to hospitals to participate in the Australian Council of Healthcare Standards accreditation process, which has stringent quality assurance requirements with an orientation towards outcome measurement. Encouragement was provided through an annual grant to each hospital accredited with the Council. This grant was paid as part of the specified grant arrangements.

Third, a new data element was introduced into the hospital minimum data set which required an indication of whether re-admission to the hospital is intended within 28 days of discharge. This will allow the Department to monitor the unplanned re-admission rate to hospitals. The use of the unplanned re-admission rate was felt by the Clinical Advisory Committee to the Department to be the best indicator of potential quality problems. The hypothesis was that one of the key results of

the introduction of casemix funding would be a reduction in length of stay with the possibility that patients would be discharged too quickly and hence be at risk of unplanned re-admission. Since the Department decided to monitor re-admission rates, some evidence became available that re-admission rates are not necessarily associated with poor quality [26].

Fourth, the Department introduced a consumer satisfaction survey to measure directly the consumer experience with care provided in public hospitals. The questionnaire is to be administered to a 1% sample of all patients discharged from public hospitals approximately 6 weeks after discharge. The questionnaire itself was based on an instrument developed in the United States and asks a number of questions designed to measure the information provided to patients and their perception of the care received [27]. Unfortunately, the questionnaire program was not implemented prior to the introduction of casemix funding and so before and after studies of whether consumer satisfaction changed will not be possible.

14. The first 6 months' experience

As indicated earlier, casemix funding was designed to implement two key government objectives: to reduce total hospital expenditure by improving hospital efficiency and to reduce waiting lists. Results from the first 6 months of casemix funding indicate that the hospital system has responded to the incentives inherent in casemix funding and that both these objectives are being achieved.

Total expenditure on hospitals in Victoria was about 5% less in 1993/1994 compared to 1992/1993. However, the overall number of patients treated in Victorian hospitals in the period July–December 1993 was about 5% higher than the number treated in the same period in 1992. This increase in activity has not been the result of hospitals concentrating on simple operations to the neglect of the more complex: the overall average case weight (measured in DRG terms) has also increased marginally. Because these increases have been partially offset by a substantial decline in outliers (very long stay patients), which contribute to the overall payment rate, the number of weighted inlier equivalent separations (the unit of payment in Victoria) has increased by 4.4% [17].

The increase in activity is highly variable. Table 2 shows the average increase in activity, by group, together with the number of hospitals with activity increases. Major teaching hospitals have recorded the greatest increase in activity with all hospitals recording increases in activity, and the average increase being 7.9%. A majority of hospitals in all groups (except the very smallest hospitals) had increases in activity. Almost half of the very small hospital group had increased activity, but the average hospital in that group had reduced activity by 1.2%.

A key objective of Government was to reduce the number of people waiting longer than was regarded as clinically desirable. The policy focus for the first 6 months was to reduce Category 1 waiting lists (those in urgent need of care) with a target of having zero persons waiting more than 30 days on 1 January 1994. A target of zero Category 2 patients waiting more than 90 days on 1 April 1994 was also announced as part of the original casemix program.

Table 2
Victorian hospital activity level changes July–December 1993 compared with target

Group	Average % increase in weighted separations[a]	Hospitals in group with increase in activity
A1 (Major teaching)	7.9	6/6
A2 (Other major hospitals)	3.1	7/10
B (Large suburban and regional hospitals)	2.4	14/21
C (District hospitals)	1.4	15/24
D (Small community hospitals)	2.2	11/21
E (Very small, mainly rural hospitals)	−1.2	15/31
Overall	4.4	68/113

[a]Measured in weighted inlier equivalent separations.

Table 3 shows the data for the number of patients waiting as at 1 January 1994. It can be seen that there has been a significant reduction in the urgent waiting list. Category 2 waiting lists are also beginning to show a decline in line with the policy objectives. By the end of the 1993–1994 financial year, the Government will have basically achieved its target of a major reduction in waiting lists.

15. Unresolved issues

15.1. Definition of product

The current inpatient casemix funding system in Victoria relies on a concept of the 'treated patient' which is consistent with the historical evolution of the role of hospitals in the State. Implicit in the casemix funding arrangements is an expectation of what care is to be provided by hospitals, an expectation which is made explicit in the derivation of the resource weights which are paid to hospitals. The construc-

Table 3
Victorian hospitals waiting list changes

	1 July 1993	1 January 1994	% change: 1 July 93–1 January 94
Category 1 total (urgent)	1356 (4.7%)	413 (1.5%)	−70
Category 2 total (semi-urgent)	11 650 (40.7%)	10 965 (40.4%)	−6
Category 3 total (non-urgent)	15 612 (54.6%)	15 786 (58.1%)	1
All Categories total waiting	28 618 (100%)	27 164 (100%)	−5
Category 1, waiting > 1 month	911	158	−83
Category 2, waiting > 3 months	5569	4970	−11
Total waiting longer than clinically desirable	7077	5144	−27

tion of DRGs is based on the diagnosis of the patient and the procedures, if any, performed, not the patient's health status at admission and discharge. Accordingly, it is possible that hospitals might redefine what is an appropriate functional or health status level for discharge and hence transfer responsibility for care from the hospital to community-based organisations and families. Such a change reduces hospital costs but need not necessarily lead to an improvement in system efficiency.

The most obvious area in which this redefinition of the 'product' could occur is in obstetrics where contemporary length of stay in Victoria is 4.7 days compared with lengths of stay of around 2 days in most parts of the United States. This issue of 'early discharge' has been the subject of the most vocal criticism of casemix funding. Anecdotal evidence suggests that there has been an increase in the number of people discharged earlier than the previous practice. Whether this is an over-reaction by hospitals to the new casemix funding arrangements or a systematic shift in the nature of patient care, needs to be thoroughly investigated.

One way of addressing this issue is to define the hospital's responsibility for care as stretching beyond discharge, to include, for example, a defined number of days or defined health status after discharge [28]. It would then be the hospital's responsibility to organise (or purchase) post-acute domiciliary services to provide that care. Such an approach facilitates continuity of care and also internalises to a hospital the cost and benefits of changing the length of stay. This approach was outlined in more detail in a Departmental Discussion Paper on maternity services and, subsequently, the Department implemented a policy of redefining the 'product' for maternity services to include a post delivery 'window' with consequential changes in the price paid [29].

Maternity services are the most visible area in which changed practices appear to be occurring and are the services where the post-acute window can most easily be defined. Definition of appropriate 'windows' or 'episodes of care' is quite difficult in other areas, especially if the windows are to include necessary community services rather than simply medical services [30]. The development of an improved interface between hospitals and community services will be one of the critical issues for casemix funding in the future.

15.2. Capital

Traditionally, capital funding for hospitals has been supplied by Government as separate funding. Government has provided this capital injection in the form of minor works (projects of less than $A50 000), equipment funding and funding for plant and buildings. All of the costs of capital (borrowing costs, etc.) have been met by Government and so from the hospital's perspective, capital has been a free good. This could not be expected to lead to rational investment decisions and capital planning has, to a very large extent, been a political process where hospitals have put in bids for expansion, often unrelated to need, and used political processes to ensure that these projects were funded. Casemix funding has done nothing to redress those perverse incentives.

15.3. Updating arrangements

The existing casemix funding arrangements in Victoria are relatively static, and ill-

equipped to deal with dynamic aspects of the policy. Although the Department has indicated that in future years the fixed/variable ratio will be altered to favour an increased proportion of variable payments, few details of other dynamic aspects of the policy have been announced.

If the policy is to maintain credibility, the funding arrangements must respond to changes in the cost structure of hospitals and meet increases in demand. In the United States, the Prospective Payment Assessment Commission has been given the remit of advising on 'update factors' to take account of the dynamic nature of the hospital environment including inflation and technological change. Victoria has, as yet, no such mechanism.

A critical element in any casemix system is the level of the absolute dollar amount which is paid for the average case: for a system of case payment to be acceptable to hospitals, this base amount must be accepted as being set at an appropriate, achievable standard. As casemix funding was introduced in Victoria in the context of fairly severe budget reductions, with further reductions to take place in ensuing years, this aspect of casemix funding will need to be carefully monitored.

Although the price relativities for casemix funding (the 'weights') are set using data from Victorian hospitals, the actual base payment per case ($800 per additional case in 1993/1994, $840 in 1994/1995) is essentially determined on a normative or policy basis and is not the result of any public benchmarking process [21,31]. Accordingly, there is a risk that the price may not be set at an achievable level consistent with quality standards. There is currently (mid-1994) no published evidence about poor quality care in response to financial stringency and, as Ellis and McGuire point out ([32] p. 148):

'In practical terms, inertia in the medical system should ameliorate any immediate concern about undersupply of services in response to prospective payment. Threat of malpractice, physician practice patterns, and patient expectations will constrain elasticity of supply in the short run' [32].

How quickly this 'inertia' is overcome will depend, in part, on the strength of the 'control structures' of the health care system and the size of the budget cuts. Again as Ellis and McGuire highlight:

'...policy makers should be wary of overshooting with reimbursement policy, based on a short-sighted belief that the medical system is unresponsive to financial incentives'.

The casemix funding arrangements will also need to respond to changes in demand for treatment. Given the structure of the Victorian policy, this effectively would be achieved by increasing the funding available for variable payments. Whether this should be achieved by increasing the 'base amount' (thus increasing the volume of cases paid at the full rate) or whether expansion should be by increasing the additional throughput pool (thus possibly paying a lower price for expansion) involves complex trade-offs.

15.4. The downside: the creation of perverse incentives

The potential problems associated with reducing length of stay outlined above have attracted substantial public comment. There are, however, other significant perverse incentives enshrined in the casemix payment arrangements. First, the design

parameters of casemix funding as implemented in 1993/1994 and 1994/1995 encourage growth in public hospital admissions. This has been regarded as appropriate in the Victorian context because of the high level of waiting lists and Victoria's relatively lower admission rate, relative to other States. However, admission rates per thousand population vary substantially across the State and increasing admissions in some geographic areas may be undesirable [33]. Further, all admissions to hospitals attract funding under the case payment arrangements regardless of whether the patient needed the sophisticated facilities of a hospital. (It is possible to measure need for admission; see, for example, [34,35].)

Whether additional hospital admissions are warranted will depend on the extent to which investing additional resources in acute health care will yield improvements in community health status. The hypothetical relationship between additional hospital care and health status can take a number of different functional forms, not all of which posit improvements in health status with additional admissions [36]. To some extent, the relationship between hospital admissions and community health status will vary between specialties and between geographical areas (an additional asthma admission may be more likely to contribute to improved health status in some suburbs than in others), in turn making the policy response extremely complex to develop.

More fundamentally, casemix funding transforms the incentives on hospitals. Hospitals face a situation where there is a clear relationship between what they do and what they get paid. There is a downside to this: by definition, hospitals will not get funded for intangible products and they are likely to emphasise only those activities for which they are paid.

Putting a price on everything a public hospital does, and conversely, not doing anything for which there is no payment, rests uncomfortably with the values and principles of many who work in the public sector. There are many aspects of health care which should be valued, but can't be priced. The emphasis on measuring and pricing the product is not only occurring in hospital care, but is a characteristic of contemporary change strategies across the public sector in many countries [37]. Its basis is a naive conception of economics which assumes that efficiency is the only policy-relevant value and that pursuit of efficiency (above other values such as equity or the desire to promote altruistic behaviour) is value neutral. This assumption is increasingly questioned, partly because the single minded pursuit of efficiency and the neglect of altruism and other moral behaviours is a short sighted strategy which has long-term negative consequences [38].

A pure focus on efficiency exposes hospitals and medical practitioners to ethical risks unknown in the past. For example, is it legitimate for hospitals, who obtain additional income from treating additional patients, to give preference in employment or at contract renewal to medical practitioners who will refer large numbers of additional patients? Medical practitioners may also be placed under pressure by hospitals to behave unethically by discharging patients before it is medically appropriate. Although strategies can be developed to mitigate ctthe effect of possibly unethical practices, to the extent financial incentives work counter to ethical practice, quality of health care suffers [39].

It is to be hoped that the adverse consequences of this downside will not outweigh the undoubted positive benefits that casemix funding has brought to the public hospital sector in Victoria.

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