



# Review of funding for paediatric clinical care services in Victoria

April 2004

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clinical care services in Victoria  
April 2004**

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*Professor Stephen Duckett*  
PROFESSOR OF HEALTH POLICY  
DEAN, FACULTY OF HEALTH SCIENCES  
PRO VICE-CHANCELLOR  
(HEALTH DEVELOPMENTS)

Mr. Shane Solomon  
Executive Director,  
Metropolitan Health and Aged Care Services,  
17/555 Collins Street,  
MELBOURNE. Vic. 3000.

22 April 2004

Dear Shane,

**Re: The Review of Funding for Paediatric Clinical Care Services in Victoria**

You asked me to chair the Steering Committee constituted to consider whether paediatric clinical care services and specialised children's services provided by the Royal Children's Hospital were disadvantaged by the current casemix system.

There has been an ongoing debate within Australia regarding differences between adults and children in terms of the types of illness, the treatment and the costs involved.

The Review found that on average, the costs of treating children outside of a specialised children's hospital are lower than for adults.

The costs of the specialised care provided by the Royal Children's Hospital, however, is equivalent to that of the specialised teaching hospitals providing care primarily to adults due to a number of factors.

The Committee found that the Royal Children's Hospital is disadvantaged by the current system which is a composite of WIES price and additional payments. It recommends that funding to the Royal Children's Hospital is adjusted by equating it to the average cost per WIES of major teaching hospitals.

The Committee was ably assisted in its considerations by Mr Chris Aisbett and his colleagues at Laeta Pty Ltd who provided detailed comparative data in a timely and erudite manner. It was also assisted by the clinical advice provided by the clinicians at Royal Children's Hospital.

I would especially like to thank all the members of the Committee for their keen involvement and contribution.

Yours faithfully,

A handwritten signature in black ink, appearing to read "S.J. Duckett".

**S.J. Duckett**

LA TROBE UNIVERSITY  
VICTORIA 3086 AUSTRALIA  
TELEPHONE: +61 3 9479 1930  
FACSIMILE: +61 3 9479 2624  
EMAIL: s.duckett@latrobe.edu.au

ABN 64 804 735 113



## Steering committee

The review was led by a steering committee comprising senior management and technical staff from Women's & Children's Health and the Department of Human Services. It was chaired by Professor Stephen Duckett, an expert in casemix funding.

**Stephen Duckett** (Chair)  
Dean of Health Sciences, La Trobe University

### Women's & Children's Health

**Kathy Alexander** (Chief Executive Officer)  
**Mari-Ann Scott** (Executive Director, Corporate Services)  
**Warwick Butt** (Staff Specialist, Intensive Care)  
**Tony Cull** (Executive Director, Royal Children's Hospital)  
**Cheryl Apperley** (Clinical Business Analyst)

### Department of Human Services

#### Metropolitan Health and Aged Care Services Division

**Bernadette O'Connell** (Manager, Funding Policy Unit)  
**Steve Gillett** (Senior Policy and Statistical Analyst)  
**Jane Fewings** (Senior Policy Analyst)

### Consultants - Laeta Pty Ltd

The steering committee appointed Laeta Pty Ltd to provide detailed statistical analyses of Victorian data. Laeta Pty Ltd was involved in the data analysis for the study conducted by Children's Hospitals Australasia and specialises in casemix-based analyses, with extensive expertise in this area both in Australia and internationally.

**Chris W. Aisbett** (Director)  
**Beth Reid** (Professor of Health Information Systems, University of Sydney)

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## Background

### 1. Introduction

- 1.1 The review of funding for paediatric clinical services in Victoria was undertaken following concerns expressed by management at Women's & Children's Health that children's services were disadvantaged by the current Victorian casemix system.<sup>1,2,3</sup>
- 1.2 In Victoria, the Royal Children's Hospital (RCH) is the sole specialised paediatric hospital with a total of 30,465 inpatients and 32,197 WIES10 in 2001-02. Monash Medical Centre (MMC) also provides specialised children's services but is smaller in size with 8220 inpatients and 10,022 WIES less than 16 years. MMC paediatric services are located within a large general teaching hospital, which therefore has a much larger throughput and the associated economies of scale. There are also a number of children's services providing some limited specialised but predominately general services for children.
- 1.3 Children's illnesses can differ from adults, for example, congenital conditions including heart, hearing, sight, types of cancer, or early stages of lifelong disorders such as cerebral palsy, are generally detected in childhood. The course of treatment can also differ in some respects; for example, children are more likely to be given a general anaesthetic than adults.
- 1.4 Children also require different levels of care because of their developmental limitations (for example, their inability to feed, wash, clothe themselves etc), as well as a requirement for play and parent support services. The need for additional nursing care beyond that required for the condition is also found for adults who are too frail or mentally unable to provide such care for themselves.
- 1.5 While certain differences between children and adults are well recognised, there has been long-standing debate at national level about the relative classification and costs of such differences.<sup>4,5,6</sup>
- 1.6 The review attempted to determine in broad terms, whether there is a difference between adults and children; between specialised adult and children's services and whether RCH was disadvantaged by the casemix formulae.
- 1.7 Given the scope of all the conditions and costs involved, it was not possible for the steering committee to investigate separately and/or clinically all diagnostic related groups (DRGs) (n=664) or all international classification of disease (ICD) codes (n=14,000) at a level that can be undertaken for a review of one specialty or one DRG.
- 1.8 Hospital inpatients are the major component of hospital activities and funding and there are general clinical and cost information available for inpatients that are not available to the same extent for outpatients or community-based patients. While the review restricted its analyses to inpatients using available data for the 2001-02 year<sup>7,8</sup> the general conclusions can be generalised to outpatients.
- 1.9 Casemix funding is frequently interpreted as the WIES price funding component but casemix funding also includes those cases and functions that are described and funded in addition to WIES, for example, teaching or services funded through co-payments or specified grants.

1.10 The Terms of Reference were:

- 1.10.1 To determine whether, in all metropolitan and A1 group hospitals, it is universally more costly to treat paediatric patients compared with adult patients for similar clinical conditions.
- 1.10.2 To determine the level of quaternary or statewide inpatient services provided by the Royal Children's Hospital compared with adult hospitals that have a similar requirement of being a provider of statewide services.
- 1.10.3 To determine the extent that provision of such statewide services results in a cost of service provision that is not reasonably met by the Victorian casemix funding.

## **2. Issues with DRG classification: small numbers, heterogeneity and specialisation**

- 2.1 Victoria uses the national classification system AR-DRG. This system (colloquially known as the national grouper) has 664 DRGs that summarise 14,000 diagnostic/treatment groups. While all groups meet given criteria for clinical and resource homogeneity, clearly some categories will be more heterogeneous (i.e. with a greater range of patients). Furthermore, while 14,000 ICD codes is an extensive system, not all clinicians agree with the configuration of such codes and the codes themselves do not always measure the total complexity of a patient.
- 2.2 One of the ongoing national debates has been concerned with grouping cases to DRGs on condition or age.<sup>4,5,6</sup> This issue is important when considering specialised hospitals with small numbers. Grouping on age can disadvantage the specialist hospital for certain conditions. Grouping on specialisation is preferable but can disadvantage the specialist children's service if there are costs attached only to children. Conversely, if costs are less for the hospital's subset within a DRG, the hospital will be advantaged.
- 2.3 One of the ongoing difficulties in the assessment of children's services and particularly specialised children's services is the number of children within any DRG. Small numbers mean that the data is variable and/or less likely to be seen within a DRG. Only 79 (or 12 per cent) of the 664 DRGs, had 100 or more inpatient admissions. Equally if the number of cases are small, hospitals are less likely to make individual submissions for assistance through a specified grant.
- 2.4 The level of specialisation and patient complexity for adults and children is difficult to measure because so many functions are correlated, for example, teaching of students, provision of specialist advice and care, research into diseases. There is no international, national or State measure that can precisely measure the level of specialisation or patient complexity, although there are a number of useful surrogate measures used for general funding purposes.
- 2.5 The Victorian casemix system recognises specialisation, multiple hospital functions and patient complexity through a number of mechanisms including: outlier policy; co-payments; training and development grant and specified grants for specialised services.<sup>9</sup>

- 2.6 Cost data used in establishing weights for DRGs take all reported hospital costs from the sample of hospitals into account. Clearly the greater extent and level of the multiple functions and costs of the teaching hospitals will add to the costs as allocated to some DRG categories, for example, medical costs will reflect teaching costs as well as direct care costs. The problem is that it is not possible to separate the higher costs of specialisation from other costs, for example, direct patient care, costs due to the scale of the hospital or inefficiencies.

## Findings

### 3. Comparison of average costs per WIES: adults vs children and Royal Children's Hospital compared to other hospital and age groups

- 3.1 The first major set of analyses shown in table 1 shows that adults were on average more expensive at \$3,339 per WIES than children who were not cared for in the RCH: \$2,823 per WIES.
- 3.2 It also showed that the RCH average cost per WIES – (\$3,555) was almost identical to that of other major teaching hospitals – all ages (\$3,557) and higher than for patients less than 16 years at Monash Medical Centre (\$3,026).
- 3.3 There was an average cost per WIES of \$3,316 for all patients in the Victorian Cost Weight Study (excluding smaller rural cost-modelled hospitals).
- 3.4 The average cost per WIES divides all total costs as given in the Cost Weight Study data by the total number of WIES for each of the groups.

**Table 1: Cost per WIES: standardised comparison: major hospital groups**

Hospital	WIES	Total cost \$M	Cost per WIES \$	Standardised index value
Royal Children's	28,467	101.2	3,555	1.00
Major teaching hospitals	262,698	934.3	3,557	1.04
All adults – over 16 years	411,910	1,375.4	3,339	1.09
All hospitals in CWS	473,502	1,570.0	3,316	1.12
Monash Medical Centre (under 16 years)	10,022	30.3	3,026	1.14
Patients under 16 yrs (excl RCH)	33,124	93.5	2,823	1.29

- 3.5 The casemix was then standardised to control for the impact of different cases and numbers at different hospitals, or in other words, equivalent cases across hospitals were then compared (or standardised) by multiplying the RCH casemix by the average DRG costs at the RCH and the average DRG costs per WIES at the other hospital groups. These DRG costs were then totalled and compared. The proportional differences are shown in table 1 as the standardised index, representing the cost of RCH compared to the target group. This index showed RCH was marginally more expensive (4 per cent) than major teaching hospitals for the same casemix. It was more expensive than the MMC less than 16 year group (14 per cent) and more expensive than all children less than 16 years (29 per cent). In other words, the actual or crude average cost per WIES was almost identical to other major teaching hospitals, but RCH had slightly higher costs (four per cent higher) after adjusting for the mix of DRGs.
- 3.6 Both RCH and MMC provide more specialised and complex services than other children's services and both could be expected to be higher cost services. The MMC has a smaller caseload and offers a more limited range of services. One would expect that the RCH's higher costs in relation to MMC (14 per cent) and other children's services (29 per cent) are due to the higher costs of specialisation.
- 3.7 This analysis cannot distinguish the reasons for the higher costs which could include higher costs associated with specialist conditions and care of children (for example, longer operation times, greater use of anaesthetics); specialised and higher levels of care of children (for example, higher levels of nursing care); size or scale of sole provider operation (for example, higher teaching load) and/or inefficiencies in the provision of care.
- 3.8 In order to further illuminate the differences between RCH and other specialised hospitals and between children's and adult services, two approaches were taken:
- a) an analysis of general major factors likely to result in higher costs
  - b) five clinical specialties where RCH costs were greater than the state average cost by more than \$2M were selected for more detailed and systematic examination.

#### **4. General factors across sample**

- 4.1 Earlier children's studies, exploratory analyses and discussions within the Steering Committee suggested a number of potential reasons for the higher costs demonstrated at RCH. As all specialist hospitals will provide some high cost specialist therapies, emphasis was on systematic differences that were within RCH casemix and which could potentially impact on RCH costs across a range of DRGs. A number of possible factors were identified.
- 4.2 The first analysis was undertaken across the total patient sample (using CWS data) in relation to the three factors that were likely to cause higher costs across DRGs.<sup>10</sup> These factors included the use of general anaesthetics, the number of patients with congenital anomalies, and the number of transfers to RCH from other hospitals. The study considered cost differences within DRGs.

- 4.2.1 General anaesthetic: At RCH 48 per cent of all patients (63 per cent of WIES) received a general anaesthetic compared with 21 per cent of separations at all other hospitals. Patients receiving a general anaesthetic at the RCH accounted for 63 per cent of costs compared with 37 per cent of costs in other hospitals. It is often necessary to fully sedate children for procedures, which for adults, will require local or no anaesthetic. Therefore, costs related to the provision of a general anaesthetic are not related to the condition *per se* but rather, the age of the patient.
- 4.2.2 Congenital anomalies: 14 per cent of RCH separations had a congenital defect diagnosis and these patients accounted for 32 per cent of RCH costs. Most of these were coded as the principal (or main) diagnosis. In all other hospitals, patients with congenital anomalies accounted for one per cent of separations and three per cent of costs. A range of associated complex health issues, other than that described by the principal diagnosis, generally accompanies a congenital malformation.
- 4.2.3 Transfers in: RCH received approximately twice (six per cent) the proportion of transfers from other hospitals than the other hospitals considered in the analysis (three per cent). It can be reasonably assumed that the complexity of patients transferred into the RCH from other hospitals would be very high with the associated extra costs. This could be assumed for transfers into all other major teaching hospitals.

**Table 2: General anaesthetic, congenital anomalies and transfers in: Royal Children's Hospital and State**

	WIES		Separations		\$ Costs		
	RCH %	State %	RCH %	State %	RCH %	State %	Estimated \$ Impact \$M
General anaesthetic	63.2	35.5	48.4	21.4	63.1	37.5	2.9
Congenital anomalies all diagnoses	33.4	3.4	14.4	1.3	31.9	2.8	0.9
Congenital anomalies principal diagnoses	26.7	0.6	11.9	0.6	25.2	0.6	0.5
Transfers in	23.3	7.2	5.6	2.7	21.2	7.4	0.5

Note:

1 State excludes RCH

2 WIES means Weighted Inlier Equivalent Separations

3 All results excluded renal dialyses, liver, lung and heart transplants

- 4.3 The likely total cost impact of these differences as shown in table 2 was \$4.3 million: the higher costs of general anaesthetics to be \$2.9 million and the higher level of diagnostic investigations and different procedures for congenital anomalies nearly \$1 million.

## 5. Differences in casemix within the five clinical specialties

- 5.1 The five clinical specialties chosen included: cardiology, gastroenterology, general medicine, neonatology and haematology/oncology. These specialties were chosen by RCH taking their clinicians' advice. These specialties contained the DRGS with the higher costs per separation and higher costs per WIES. They were chosen to illuminate the possible differences at the ICD level and determine whether there were other general factors than those mentioned above.
- 5.2 Laeta Pty Ltd constructed casemix-standardised ratios for the cost per WIES in each of these areas. The results for comparisons against different groups of patients are presented in table 3 below.

**Table 3: Relative cost per WIES for Royal Children's Hospital compared with other groups of patients**

Specialty	All Patients	Major teaching hospitals	Adults—all hospitals	Children at MMC	All children except RCH
Cardiology	1.09	1.09	1.15	1.27	1.22
Gastroenterology	1.19	1.14	1.18	1.38	1.44
General medicine	1.15	1.07	1.11	1.21	1.31
Haematology/oncology	1.23	1.23	1.24	1.51	1.54
Neonatology	1.32	1.13	N/A	1.35	1.64

As expected from the general index, comparison of the standardised index for these five areas shows that although RCH costs are closer to major teaching hospitals than other children's services, RCH costs are nine per cent more costly for cardiology, 14 per cent more costly for gastroenterology, seven per cent more costly for general medicine, 23 per cent more costly for haematology/oncology and 13 per cent more costly for neonatology in other major teaching hospitals. (Note that these differences need to be interpreted cautiously as they do not reflect funding differences, for example, neonatology is 'better' funded than the other areas).

- 5.3 Each specialty was then considered at a diagnostic and procedure level using specially constructed indices to understand the differences between adult and children's services within these specialties. These data were discussed at a special meeting of clinicians who also provided written accounts of differences to illustrate the type of cases seen and the way children are treated.

- 5.4 The primary differences between adults and children and specialised care for children and less specialised care were for each RCH specialty:
- 5.4.1 In cardiology, most patients cared for have congenital heart defects. Furthermore, treatment tends to be different from adults, for example, right and left heart catheterisation takes longer theatre time, patients with congenital defects of their ventricular septum are often in the high-risk group not seen in other hospitals and approximately half of patients with coarctation of the aorta at RCH are neonates.
- 5.4.2 In gastroenterology, there are a higher proportion of general anaesthetics administered, particularly for endoscopic procedures. This reflects the greater potential for risk associated with young children, often with complex medical conditions or congenital anomalies. Clinical presentations are more ambiguous than adults. The inability of small children to present a clear history often results in endoscopic procedures to rule out oesophagitis, food-related allergic disease and malabsorption. Large numbers of children are admitted with gastroenteritis each year. The most severe episode of gastroenteritis occurs during the first infection, usually acquired in the first 1-2 years of life. Gastroenteritis is more difficult to treat in small children as they easily dehydrate and are likely to refuse feeds and oral rehydration. Feeding gastrostomies are a frequently used mainstay in the nutritional management of children with complex and congenital medial disease.
- 5.4.3 In neonatology, the majority (over 80 per cent) of patients are transferred to RCH and over 40 per cent of inpatients receive major surgical procedures. The most complex neonatal surgical procedures are performed only at RCH. Services offered at the RCH and not found elsewhere include ECMO, high frequency jet ventilation and embolisation of the great cerebral vein of Galen. The data showed the greater provision of general anaesthetics, magnetic resonance imaging of the brain, greater use of respiratory support and audiology at RCH. Neonatal patients with congenital anomalies were also identified as being more common at RCH.
- 5.4.4 In haematology/oncology, paediatric patients are treated from the onset with an intention to cure, whereas for adult oncology services, a proportion will be treated for palliative care. The clinical cases also likely to be different and specialised, for example, children with medulloblastoma, acute myeloid leukaemia and constitutional aplastic anaemia, are only treated at RCH. Kidney tumours and bladder tumours in childhood are different and require different and generally more expensive treatment than adults. The data also showed that intravenous and inhalational general anaesthetic was more common than at other major teaching hospitals but intravenous sedation, anaesthetic controlled was less common than at other major teaching hospitals. The course of chemotherapy was generally longer than in major teaching hospitals and clinical advice was that the type of drugs used were more expensive as the treatment of children is often more aggressive than in adults.

- 5.4.5 In general medicine, approximately 30-40 per cent of admissions are tertiary with patients transferred in, or specially referred to RCH. Examples of differences between children and adults were given for two DRGs one regarding viral illness and the other oesophagitis and miscellaneous digestive system disorders. In both cases the symptoms are more ambiguous in children and require greater investigation. Adults can be given a prescription for oesophagitis and digestive system disorders but drugs are frequently unsuitable for children. The data for general medicine cases also showed a greater use of general anaesthetics and a higher use of gamma globulins and other blood products.
- 5.5 These findings cannot be neatly translated into a cost difference for individual DRGs for a number of reasons. Firstly, procedures and secondary diagnoses can belong to a number of different patients with different illnesses across DRGs, so identification of the cost of a particular procedure is not possible. Secondly, patients will have a number of diagnoses and procedures that will increase costs but cannot be subdivided into DRGs. Thirdly, some of the differences are not adequately captured by the ICD codes. Fourthly, the cost data is underestimated for private patients at RCH. Fifthly, the above examples are illustrative and as the clinicians point out not comprehensive.
- 5.6 Even for the cases where there are DRG costs, the translation into a DRG must be considered as inadequate. For example, the case for higher rates of chemotherapy is clearly shown by the standardised data on diagnosis and procedures. If the difference in costs is calculated for the DRG chemotherapy, the difference in cost is \$250,000. This solution does not solve the problems of costing the differences in the actual episodes for children with particular forms of cancer or the unreported costs of drugs.
- 5.7 In summary, examination of this data is important in that it confirms the existence of highly specialised conditions and the differences between children and adults. It does not however allow for the meaningful costing of such conditions. It is technically impossible to control for all sources of variation in order to make precise comparisons.

## 6. Private patients: costs and cost weights

- 6.1 It was discovered during the course of the review that RCH appeared to be losing funding on DRGs in which it undertakes the majority of activity. It was considered that this was due to a lack of cost data relating to private medical costs so the costs as used for the cost weights are underestimated. This is likely to be true for all hospitals but as RCH has a higher proportion of private patients (23 per cent) than the State average (seven per cent) this affects RCH more than other hospitals.
- 6.2 As the excluded private medical costs are not incurred by the hospital, private patients are discounted (by \$412 in 2001-02) by the department to account for the fact that these medical costs are not borne by the hospital or generate separate revenue. Without full data on all private costs, this amount is an estimate based on available data.<sup>17</sup>

## 7. Environment of care for children

- 7.1 A number of factors were proposed that are particular to the care of children and not adults but not recognised in the clinical classification system in terms of recognised diagnoses or procedures. The most important in terms of cost is the involvement of parents staying with their children. It has been estimated by RCH that these costs associated with laundry and meals provision for patients are approximately \$1M per annum in 2001-02.

## 8. Costing the differences

- 8.1 While the above analyses demonstrate that RCH has both specialised cases and on average, higher costs than other children's services, they also demonstrate the difficulties in assessing the degree of disadvantage.
- 8.2 There are four ways of assessing this disadvantage:
- 8.2.1 Costing general factors across the hospital (general anaesthetics, congenital anomalies, transfers in). This approach identifies a number of factors influencing higher costs at a DRG level, but could be considered to be an underestimate in that it excludes more limited effects relating to particular DRG or ICD groups. It doesn't take into account the problems with RCH data. The estimated cost for the factors identified so far is \$4.3 - \$5M.
- 8.2.2 Costing at the high cost specialities at a specialty or an ICD level – the five clinical specialties. This approach assumes that the higher costs are totally due to specialisation and/or the differences between adults and children. Funding higher cost specialties simply because they had higher costs would set a new and unusual precedent and could be considered to be unfair and/or insensitive to broader management and economic objectives. Costing at ICD level within the specialty would be incomplete and problematic as outlined above. The estimate would depend on the degree of specificity; for high cost specialties it would be \$4-6M and would increase at DRG or ICD level. Other hospitals could make similar claims.
- 8.2.3 Costing on the basis of the general factors and high cost specialties (i.e. combining 8.2.1 and 8.2.2) This approach would recognise the general factors across all DRGs and the examples given by the specialties and/or the total costs of the specialties.
- In effect, this approach would add the costs of general anaesthetics and transfers for those cases outside the high cost specialties. It would be subject to the same disadvantages listed above, for example, funding based on an individual hospital's costs. It would be viewed as partial to certain specialties, incomplete within those specialties (if based on examples) incomplete as it would be based on incomplete data and would introduce the precedent of specialty funding and ICD funding across all hospitals. The estimate would be \$5-8M although further analyses could add to it.

8.2.4 Using an external criterion to determine total inpatient costs. This approach outlined below establishes the expected costs based on the assumption that RCH is a specialised hospital for children and can be compared to adult specialised hospitals. In essence it compares the *expected* funding for RCH based on the average costs per WIES of major teaching hospitals to RCH's *actual* funding. The precise formula and its advantages and disadvantages are outlined in section 9 below. This approach is fairer than the above method in that it includes all specialties within RCH, and it allows for the mix of high and low cost cases by assuming that mix is similar to adults. It does not favour particular specialties. It is both more equitable within RCH and ensures efficiency by pegging to a comparator group. It is essentially a loading to bring RCH in line with other major teaching hospitals. The estimate here is \$10-11M.

## 9. Specialised children's hospital adjustment factor and formula

- 9.1 This approach is based on the assumption that RCH is comparable to other major teaching hospitals. It is comparable to The Alfred in regard to its complexity factor as measured for training and development, last year. Both hospitals had 12 per cent of WIES defined as complex.<sup>12</sup> Detailed data on clinical differences in the five specialty areas established specialised care and some of these specialties are only provided by RCH. It also has a high number of transfers into the hospital. Like all specialised hospitals, it will treat a range of cases and have a range of costs. In other words, the expectation must be that RCH should be funded as a major teaching hospital.
- 9.2 Under this approach, the main problems (a partial approach and inadequate RCH data) associated with the first two approaches are avoided. The expected costs are based on the costs of major teaching hospitals: a stable and robust measure. These costs are the average for The Alfred, Royal Melbourne Hospital, Austin and Repatriation Medical Centre, Monash Medical Centre and St Vincent's Hospital (or A1 hospitals in the Cost Weight Study). These costs include all hospital costs, including all programs and most grants and are substantially higher than the WIES price.
- 9.3 This approach is fair as it includes all specialties within RCH, and it allows for the mix of high and low cost cases by assuming that mix is similar to adults. It does not favour particular specialties.
- 9.4 It is both more equitable within RCH and ensures efficiency by pegging to a comparator group. Without a special comparator standard of the most efficient teaching hospital, the average constitutes the best method.
- 9.5 This approach assumes that the differences noted above in the clinical specialties, and in the general factors and the special factors regarding the environment of care have not been provided in specified grants and are included in the difference between the expected level and the actual level of funding. Specifically it incorporates both the visible differences seen in the higher level of general anaesthetics, the higher proportion of congenital anomalies and the proportion of transfers in. It also incorporates the highly specialised services both provided as examples for the five specialty areas and those areas raised by Women's & Children's Health in its 14 November 2003 letter in relation to inpatient services. It includes factors related to environment of care.

- 9.6 The adjustment factor for the hospital is in fact a loading to compensate for the myriad differences between both general and specialised care for children and adults. It also recognises that RCH is disadvantaged compared to other specialised hospitals given the small numbers involved within DRGs and the size of many of its services in terms of its ability to argue for specified grants and/or separate DRGs.
- 9.7 It is linked to the average cost of the major teaching hospitals and therefore is not based on policies related to specified grants or particular programs. It is also not based on price changes to WIES.
- 9.8 Major teaching hospitals are funded through:
- WIES targets at a given price; and
  - additional funding based on a range of mechanisms both associated with WIES funding (for example, components of training and development, specified grants for transplants) or associated with attributes of a teaching or general hospital (for example, hospital demand, training costs, quality initiatives).

9.8.1 In formulaic terms:

*Department of Human Services funding for major teaching/A1 hospital = (WIES x price + additional funding)*

9.9 The formula to derive the expected level of funding therefore is:

*Expected departmental funding for RCH = (Average cost per WIES for major teaching hospitals x RCH's public and private WIES) minus (private costs as determined by government policy).*

- In 2001-2002, the average cost per WIES for specialised major hospitals was \$3,560. (This has been derived by using the consultant's total for major teaching hospitals and subtracting RCH's costs)
- Public and private WIES are only applicable as all compensable patients are paid *through* the department not by the department. For the purpose of the review, the WIES count has been taken from the cost weight study.<sup>13</sup>
- Government policy in terms of the private costs it would not fund was expressed as \$412 per private WIES. (Note: There were other policies regarding the rate of revenue collection and revenue 'call-back' for the department that are external to the actual funding formulae. They are administered separately and not necessary to consider here. If this amount changes in future years, this would need to be considered).

9.10 Applying the formula for 2001-02:

$$\begin{aligned}
 & \text{(Av cost per WIES (MTHs) x (pub and priv WIES) - (priv costs discount - DHS policy)} \\
 & = \quad (\$3,560 \quad \times \quad 30,939) \quad - \quad (7,055 \text{ private WIES} \times \$412) \\
 & = \quad \quad \quad (\$110.14M) \quad \quad \quad - \quad \quad \quad \$2.91M \\
 & = \underline{\underline{\$107.2M}}
 \end{aligned}$$

(iv) In 2001-02, the actual funding for inpatients at RCH was \$96.7m (excluding compensables i.e. trauma specified grant).<sup>14</sup>

(v) This means that RCH was funded by \$10.5M less than expected.

9.11 This specialised paediatric hospital adjustment factor will need to be adjusted every two or three years to ensure continued parity.

9.12 It is also recommended that as part of this adjustment, the complexity factor as constructed as part of the training and development grant be reviewed to determine whether case complexity at RCH has changed significantly or whether it is in line with major specialised hospitals.

## 10. Preferred method

10.1 The RCH Specialised Children's Adjustment Factor or Loading is preferred on the grounds that it is fairer, more complete, simple, transparent and based on robust measures. It takes into account all funding for patients, not just the WIES price component. It is not based on a single hospital's costs, nor selected specialties. It recognises the importance of ensuring equity and efficiency within the Victorian casemix structure.

10.2 It acknowledges the differences in RCH's casemix and the problems of costing and funding specialised children's care and recompenses the RCH for the costs of providing specialised children's care.

## Notes

- 1 Details on casemix funding for 2001–02 are found in Victorian Government Department of Human Services, 2003, *Victoria – public hospitals and mental health services Policy and funding guidelines 2003–2004* and website: <http://www.health.vic.gov.au/pfg2003>). In 2002–03, the training and development grant was split into components.
- 2 Casemix funding at DRG level is based on a national classification of 664 DRGs that group 14,000 ICD International Classification of Disease codes (colloquially known as the National Grouper). This system of classification is both sophisticated and complex and has been developed over the last 15 years by the Commonwealth Department of Health and Ageing (CDH&A) through the independent Australian Clinical Casemix Committee (ACCC). Through the ACCC, the CDH&A draws upon the expertise of eminent clinicians in all fields and empirical analyses undertaken by the Commonwealth and by independent, internationally recognised statistical consultants. It is supported by the Centre for National Classification in Health. DRGs are progressively refined to reflect current medical practice.
- 3 Although the Department of Human Services has introduced a few modifications to better reflect generally emerging conditions (for example, stent use), in the main, the Victorian casemix system is based upon the national system. As a signatory to the Australian Health Care Agreement and the National Health Information Agreement, Victoria acknowledges that national consistency in data collection and reporting is necessary and that the development and implementation of a separate, Victorian-specific Grouper would be unjustifiable.
- 4 Consideration of the differences between adults and children across all disease groupings has been a fundamental part of the national classification's development and evolution. Paediatricians have been involved in the evolution of the DRG classification and it has changed over time to better reflect paediatric conditions and costs. These analyses, which have included both length of stay and cost information, have resulted, over time, in a reduction in the number of paediatric age splits within the classification (41 paediatric splits in Version 2.0, 14 splits in Version 3.0, 7 splits in Version 4.0) and a corresponding increased sophistication in the use of clinical detail within DRGs. As a consequence, DRGs have progressively become better at describing the costs of care provided to patients.
- 5 Initially, Victoria used Version 2 DRGs in the casemix funding formula. At that time, relatively few costing data were available and concerns about the ability of DRGs to describe paediatric care resulted in DHS allocating a particular specified grant to the Royal Children's Hospital (RCH). It was removed with the introduction of AR-DRG 4; a more sophisticated AR-DRG version that better recognised paediatric costs. Department of Human Services analyses also showed that services provided to children did not have higher costs than adults.
- 6 A subsequent, national study (Children's Hospitals Australasia, 2001, *Costing Kid's Care. An investigation into cost differentials for paediatric patients*) found that the base cost for paediatric hospitals was significantly higher (10–20 per cent) than for other large hospitals treating adults or treating both adults and children, but this study was not directly comparable to Victorian casemix. The study did however recommend that

Australian DRGs were suitable for use in paediatric hospitals and for paediatrics in general. This study looked at cost per separation which is a cruder count than costs per WIES and ignores the co-payments, for example for mechanical ventilation within the Victorian formula. Therefore, the results of the national study are not necessarily directly relevant to funding paediatric services in Victoria.

- 7 The review's terms of reference focused on the funding formulae as expressed in available data. The review was limited to acute admitted patients as only these patient-types are funded through the DRG and WIES system. It considered data for the 2001-02 year, as it comprised the most recent, complete and properly audited data set.
- 8 The committee had to make judgements in an area where, frequently, numbers are small (and therefore effects can be difficult to interpret); costs are allocated using broad methods that can legitimately vary across hospitals and within a financial accounting system that lists details that are problematic to aggregate and summarise. The cost funding comparisons at The Alfred and RCH were ratified by the chief financial officers at each hospital. The data provided in the Cost Weight Study is compared to the strictly monitored Victorian Admitted Episodes Dataset (VAED).
- 9 The casemix system recognises that not all services can be funded through DRGs. A number of grants and mechanisms have been introduced to fund specialisation, teaching, and patient complexity costs including:
  - the outliers component of WIES for increased case complexity, co-morbidities and rare patients
  - co-payments attached to WIES, for example, thalassemia, intensive care/ mechanical ventilation
  - training and development grant
  - specified grants for specialised services that recognise the additional and different costs borne by hospitals (for example, burns unit, spinal unit) generally established on the basis of claims by hospitals.
- 10 The study of general factors' sample excluded dialysis and major organ transplant DRGs.
- 11 Clinical costing standards state that all costs should be allocated to patients with revenue displayed as a separate item. An issue occurs when costs (for instance, medical costs) are not accrued by the hospital and revenue is paid directly to clinicians. In this situation, the costs of DRGs with a significant private component are likely to be underestimated. This means that cost weight relativities are lower. The department then subtracts \$412 (2001-02) for the medical component. The cost weights are developed for public patients only and for private and public combined and any discrepancies are assessed and corrected. This is relatively easy for prostheses costs and clear differences in cost components. RCH has estimated this effect to be a \$1 - \$4M loss on the basis that 50 per cent of all medical costs are missing but this analysis relies heavily on specific assumptions and is based only on RCH data. The department is investigating the issue as a component of the current cost study.

- 12 Work undertaken in distributing the complexity component of the training and development grant indicated that the RCH and the Alfred both had higher than average levels of patient complexity (12 per cent) when compared with other A1 Group hospitals. Both of these hospitals have highly specialised units; the Alfred for adults and the RCH for children. Unfortunately, the level of complexity cannot be used to indicate costs.
- 13 Issues concerning the revenue received from private patients, or compensable patients (i.e. payments received from Transport Accident Commission, Workcover or Department of Veteran Affairs) can have an impact on the profitability of a hospital especially if revenue sources vary from the standard and public funded component. There are differences in the proportion of patients in these categories between adult and children's hospitals. RCH has a higher proportion of private patients and major specialised hospitals have higher proportions of compensable patients.
- 14 The total amount of \$96.7M was based on \$64.7M provided as WIES funding; \$4.3M provided as specified grants linked to specialties and/or DRGS; \$9.2M provided as training and development and research; \$18.5 M provided for quality, new technology, nurse agency costs and other staff payments and other payments. The total of \$96.7 excludes all outpatient payments, grants provided by the Commonwealth DVA and trauma funding. The analysis was undertaken by separating all RCH inpatient funding from Royal Women's Hospital funding. Grants that were primarily for inpatients were included in total and similarly funding for outpatients that were primarily for outpatients were excluded. This allowed for a more transparent result and a clear trail for auditing rather than arbitrary splits between inpatients and outpatients.