Equity and the Funding of Australian Health Services: Prospects for Weighted Capitation

Dr Stuart Peacock
Senior Lecturer, Health Economics Unit, Centre for Health Program Evaluation

Ms Leonie Segal
Deputy Director, Health Economics Unit, Centre for Health Program Evaluation

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The Co-ordinator  
Centre for Health Program Evaluation  
PO Box 477  
West Heidelberg Vic 3081, Australia  
Telephone + 61 3 9496 4433/4434  
Facsimile + 61 3 9496 4424  
E-mail CHPE@BusEco.monash.edu.au
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Health service funding mechanisms are pivotal in the pursuit of health system objectives, as they provide strong financial incentives for actors in the system to achieve policy goals. Underpinning funding mechanisms is a set of key economic principles, or objectives, that should guide their design and use: efficiency, equity, and accountability. The Australian health system has historically performed relatively poorly in relation to these objectives, with evidence of inefficiencies, inequities, and poor accountability in many areas of health services. The primary cause of these shortcomings may lie in the complex set of funding and delivery arrangements at the State and Federal levels of government. Potentially significant improvements in the performance of the health system would be available from the integration of the funding of services within a single tier of government, coupled with the development of a national weighted capitation approach to funding. To develop a national capitation funding model a number of unique factors require consideration, including the current fragmentation of services, the role of the private sector, the needs of indigenous populations, and the effects of rurality. The data available to develop a capitation model is of a level of detail and quality not readily found elsewhere. If policy statements promoting efficiency, accountability, and particularly equity are to be actively pursued, a national capitation model, based on robust methods should become a cornerstone of Australian health system reform.
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1 Introduction

Health system reform is the subject of ongoing debate worldwide. In a climate of limited health budgets, ageing populations and medical technology providing expanding options for health care, there is a pervasive concern with how to get the best out of health system resources. The challenge is to define funding and delivery arrangements that will achieve health system objectives, through the use of appropriate incentives for key actors in the health system: individuals (as patients and citizens), funders, providers, health bureaucrats, and insurers. In broad terms, the objectives of the health system are to promote health and wellbeing through the provision and consumption of health services. Central considerations within this are efficiency and equity. That is, concern is not just with the overall health of the community, but also with the underlying distribution of health.

The focus of this paper is with funding models in health services. Specifically, we consider the arguments for funding health services on the basis of a weighted - or risk adjusted - capitation formula, and methodological issues in developing formulae in the Australian context. Further, recognising that the success of capitation based funding depends not just on the integrity of the methods used, but also its context in the health system, other requirements are also explored. Australia does not fund the bulk of services through any sort of capitation formula (an exception being nursing homes), thus before considering issues in the desirable capitation model, the question of whether a capitation formula is a good idea for Australia, is addressed.

The remainder of this section provides a brief introduction to Australia’s health funding and delivery arrangements to provide a context for the ensuing discussion. Australia’s funding arrangements are then reviewed relative to the economic principles and objectives of funding systems. This leads into a discussion of health system reform options, and consideration of whether capitation represents a logical answer to the observed problems. Finally, the key challenges in developing a suitable weighted capitation formula for Australia are explored.
1.1 Overview of Health Funding Arrangements in Australia

In 1996-7 the total expenditure on health services in Australia was $43,204m, of which 94% is identified as recurrent expenditure [4]. This represents 8.5% of GDP, which is close to the average for all OECD countries [25]. Total health service expenditure per person was $2,345 in 1996-7 a growth of 4.3% pa since 1992-3. Hospitals accounted for 37% of expenditure, medical services 20%, pharmaceuticals 11.6%, dental and other health professional 9.2%, nursing homes 7.5%, and community and public health 5%.

Funding of health services is split between the Commonwealth, State and municipal governments, and the private sector. Government has financed between 62% and 73% of recurrent health expenditure since 1960-61 [5], in recent years stabilising at around 68.5%. The Commonwealth funding of health is underpinned by the ‘Medicare levy’, a hypothecated income tax introduced in 1984. Under Medicare the Commonwealth has a responsibility to ensure universal access to public hospitals and medical care. Of the one third non-government share, private health insurance covered 35%, direct patient contributions 51% and workers compensation and transport accident insurers 14%. Services are provided by both public and private providers. The funding and provider status for major funding categories in 1995-6 is illustrated in Table 1. The health services outlined in Table 1 are paid for under a mix of arrangements.

Medical services provided outside public hospitals - general practitioner services, medical specialist visits, pathology, and radiotherapy - are provided almost entirely by private medical practitioners who charge fee-for-service. Under Medicare the Commonwealth reimburses medical services at 85% of the scheduled fee, as listed in the Medicare Benefits Schedule [8]. There are two payment mechanisms. Either clinicians set a fee and charge the patient directly. The patient is able to claim reimbursement from Medicare (receiving up to the Scheduled fee, having to meet any difference). Alternatively the medical practitioner, bills Medicare directly at 85% of the Scheduled fee (termed bulk billing). In 1995-6, 71% of medical services were billed under the latter arrangement. The budget for medical services is open ended. Whilst the reimbursement rate per service is fixed, the volume of services is totally unconstrained.

Public hospitals provide free in-patient care to all Australian citizens and a range of outpatient services including specialty clinics, accident and emergency services, and some community support services. Public hospitals are jointly funded by Commonwealth and State Governments under various arrangements. The Commonwealth contribution is negotiated five yearly, via Health Care Agreements with each State. For a fuller description of the basis for payment under successive Medicare Agreements and hospital funding see Duckett [13]. Decisions about public hospital budgets and basis of payment are determined by each State. The total contribution by each State to public hospitals is subject to annual budget cycles. Hospital budgets incorporate a mix of adjusted historic funding with performance requirements defined in health service agreements between States and hospitals. Performance requirements tend to be specified in terms of units of service. In some States units of service are measured in terms of weighted separations (discharges) using an Australian DRG classification and cost weight system. In New
South Wales a capitation based funding formula, forms part of the budget of Area Health Authorities, with Areas then determining hospital budgets.

Table 1: Overview of Provision and Funding of Health Services in Australia 1995-6 ($ million)

<table>
<thead>
<tr>
<th>FUNDER</th>
<th>PROVIDER</th>
<th>Private/private (29%)</th>
<th>Private/Public (3%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>Private hospital</td>
<td>2,888</td>
<td>Private patients</td>
</tr>
<tr>
<td></td>
<td>Medical services</td>
<td>1,375</td>
<td>in public hospitals</td>
</tr>
<tr>
<td></td>
<td>Other professional Services</td>
<td>1,155</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pharmaceuticals</td>
<td>2,142</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aids and appliances</td>
<td>642</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nursing homes</td>
<td>677</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dental</td>
<td>1,722</td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td>Public/private (27%)</td>
<td>295</td>
<td>Public hospitals</td>
</tr>
<tr>
<td></td>
<td>Medical services</td>
<td>6,497*</td>
<td>10,629</td>
</tr>
<tr>
<td></td>
<td>Pharmaceuticals</td>
<td>2,515</td>
<td>Other health professional</td>
</tr>
<tr>
<td></td>
<td>Aids and appliances</td>
<td>148†</td>
<td>195</td>
</tr>
<tr>
<td></td>
<td>Dental</td>
<td>152†</td>
<td></td>
</tr>
</tbody>
</table>

Source: Derived from AIHW 1998 [4]

Notes: * Includes a small amount of salaried medical practitioners employed by aboriginal medical services.
† Allocation between public and private provision is approximate as data is not available by public and private nursing homes, aids and appliances and dental services.

Public health services are mainly the responsibility of the Commonwealth, with contributions largely reflecting historic allocations. The Commonwealth determines the number of nursing home beds within each region as a function of the elderly population, with payment based on a formula designed to reflect level of care requirements. In this way nursing homes are funded under a weighted capitation formula, with weights determined by age and nursing dependency [16]. Private hospitals provide a large range of in-patient and outpatient services, with an historic focus on minor surgery, diagnostics, and obstetrics. The Commonwealth covers medical services in private hospitals, up to the scheduled fee, with the remainder covered by patient fees.
2 Critique of Current Funding Arrangements

In terms of whether current funding and delivery arrangements promote efficiency and equity, and incorporate accountability considerations, Australian health services are deficient in a number of important aspects. A major cause of these deficiencies lies in the complex nature of the organisation of health services. Delivery and funding arrangements fail in the promotion of efficiency, primarily because of restrictions in the movement of health care resources between different types of services. Arrangements also limit the active involvement of consumers and the community in decisions about the health service mix, and fail to adequately address the distribution of health services. The combination of a largely unresponsive supply system, with competing and overlapping funding responsibilities, results in a health system in which incentives for achieving efficiency or equity objectives are weakened. The main contributors to these deficiencies and recent government responses are described below.

2.1 Efficiency

Efficiency is concerned with allocating resources between alternative health services to maximise health and wellbeing gains to society, from a given level of health service resources. Technical efficiency requires that a given set of (effective) services should be provided using the least amount of resources possible. Allocative efficiency requires that new services should only be provided, or existing programs expanded, where benefits outweigh the opportunity costs of not providing a range of other potential services.

Patterson [27] identifies 60 separate Commonwealth Government programs each with their own funding arrangements, which he argues is a major deterrent to efficiency, as it prevents resource shifts between programs and discourages a coordinated response to care needs. Government funding of medical services and drugs is uncapped, whilst funding for all other programs is capped. This has resulted in an increased share of health services funded through the Medical and the Pharmaceutical Benefits Schedules [4]. No single agency has the clear responsibility for the overall health of a population, nor control over the total health budget. Service provision therefore tends to be poorly co-ordinated, dictated by short term concerns and narrow financial targets, with strong incentives for cost shifting between programs and sectors. Equally, no single agency possesses a complete picture of a patient’s current and past health status and health service use. The consumer and/or their agent are poorly placed to make an informed choice about the optimal mix of health services to meet individual health needs.

Fee-for-service payments may distort the use of health services as practitioners may induce demand to maintain their income level in the face of an expanding doctor supply [9,31]. In Australia, State capitals average 130 GPs per 100,000 persons, nearly twice that of remote centres (65-84 per 100,000), with use of GP services in the capitals at 6.1 consultations per capita per year, nearly twice that in remote communities [4]. Fee-for-service funding arrangements also reward and encourage service provision, while salaried arrangements or payments based on an enrolled population may provide weaker incentives for service provision. This is demonstrated by the differential procedure rates of privately insured patients, treated by clinicians under fee-for-service payment, compared with public patients treated by salaried
doctors. This is consistent with findings in Australia that privately insured patients post heart attack receive twice the level of cardiac surgery procedures as public patients [32]. The substantial regional variation in procedure rates not explained by variation in the presenting population, but related to doctor supply, also suggests a significant influence of fee-for-service funding on service mix and volume [30,33].

2.2 Equity

Equity is concerned with notions of social justice and fairness. This may imply inequality in treatment (in its most general sense) of individuals within a society, as it may be fair to be unequal. Horizontal equity concepts refer to the equal treatment of equals; and vertical equity concepts to the unequal treatment of unequals. To date much of the equity and health funding literatures have focussed on the former rather than the latter equity concept [19], a point to which we return later. Mooney has provided the most well known taxonomy of definitions of horizontal equity [20], which has formed the basis for debate in recent years [10,11,12,21,22]. Of Mooney’s definitions, the focus of many governments has been on a goal of ‘equal access for equal need’ in funding arrangements. Operationalising the relevant concept of need presents some difficulties, however. The principal issue is to develop appropriate measures of the need for health services. To this end, the weighted capitation and risk adjustment literature has highlighted significant advances in the use of statistical techniques to disentangle the effects of demographic, socioeconomic, morbidity and mortality, and health service availability and access, on utilisation.

The introduction of Medicare in 1984 provided ‘universal access’ to health care for all citizens, but there has been no formal debate about the ‘core services’ to be included in the scheme. Some important health services can be highlighted for which access is limited, or based on capacity to pay. These include; dental services which are only free to Health Care Card holders (pensioners and others on very low incomes); limited access to allied health services through out-patient clinics and community health centres; co-payments of $3.20 per pharmaceutical script up to a ceiling equivalent of 52 scripts for Health Care Card holders; co-payments up to $20 per pharmaceutical script for non Health Care Card holders which includes many low income families; and limited access to free/subsidised home based nursing and personal/attendant care services.

The funding of public hospital services is dependent on State and Commonwealth funding, with the contribution by State Governments determined as part of the budgetary cycle. As a result, there is potential for significant disparities in hospital funding between States (Table 2). For instance, in 1997-98, the New South Wales Government allocated 13% more per head on public hospitals than the Victorian Government ($531 compared with $470) and 22% more per head than the South Australian Government ($531 compared with $436). This has resulted in significant differences in the role of the public and private hospital sector, and access to and utilisation of public hospitals (Table 3). New South Wales and the Northern Territory rely heavily on the public hospital sector. Victoria, Queensland and Tasmania rely more on private hospitals, implying a far greater patient contribution to hospital costs in those States.
Total separations per thousand persons vary from 231 in the Australian Capital Territory to 311 in South Australia, and bed days per thousand from 916 in the Australian Capital Territory to 1312 in New South Wales.

Table 2: Net spending per capita on public hospital services by State Governments ($)

<table>
<thead>
<tr>
<th>State/Territory</th>
<th>1996/97</th>
<th>1997/98</th>
</tr>
</thead>
<tbody>
<tr>
<td>New South Wales</td>
<td>512</td>
<td>531</td>
</tr>
<tr>
<td>Victoria</td>
<td>480</td>
<td>470</td>
</tr>
<tr>
<td>Queensland</td>
<td>436</td>
<td>480</td>
</tr>
<tr>
<td>Western Australia</td>
<td>464</td>
<td>511</td>
</tr>
<tr>
<td>South Australia</td>
<td>380</td>
<td>436</td>
</tr>
<tr>
<td>Tasmania</td>
<td>522</td>
<td>510</td>
</tr>
<tr>
<td>Australian Capital Territory</td>
<td>525</td>
<td>509</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>659</td>
<td>796</td>
</tr>
</tbody>
</table>

Source: Grants Commission, 1999 [15].

Table 3: Average Number of Services Per Head. Australian States 1996/7

<table>
<thead>
<tr>
<th>State</th>
<th>Age standardised Death Rate per 100,000 pop</th>
<th>Public hospitals</th>
<th>Private hospitals</th>
<th>Medical services #</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Sepns/1000 pop</td>
<td>Bed days/1000 pop</td>
</tr>
<tr>
<td>New South Wales</td>
<td>815</td>
<td>499</td>
<td>203</td>
<td>1059</td>
</tr>
<tr>
<td>Victoria</td>
<td>803</td>
<td>494</td>
<td>192</td>
<td>810</td>
</tr>
<tr>
<td>Queensland</td>
<td>834</td>
<td>506</td>
<td>191</td>
<td>835</td>
</tr>
<tr>
<td>Western Australia</td>
<td>818</td>
<td>491</td>
<td>191</td>
<td>770</td>
</tr>
<tr>
<td>South Australia</td>
<td>807</td>
<td>491</td>
<td>217</td>
<td>921</td>
</tr>
<tr>
<td>Tasmania</td>
<td>908</td>
<td>564</td>
<td>152</td>
<td>802</td>
</tr>
<tr>
<td>Australian Capital Territory</td>
<td>858</td>
<td>554</td>
<td>186</td>
<td>761</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>1042</td>
<td>700</td>
<td>260</td>
<td>1051</td>
</tr>
</tbody>
</table>

Source: Duckett 1998 Table 5.1 [13].

Notes: * Aged standardised death rates, male (m), female(f) all cause, 1996 per 100,000 population (AIHW 1998, Table S17 [4])

# Medicare items/person aged standardised, (AIHW 1998, Table S51 [4])
Access to medical services is highly dependent on location, with major disparities between rural and remote regions and metropolitan centres. Access to, and use, of medical practitioners is highly correlated with population density. There is a serious shortage of medical services both general practitioner and specialist medical practitioner services outside major cities. This translates into a lower use of private medical services in rural communities, and a corresponding higher use of acute care services. Persons living in rural and remote areas of Australia use on average 4.2 GP consultations per capita (age standardised) compared to 6.1 for persons in capital cities (45% higher). On the other hand hospital admissions are slightly higher in rural and remote communities [4]. Table 3 also highlights potential inequities in the distribution of medical services across States. Utilisation of private medical services is significantly higher than the national average in New South Wales and significantly lower than the average in the Northern Territory and the Australian Capital Territory.

Australia has a two tiered health system underpinned by a large private health insurance market, which supports differential access to services. Between 1989-90 and 1994-5 while expenditure on public hospital admissions increased by 16%, expenditure on private hospital admissions increased by 67%, despite a substantial reduction in the number of persons covered by private hospital insurance from 6.5 million to 5 million persons by December 1997 [28]. The effect is highlighted by the differential rate of cardiac procedures post heart attack, which shows procedure rates to be highly dependent on insurance status. Similar results are also reported for surgery for prostate cancer. Other studies using intergroup comparison [34] and concentration curve [18] approaches have also shown evidence of inequity favouring higher income groups in health service use.

Table 4: Likelihood of Coronary Angiography and Coronary Revascularisation Post Acute Myocardial Infarction, 1996-97, Victoria, by Insurance Status

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Insurance and Provider Status</th>
<th>Public hospital</th>
<th>Privately insured, Public hospital</th>
<th>Privately insured, Private hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coronary angiography</td>
<td>Male</td>
<td>28.3</td>
<td>53.7</td>
<td>57.1</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>19.5</td>
<td>27.8</td>
<td>43.5</td>
</tr>
<tr>
<td>Coronary revascularisation</td>
<td>Male</td>
<td>11.7</td>
<td>19.9</td>
<td>35.5</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>6.2</td>
<td>12.5</td>
<td>24.5</td>
</tr>
</tbody>
</table>

Source: Richardson et al 1998 [32], based on the Victorian minimum in-patient data set.
Significant inequalities in health status persist in Australia. While average life expectancy has increased by 4 years for men from 71.2 years to 75.2 years and for women from 78.3 to 81.1 years between 1984 and 1996, for some sub-groups mortality outcomes remain consistently worse than average. The SF 36 quality of life instrument, applied as part of the Australian Health Survey, has been used to show that income is a strong predictor of health status, more powerful than an index of relative socio-economic disadvantage [1]. Substantial differences have also been identified by State, in terms of both all-cause mortality and by class of disease [2]. Major differences in health status have also been identified by rurality and status as an indigenous Australian [4]. Age standardised mortality rates for Aboriginal and Torres Strait Islanders (ATSI) are approximately 300% of the rate for other Australians, with mortality for 30-34 years olds in excess of 1000% of the rate for other Australians [19]. Similarly, life expectancy is up to 19 years lower for indigenous males than for other Australian males, and up to 20 years lower for females [4].

2.3 Accountability

Funding and budgetary mechanisms may perform several functions in health service decision making processes, including: the communication, co-ordination and authorisation of actions; service planning and performance evaluation; expenditure control; and the provision of incentives for staff. Public accountability has a number of advantages [35]. Firstly, the methods used in funding arrangements, and any proposed changes to them, if made transparent and publicly available allows democratic debate and scrutiny over their appropriateness. Moreover, an explicit and transparent funding mechanism provides a constraint on the use of arbitrary political or bureaucratic power, and identifies key value judgements that underpin the funding process. The basis of those value judgements can then be openly discussed. Finally, explanation of statistical methods and the assumptions employed also reduces the potential for inappropriate funding policies disguised by poor assumptions and statistical techniques.

The current funding models show mixed performance in terms of budget control. Whilst services under the control of State Governments, notably hospitals and community based services, are subject to budget caps while expenditure on medical services and pharmaceutical services funded by the Commonwealth Government are uncapped. Unit reimbursement rates are fixed, but volumes are totally uncontrolled which has commonly allowed a large increase in expenditure on drugs and medical services. Nursing homes, while funded through the Commonwealth have also been effectively capped, through a combination of a defined reimbursement formula, with a strict prescription of the number of nursing home places that will be funded. Between 1989-90 and 1996-7 total expenditure on benefit paid pharmaceuticals increased from $1,448m to $3,268m an increase of 126%, and medical services increased from $4,945m to $8,198m (66%). Expenditure on private hospitals, largely funded through (uncapped) private health insurance increased by 105% ($1,701m to $3,493m) Over the same period, expenditure on public hospitals (including psychiatric hospitals) only increased by 34% ($9,182 to $12,341m) and on nursing homes by only 41% (from $2,230m to $3,148m). This cannot be explained by a shift to community based care, as expenditure on community and public health increased by only, 40% from $1,497m to $2,097m [3].
Thus in the capped sectors, expenditure has exceeded the growth in the health price index of 17% over the same period by only 2% pa, while growth in the uncapped sectors has been very high.

Current funding arrangements are administratively complex. The Federal-State Health Care Agreements are renegotiated every five years, and establish the funds to be transferred from the Commonwealth to the States for the provisions of health services through both a general grant and specific program funds. The process lacks transparency and accountability. It is very difficult to establish the total health expenditure allocated to sub-populations, defined by region or by any other criteria. The capacity of funding arrangements to contribute to equity objectives (however defined), cannot be easily deduced. There is no formal opportunity for community input into either the level of funding, its regional distribution or its allocation between broad program areas. Current arrangements provide great autonomy to each jurisdiction, allowing the key players - the Commonwealth, the States and Territories - to negotiate the outcome largely unconstrained by an explicit framework.
3  Funding Reform Initiatives

Reflecting some of the concerns summarised above, the need to reform health funding and delivery arrangements has been widely recognised, giving rise to several health funding experiments. The main area of reform has been the development of a national series of coordinated care trials. The coordinated care trials were established in 1997, to test the advantages of funds pooling and the nomination of a care coordinator with responsibility for development of a care plan, for persons with complex care needs [8]. The trials arose out of a Council of Australian Governments (COAG) Discussion Paper [7] in which key weaknesses in current funding arrangements were highlighted, specifically the problems of multiple programs and multiple funders. In operationalising the trials, most, but not all, health services are pooled (medical services, drugs listed on the Pharmaceutical Benefits Schedule, public hospitals, and limited community based services). The funds pool has been determined solely from historic service use of enrolled participants with no attempt to determine the funds pool based on need, or to seek either vertical or horizontal equity.

Other reform initiatives have included: the Victorian HealthStream program to combine State health and community service programs in rural and remote communities, and to more actively involve local communities in resource allocation decisions; the Multipurpose Service initiative to co-locate rural and remote health and community services; and a range of initiatives around services for defined disability groups. Whilst these reforms initially promised some improvements in equity and efficiency, their approach has been piecemeal and has often resulted in improvements in services only for specific groups, which may have increased inequities between those eligible and ineligible to receive services through the initiatives.

Taken collectively, the deficiencies with current arrangements have created a health system in which the level and distribution of hospital and other health services is rather ad hoc, reflecting historic budgets and current fiscal objectives of the various State Governments. Use and distribution of medical services is dependent on the myriad of decisions by individual practitioners and patients, and is likely to reflect the supply of medical services more than any other factor. The result is a health system that may be both inefficient in terms of the health service mix, and inequitable under a range of possible equity goals.

Furthermore, none of the current health reform initiatives address what constitutes an appropriate level and distribution of funding for health services. While a number of States have started to look at funding formula, this can have only a limited capacity to address issues of equity and efficiency, because of the limited role of the States in the health sector. State based funding formula can only be developed in the context of existing budgets, restricting the capacity to address inefficiencies and inequities, both within a State and nationally.
The adoption of a weighted capitation formula at a national level would, potentially, be central to a move towards a more efficient and equitable health system. But, the adoption of a suitable funding formula is not sufficient in itself. Other elements of the incentive system are also critical, such as how services are paid for and how patients, citizens and communities contribute to health service decision making. A national weighted capitation approach could provide a consistent and transparent framework for resource allocation, within which other reform elements could be developed and tested. The attributes that a weighted capitation formula would need to incorporate, and possible sources of complexity, are discussed below.
4  Weighted Capitation

If weighted capitation is to be considered as a possible central element of health system funding in Australia, a number of key issues need to be addressed. Many of the issues are common across health systems, but several are specific to Australia and the structure of Australian health services. The main context specific issues considered are: fragmentation of Australian health services; the role of the private sector; urban and rural populations; Aboriginal and Torres Strait Islanders; and data availability. Whilst these issues are by no means comprehensive, they highlight the major areas which require careful thought and attention before a weighted capitation formula can be developed.

4.1  Fragmentation of Australian Health Services

The fragmentation of funding and delivery in Australian health services is perhaps the defining characteristic of the health system. The Federal-State divide and the existence of financial and organisational barriers in the health system present significant challenges for the potential development of a weighted capitation approach to funding.

Clearly, the development of over 60 separate funding models for each existing Commonwealth program is impractical, and would involve significant duplication of effort. A more prudent approach would be to develop a small number of separate analytical models covering the full range of health services. Evidence from the UK suggests that a single model for all health services may be inappropriate due to differences in the epidemiology of different health related conditions, and that it may be better to develop separate models for different condition groupings [36]. The aim of using separate analytical models is to develop robust statistical models explaining variations in utilisation patterns based on the salient needs drivers of that health problem or defined service area. Combining all health services into a single analytical model will result in a less robust model, due to differences in needs drivers for different conditions. On the other hand a single model will maximise this opportunity for a flexible response from the service system, and by being simpler be more accountable.

Of course, the choice of the number of models to be used, and the health related conditions examined in each may be arbitrary at the outset. But, empirical testing of the robustness of alternative models using the wealth of information generated in the development of DRG classifications and the recent health system reform trials, may offer guidance on a more scientific basis to modelling.

The outstanding issue then becomes one of how to combine the analytical models to provide a single formula for funding health services. This essentially involves a mix of political and value judgements, most often resulting in individual models being weighted according to the current share of expenditure associated with those health related conditions. The strength in the process of combining the models lies in the way in which such judgements are made explicit and open to debate. At present, such judgements in Australia are far from explicit, leaving many questions about the extent to which either equity or efficiency considerations are being addressed.
4.2 The Role of the Private Sector

The treatment of the private sector in the development of public sector health service funding has represented an area of some controversy in many countries. This is particularly true in the Australian context, where the private sector accounts for over 30 per cent of all health service expenditures. The main issue is whether a public health system should consider private sector use in its funding mechanism. The answer to this issue lies in the ethical principles that underpin the health system. In a general sense, two polar principles may be adopted.

The private sector acts as a ‘pressure valve’ for the public health system. Areas or regions with relatively high private sector utilisation will use relatively fewer public sector services and resources. Those high private utilisation areas should receive less public funding, and the public resources freed up should be redirected to areas with greater demands on the public system. This standpoint defines equity in terms of equal access for equal need where access includes the perceived availability of both public and private sector services and the capacity to self-fund.

The alternative principle is that public sector should provide a comprehensive set of services for all individuals and populations, based on notions of minimum standards and core services. Areas or regions receive public sector funds relative to their underlying health care needs irrespective of the level of private sector utilisation. This standpoint defines equity in terms of equal access to public health services for equal need, and is more closely related to a rights or claims based approach to equity.

Which standpoint is the correct principle for Australia is a normative question. The answer would be best sought through research into community values and preferences for health services. In the absence of such information, both Federal and some State Governments have inclined towards the first standpoint. The Health Care Agreements which outline Federal funding policy, and some population based State mechanisms, have adjusted for private sector utilisation in funding arrangements.

Both standpoints, however, rest on the identification of the underlying needs for health care of populations irrespective of which sector meets those needs. To identify population need, a population level analysis is required which includes the need for all health services. It appears to be more prudent to take this more comprehensive approach to modelling, and to make any judgements about the treatment of the private sector after needs have been identified. In that way, unambiguous indicators of the need for health services may be developed, with political and value judgements made explicit without ‘contaminating’ analytical phases of the development of a formula. This implies that analytical models should include both private sector use in utilisation measures, and the availability of private sector services as a potential determinant of variations in utilisation. The caveat to this approach is that services which the private sector provides, but the public sector does not, should be excluded where the public views those services as ‘non-essential’. A formula that allocates funds on the basis of needs for services that are not provided in the public sector, and are not considered in some way essential by the community, is undesirable. In the absence of information on what the community considers as essential and non-essential services, efforts have focussed on identifying private services that are non-
substitutes for public services. These services have been estimated to represent between 20-30 per cent of private sector expenditure [23].

4.3 Urban and Rural Populations

Australia is one of the most urbanised countries in the world, yet it also has some of the most sparsely inhabited regions. Experiences with health services, health, and socioeconomic conditions of those living in urban and rural areas varies greatly.

Rural areas in Australia are characterised by low population density and large distances between urban settlements. Rural communities may experience greater need for health services for several reasons. Poorer availability of specialist services may increase the time between initial presentation and confirmation of diagnosis, which may lead to increased morbidity, hospitalisation rates and/or length of stay. Similarly, worsening of patient condition after presentation to a GP may increase morbidity and risk of death if remoteness results in a delay in receiving further medical or surgical services. Differences in the need for health services and differences in their organisation and delivery will result in utilisation patterns that are not observed for urban populations. Inpatient hospitalisation rates may be increased as GPs admit/refer more people to hospital to reduce risks of increased morbidity due to poor availability of specialised services. Outpatient and Accident and Emergency services may be more highly used due to the shortage of GPs in rural and remote areas, and a lower rate of bulk billing compared with GPs in urban areas. The presence of an up front fee (albeit largely reimbursable) in the absence of bulk billing will encourage greater use of hospital based services which are free at the point of consumption.

In modelling the relationship between health service utilisation and needs, urban/rural differences suggest that the treatment of urban and rural populations requires careful consideration. A relatively simplistic approach is to define urban and rural areas by population density. This was the approach taken by the New South Wales Government in their 1993 revision of the State resource allocation formula [24]. The formula included a variable for the proportion of the population that lived in a settlement of less than 1000. But, as the authors of the study that formed the basis of the needs adjustment noted, this measure may be limited as it may produce a counter-intuitive index of rurality for some remote areas [14]. This occurs mainly where remote areas are dominated by a single settlement – for example a mining town – but where the whole of the area is geographically very isolated and has poor access to health services.

The most recent revision of the New South Wales formula has addressed many of the deficiencies of more simplistic approaches to modelling rural and urban differences for health service resource allocation. The regression analysis of utilisation and needs now includes a more sophisticated index of population location, called the Health Related Rural Status index [14]. The new index was developed taking account of four prime considerations. The index should be independent of socioeconomic status measures and reflect only characteristics relating to location, as the relationship between rural deprivation and conventional socioeconomic measures of deprivation (income, occupation, housing and education) is poorly understood. Population density is not a robust measure to be included in an urban/rural index, as it takes no account of the distribution of population within areas used in regression analysis. Interval properties of an
urban/rural index are questionable over the whole distribution, making the use of an ordinal scale a more appropriate strategy. And, the index should be specific to health, reflecting the distance to major referral centres rather than commercial centres. These considerations were used to define remote, rural, major urban and metropolitan areas classified by distance to referral centre. These classifications were then combined with data on land use to construct an ordinal index with 17 categories for urban and rural areas.

This approach represents a major advance on previous attempts to address rurality and health service resource allocation in Australia. A major remaining task is to attempt to more robustly estimate appropriate measures of deprivation in rural areas, where conventional economic and public health indicators may have only limited value. As the architects of the New South Wales formula state ‘hardship associated with limited access to physical, cultural and social amenities causes complex changes to behavioural patterns when compared to urban dwellers’ [14].

Two further key issues require attention. Firstly, further work is required in disentangling the relationships between utilisation, needs and supply, and how they differ between urban and rural areas. The patterns of supply and use of health services in Australia are different between rural and urban areas, and the causes and effects of those differences need to be more fully understood before small area analysis models can be developed further. Moreover, the treatment of supply in the modelling of utilisation and needs for both rural and urban areas requires careful attention. The latest revision of the New South Wales formula is to explore these relationships more fully, a move which may be prudent, as evidence suggests variations in supply may be a key determinant of variations in use [36].

Secondly, the use of population density in urban/rural indices should be explored more fully. Its exclusion from the New South Wales approach was on statistical grounds: that intra-area variation in population density would make population density an inappropriate index of urban/rural populations at the small area level. This approach is sensible with small area data, but population density may still be an important component of an urban/rural index at other levels of analysis. Research should be developed using individual level data and the effects of population density on health service utilisation, including analysis of hierarchical effects through techniques such as multilevel modelling. Analysis at the individual level would avoid the problems encountered with small area analysis, and allow greater use of a larger range of measures of urban and rural areas.

4.4 Aboriginal and Torres Strait Islanders

One of the most important public health issues in Australia is the health of Aboriginal and Torres Strait Islanders (ATSI). There is a gross disparity in the health status of this group compared to the rest of the population, the magnitude of which is found in few other developed countries, and which presents decision-makers with some difficult decisions in resource allocation policy. These decisions broadly fall under horizontal equity and vertical equity considerations.
Horizontal equity considerations argue that the funding process should provide ATSI populations with health service resources commensurate with their levels of need, accounting for the availability of services. At present, the allocation of resources to States from the Federal Government fails to properly address horizontal equity for ATSI communities as funding is based largely on current utilisation patterns with ad hoc adjustments for ATSI populations [17]. These current utilisation patterns may be inappropriate, potentially perpetuating inequities in health and health service provision. It is possible that the introduction of needs weighted capitation, particularly at a national level, could go a long way to correcting some of the significant inequities in health service provision for ATSI populations.

At the State level responses to ATSI needs have been mixed. Both New South Wales and Queensland have attempted to explicitly incorporate ATSI needs in resource allocation formula. However, the now defunct Queensland formula [29] indicates the need for careful consideration of the methods used in attempting to adjust for ATSI needs. The Queensland formula applied an ATSI needs index over and above other needs measures to inpatient, ambulatory and population health services components of formula. The aim of this ATSI index was to ‘to allow for the additional health services required by this population group due to their unacceptable morbidity and mortality rates’ [29]. The index weighted the ATSI population in each region by a factor of 3, which was ‘due to the fact that many health status indicators for the ATSI population are around 3 times greater than for the general population’. There are two main problems with this approach. Firstly, it can be argued that the inclusion of needs measures for the Queensland population and specific needs measures for ATSI may lead to the double counting of ATSI needs. Secondly, the size of the ATSI weight was not empirically justified in terms of the relationship between health status, needs, use and availability of services.

Vertical equity considerations argue that the community as a whole may prefer more resources to be dedicated to ATSI health services, usually with the implicit notion that community preferences will reflect a general desire to reduce gross inequities in health and health service provision. These considerations have led to a growing literature examining the potential role of vertical equity in health service funding [14,19]. There is no reason why, in principle, vertical equity adjustments cannot be made through the use of weighted capitation formula. The approach would be to, as in the Queensland formula, attach weights to ATSI populations or other groups with unacceptably poor health outcomes. The difficulty comes in determining the appropriate weights to be employed. These weights should reflect the communities preferences for ATSI needs over and above preferences for the needs of other populations in society. Establishing credible estimates of these types of preferences is far from straightforward, and appropriate analytical tools are still in their infancy. It is likely to be some years yet before we may be in a position to determine credible weights for vertical equity which reflect the strength of community preferences.

Even if such weights can be determined, weighting ATSI populations raises the issue of what weight should be employed if community preferences are in some sense ‘unpalatable’ to politicians and policy makers. For instance, the community in general, or sections of it, may indicate they would prefer less weight be given to ATSI populations relative to the general population. In the face of gross inequities in health and experiences with health services, policy
makers would then have to decide to what extent community preferences should be overridden (or laundered), if at all, and what the appropriate weight for ATSI need should be. This could entail ATSI weights determined by a form of rights based approach rather than a community preferences based approach. Which approach is appropriate in Australia is a matter which requires considerable debate if funding is to be open, explicit and fully informed.

4.5 Availability of Data

Issues over the availability and quality of relevant data are generic in the development of funding mechanisms, but several specific factors are pertinent in the Australian context. The fragmentation of health services has led to a multitude of approaches to data collection and management. Whilst the Health Insurance Commission at the Federal level has maintained a national database for GP and specialist services, and a convergence is emerging on DRG based data bases for State and territory hospital services, data for the smorgasbord of other health service programs is available in a wide range of disparate forms and levels of quality. Calls for a common strategy for the development of data systems across health services are hardly a recent event, but to date the political will and resources have not been forthcoming. More importantly, attempts to reconcile health service data from multiple agencies are severely limited by the lack of a national identifier to match records. Whilst civil libertarians have put forward powerful arguments against national identifiers, the lack of record linkage may also be seen as a potential source of inequities and inefficiencies in health services.

Despite these problems, Australia has some of the most well developed health service data sources in the world. To date, perhaps the most important of these are the Health Insurance Commission (HIC) database on GP and specialist services, and pharmaceuticals, and the Victorian database on hospital services. Both databases hold individual patient records, including demographic, biomedical, and health service use and cost information. The HIC data covers all Medicare services for the national population. The Victorian data covers all patients attending 15 major hospitals in the State and includes detailed patient level costing information which is currently used to calculate DRG cost weights in the State’s casemix funding formula. The clinical costing systems put in place in these hospitals have provided a gold standard measure for the development of hospital databases in Australia. The coordinated care trials are also gathering large amounts of data as part of their management and evaluation. This will include patient level health service use and cost data, together with detailed socio-economic and demographic data, and information about health problems and health status. These sources of data offer tremendous potential for the development of population funding approaches, and would allow the use of individual level analysis to overcome the ecological fallacy using techniques such as multilevel modelling [26] or contingency tables [6].

Two outstanding issues remain, however. Data on the use of health services funded through private health insurance is not generally available at the national level. Whilst the major private health fund, Medibank Private, makes some data routinely available, other health funds generally do not. The release of Medibank Private data may largely be due to historical factors, as there is no imperative placed on the health funds by governments to release data. Such an imperative would lead to a better understanding of the relationship between needs and use in both the public
and private sectors. The second issue is in the measurement of morbidity at a national level. The Australian census does not ask a morbidity question, which leaves low birth weight and mortality information as the main, comprehensive, national proxies for morbidity. The development of a morbidity question on the census may provide valuable information for the equitable and efficient allocation of health resources, even given the limitations of self reported morbidity questions.
5 Discussion

The funding system for hospital services in Australia may be best described as complex and loosely organised. This is highlighted by the continuing mixed response at Federal and State levels in the design of funding systems based in the pursuit of efficiency and equity goals.

At the Federal level, the Health Care Agreements between Federal and State/Territory Governments have paid only limited attention to the objectives of the funding arrangements. Instead, debate has focussed largely on the size of the relative contribution of the different levels of government to the hospital sector. In the new Victorian Agreement - covering 1998-2003 - several key objectives are listed at the outset but none relate directly to efficiency or equity. Whilst the Agreement later includes efficiency and equity considerations under national health policy, it becomes difficult to link efficiency and equity goals to some of the financial details of the Agreement.

The financial details of the new Agreement set out a base grant for the first year of its operation and a range of adjustment factors for the subsequent four years. The estimation of the base grant is pivotal in determining future funding levels and is based on a combination of past levels of utilisation, estimates of population and its age and sex composition, and political negotiation. The Agreement also includes an adjustment for the subsequent four years which adjusts the base grant for changes in populations and their age and sex make-up. At this level, funding mechanisms are in need of some scrutiny.

Funding health services on the basis of past utilisation has long been recognised as a source of significant inequities and inefficiencies in health service provision. Areas that have historically high levels of utilisation are rewarded with increased levels of funding in the future. Some of these patterns of high use reflect historical decisions about the location of health services that were largely unrelated to the health care needs of the population. Is it then efficient and equitable to reward these areas with more funding in the future because health services were easily accessible and therefore highly used in the past? The interrelationship between health service use, needs, and availability is highly complex, but sound methods to untangle the relationships continue to be overlooked in Federal funding arrangements.

Furthermore, the age and sex weighted population approach only goes some of the way to adjusting for differences in the relative needs for health services of the different State and Territory populations. This approach omits consideration of differences in health care needs due to factors over and above age and sex. There is a wealth of evidence from Australia and overseas which shows health care needs are affected by morbidity, mortality, and socioeconomic factors. Yet, in developing a weighted capitation approach the Agreements appear to have given limited attention to a large body of evidence on the development of such models. The response to this criticism has been the equalisation process where States and Territories can negotiate for additional payments through the Commonwealth Grants Commission. Equalisation payments are then made through Financial Assistance Grants based on selected proxy indicators for health care needs in different regions. Whilst this process may result in funding more closely related to need, the process and choice of indicators of need is potentially ad hoc and rather arbitrary.
Moreover, there is no guarantee that additional revenues obtained in this way will end up in the health service budget.

At the State level, the goals of efficiency and equity have been more explicitly addressed. The development of casemix funding in Victoria, and its subsequent adoption by several other health departments, signalled a clear emphasis on operational efficiency in hospital funding arrangements. To this end, experiences in Victoria have been positive, at least as measured by hospital throughput. The New South Wales approach of using a weighted capitation formula is, by contrast, based in equity considerations, and has involved some significant advances in the development of needs based funding mechanisms. Two main issues have arisen from this parting of the ways in the objectives of funding in different States and Territories.

First, the autonomy of health departments in developing funding mechanisms may promote innovation in the development of new funding methods, but may also result in a significant duplication of effort. Funding mechanism design inherently raises a wide range of technical, bureaucratic and political issues that may be better dealt with cooperatively, rather than by different groups in relative isolation. As a result, there has been some evidence of national initiatives in the development of casemix funding and collaboration between State and Territory health departments.

More importantly, the divergence in approaches raises a question about the relevance of the approaches across the Australian population as a whole. With casemix funding justified largely by efficiency goals, and weighted capitation justified largely by equity considerations, what of the values and objectives of the populations of different States and Territories? It seems rather extreme to suggest that the people of Albury and Wodonga have such different standpoints on health services that they would support the different approaches taken by their relevant health departments. What then of Tweed Heads/Coolangatta, a community split by the New South Wales-Queensland border and in two separate time zones, do they support the divide in the goals of their health service funding mechanisms? It appears likely that the Australian population as a whole would support a mix of efficiency and equity considerations. This implies that health departments should be drawing on others experiences with casemix and capitation to learn more of the useful aspects of the two approaches.

To this end, there have been some attempts to reconcile the two approaches in some State and Territory health departments. This reconciliation should be fundamental to the development of health service funding in future years for two reasons.

Firstly, while local health services may be in the best position to determine the needs of their population, the funding of health services should reflect the values of the whole Australian population. A common strategy for the development of funding based in both efficiency and equity considerations should better reflect the goals of the national population that pays for them.

Secondly, neither casemix nor weighted capitation represents the final word in the achievement of efficiency and equity goals. A combination of the approaches is more powerful than each in
isolation. Funds could be allocated by health departments on the basis of weighted capitation to purchasing agencies. These purchasing agencies could then procure services from provider organisations using casemix prices and information on the relative cost-effectiveness of services. This would mean the introduction of a regionally based purchaser-provider models, or managed competition, or an HMO system of health service organisation. Alternatively - where State or Territory health departments do not wish to devolve budgets - spending could be determined by casemix throughput targets for providers based on a combination of predictions of future use from weighted capitation models and cost-effectiveness information. In both the above ways the desirable properties of casemix and weighted capitation could be combined.

Most important of all, however, is the need for a unified approach to the funding and delivery of health services. The fragmentation of Australian health services is perhaps its largest source of inefficiencies and inequities. There appears to be an emerging recognition that health service funding and delivery should fall under the jurisdiction of a single level of government, even by politicians. Organisation of health services under a single level of government would represent a significant step in developing a coordinated approach to meeting population health needs, and in promoting efficiency and equity in health service funding and delivery. At present, at least in public, politicians and policy makers will not commit themselves to stating their preferences over whether health services should be the responsibility of the Commonwealth or the States.

It would appear, however, that the Commonwealth would make the more logical funder and overseer of the health system. The Federal Government raises virtually all current health service revenues through taxation, whereas States have a very narrow fiscal base. Adopting a model whereby the Commonwealth allocates resources directly to regionally based health service agencies would avoid the lengthy debates and negotiations about Federal-State funding relativities. If a weighted capitation formula based on sound empirical analysis was used, there could be a genuine attempt to fund regions and services in a more efficient and equitable manner. Furthermore, a formula based in evidence would reduce the influence of political power brokering on health service funding, and may lead to more accountable decision making.

Whilst the imperatives for the development of weighted capitation are clear, there may be significant impediments to its progress. Many institutional and bureaucratic barriers are evident, not least in any attempt to secure the agreement of eight separate Federal, State, and Territory Governments to a national funding model. What is clear though, is that the potential equity gains from overcoming these barriers may be large. If policy statements on equity in Australian health services are to become more than just statements, a national weighted capitation funding mechanism based in sound evidence should become a central plank in health policy.
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