



*For further information contact:*

**Casemix Policy Unit**  
*Funding and Systems Policy Branch*  
*NSW Health Department*

**Ph: (02) 9391 9590**

**Fax: (02) 9391 9994**

**E-mail: [dmaze@doh.health.nsw.gov.au](mailto:dmaze@doh.health.nsw.gov.au)**

---

## Table of Contents

<b>1. INTRODUCTION .....</b>	<b>1</b>
1.1 Scope.....	4
<b>2 OVERVIEW OF THE FUNDING MODELS .....</b>	<b>5</b>
2.1 Acute inpatients .....	5
2.2 Emergency departments.....	6
2.3 Intensive care units.....	7
<b>3 NSW FUNDING GUIDELINES.....</b>	<b>10</b>
3.1 Step 1 Determine In-Scope Hospitals .....	10
3.2 Step 2 Determine In-Scope Services .....	10
3.3 Step 3 Determine Incentive and Optional Volume Component of the Inpatient Funding Model.....	16
3.4 Step 4 Determine Activity Levels for 2003/2004 .....	17
3.5 Step 5 Determine Prospective Budget Allocation - Activity Component .....	18
3.6 Step 6 Determine Prospective Budget Allocation - Infrastructure Component .....	19
3.7 Step 7 Implementation of Funding Models.....	22
3.8 Aids for Implementing the Funding Models .....	23
<b>4 CONCLUSION.....</b>	<b>24</b>
<b>5 REFERENCES .....</b>	<b>25</b>
<b>APPENDIX A: LINKING TARGETS FOR BOOKED SURGERY AND INPATIENT ACTIVITY .....</b>	<b>26</b>
<b>APPENDIX B: FUNDING OF RENAL DIALYSIS.....</b>	<b>29</b>
<b>APPENDIX C: SUB AND NON-ACUTE INPATIENT ADJUSTMENT .....</b>	<b>30</b>
<b>APPENDIX D: GUIDELINES FOR MECHANICAL VENTILATION CO-PAYMENTS .....</b>	<b>31</b>
<b>APPENDIX E: ACUTE INPATIENT COST BENCHMARKS FOR 2003/2004 .....</b>	<b>33</b>
<b>APPENDIX F: ED COST BENCHMARKS.....</b>	<b>37</b>
<b>APPENDIX G: NSW ED CLASSIFICATION.....</b>	<b>39</b>
<b>APPENDIX H: ED WORKLOAD PROFILE OF EACH HOSPITAL .....</b>	<b>40</b>
<b>APPENDIX I: IMPACT OF THE 2003/2004 ED MODEL BY HOSPITAL .....</b>	<b>43</b>
<b>APPENDIX J: IMPACT OF THE 2003/2004 ED MODEL WITHIN EACH AREA HEALTH SERVICE.....</b>	<b>45</b>
<b>APPENDIX K: DEFINITION OF AN IC PATIENT.....</b>	<b>46</b>
<b>APPENDIX L: RESULTS OF IC SURVEYS .....</b>	<b>48</b>
<b>APPENDIX M: NSW IC BENCHMARK COSTS.....</b>	<b>50</b>

---

## **1. Introduction**

The *NSW Funding Guidelines 2003/2004* supersede the *NSW Episode Funding Guidelines for Acute Inpatient Services 2002/2003* (NSW Health 2002a), *NSW Funding Guidelines for Emergency Department Services 2002/2003* (NSW Health 2002b) and *NSW Funding Guidelines for Intensive Care Services 2002/2003* (NSW Health 2002c). They combine the three separate sets of guidelines issued in previous years into one set covering all these services.

The *Guidelines* apply to the NSW public health system, which comprises rural and metropolitan Area Health Services and the Children's Hospital at Westmead. There are other services such as the Ambulance Service of NSW and Corrections Health Service that are also part of the NSW public health system, however, these guidelines do not extend to these services at this stage.

The *NSW Funding Guidelines* are currently limited to guidelines on acute inpatient care, emergency department (ED) and intensive care (IC). There is a plan however to introduce guidelines for other types of services such as sub- and non-acute inpatients and hospital outpatients in the near future.

These *Guidelines* should be read in conjunction with a range of other policies and documents produced by the NSW Health Department. These other documents define the conventions used in these *Guidelines*, or provide background on the derivation of the figures used. These other documents include, but are not limited to, the following:

- *Report of the NSW Health Council* (NSW Health 2000)
- *NSW Costs of Care Standards 2003/04* (NSW Health 2003a)
- *NSW Peer Hospital Groups 2001/02* (NSW Health 2003b)
- *NSW Resource Distribution Formula: Technical Paper 1998/99 Refinement* (NSW Health 1999a)
- *NSW 2001/02 Program and Product Data Collection Standards* (NSW Health 2002d)
- *Refinement of the NSW Health Program Structure* (NSW Health 1999b).

A new funding cycle formally incorporating output based funding began in NSW in 2000. This was introduced with a range of other reforms arising from the *Report of the NSW Health Council* (NSW Health 2000).

Under the reforms, a system of three-year budget allocations was established that provided NSW Health with an agreed level of funding from Treasury, including growth, for the period 2000/01 to 2002/03. This arrangement is based on a growth formula agreed by the Government that takes into account the impact of population growth, ageing and technology change.

NSW's population-funding approach, the Resource Distribution Formula (RDF) was also continued. It is used to guide the allocation of funding for Areas and to address historical funding inequities.

Within their population based funding allocation, Area Health Services are required to allocate funds across all program areas. This task is fundamental to achieve Area Health plans for service delivery that reflects government and local priorities and strategies.

From 1 July 2000, Areas were required to use Episode Funding, an output based funding approach, to allocate budgets to hospitals to meet the cost of admissions under the acute inpatient program. This did not include the ED component or IC component of admissions, which were funded through separate streams because:

- These services have high fixed capacity costs;
- The DRG system does not work well for these forms of care. Costs for patients dealt with by these services are impacted by different factors to those typically recognised in acute inpatient classifications (for example, triage category and severity); and
- The cost weights derived for DRGs average out the ED and ICU costs across all hospitals and all inpatients in each DRG. A funding model is required which recognises that the costs incurred are concentrated in hospitals with major ED and ICU services.

In 2002/03, separate funding models were introduced for ED and IC, creating three different types of episodes of care:

- Acute inpatient episodes (exclusive of the ED component and/or IC component of such episodes);
- ED episodes defined as all of the care that a patient receives in an ED irrespective of whether the patient is subsequently admitted or discharged; and
- IC episodes defined as all of the care that a patient receives in a designated Level 5 or 6 ICU during their inpatient stay. High dependency patients treated in these units are not included in the IC Funding model.

The flow of funds described above is represented in Figure 1.1 on the following page.

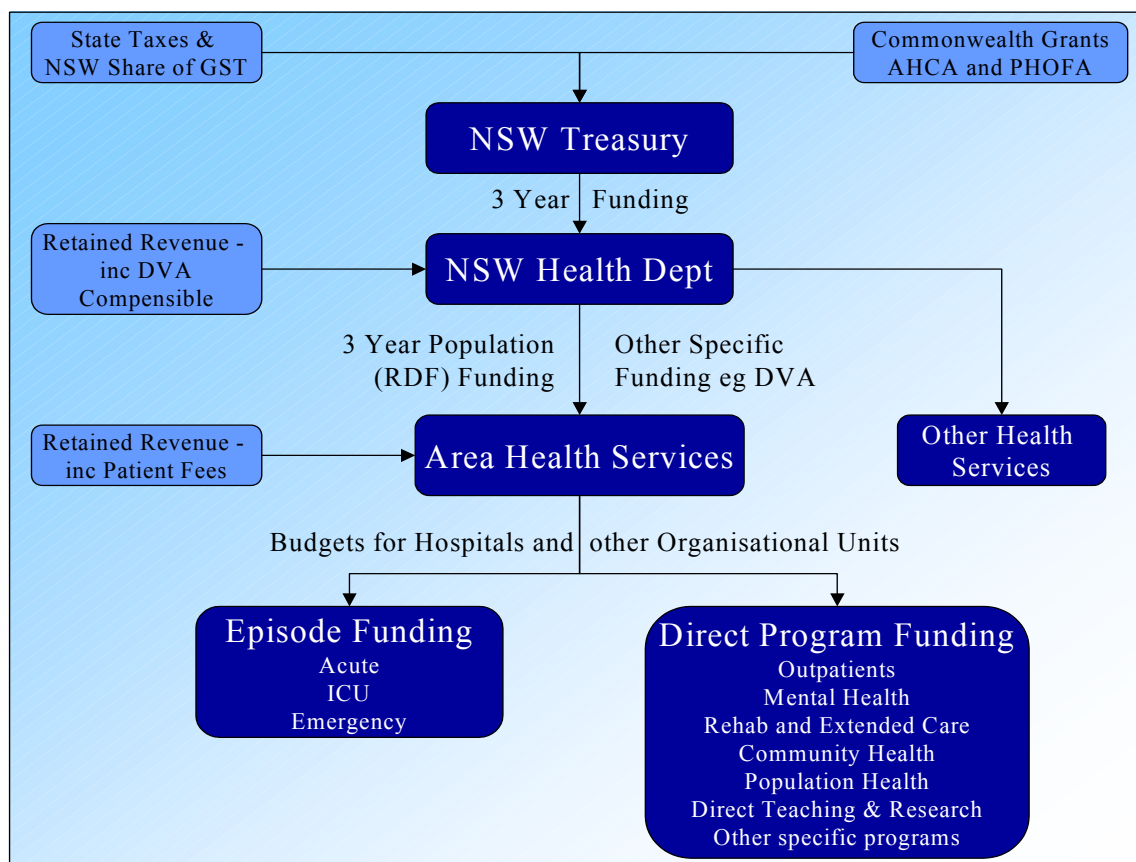
The principle of the funding approaches used is to recognise the costs of caring for patients at each different phase of their 'episode of illness'. Each of these phases is known as an 'episode of care'. Information about each episode of care can be bundled together to form an integrated picture of the services that the patient receives at each point along the care continuum.

Just as 'episodes of illness' vary in their duration, intensity and outcomes, so to do 'episodes of care' vary in the objectives of care, the time involved, the nature of the interventions provided, the settings of care and the outcomes of care.

Activity based funding will continue to be expanded in future years to encompass entire episodes of illness. This will require the use of classification and costing systems that capture other settings and types of care.

The next phase in implementing new funding models will be the inclusion of sub-acute and non-acute care episodes for rehabilitation and palliative care. This will be possible because of the progressive implementation since 1998/99 of the Australian National Sub-Acute and Non-Acute Patient (AN-SNAP) classification in NSW. Costing of these services began in 2000/01 and will continue in 2003 costing 2001/02. A review of the classification will also be undertaken during 2003/04, and funding for these services is planned for 2004/05 starting with designated inpatient services (particularly rehabilitation and palliative care) and then extending to other units in future years.

Figure 1.1 Flow of funds within NSW Health



Existing methods of funding will continue for the remaining services until there are standard measures of output and implementation of agreed service classifications in program areas such as mental health, community health and outpatient services.

Irrespective of whether the funding model is being applied to acute inpatient episodes, ED episodes or IC episodes, the objectives are the same:

- To create an explicit relationship between funds allocated and services provided;
- To shift the focus of management to outputs, outcomes and quality;
- To encourage clinicians and managers to identify variations in costs and practices so these can be managed at a local level in the context of improving efficiency and effectiveness; and
- To provide mechanisms to reward good practice and support quality initiatives.

Efficiencies arising from implementing the funding models will be retained by Area Health Services and will be used to meet increased service demand, expand services in high priority areas, introduce better models of care and invest in research, technology and training.

The NSW Health Department will continue to negotiate global activity targets with Area Health Services, particularly in the context of ensuring value in the use of enhancement funding. Area Health Services will continue to be responsible for service planning and for determining the mix of services within global activity targets, subject to any state-wide planning guidelines and requirements.

## **1.1 Scope**

The guidelines are designed to assist Area Health Services to implement the funding models covering acute inpatient, ED and IC episodes of care and further develop the link between funding and planned activity. These guidelines do not concern broad strategic issues in the allocation of Area funding but are designed to complement existing policies and planning guidelines prepared both by the Department and Areas.

They are intended to be used to inform the budgets allocated to hospitals and are not designed to be used to allocate budgets within hospitals to particular clinical services. Area Health Services and hospitals should jointly determine the process of funding clinical units within hospitals, within the funding framework, considering any incentives provided by acute inpatient funding at the hospital level.

It is important to recognise that, before being in a position to allocate the funding budget to hospitals, Area Health Services must decide on how they will allocate resources across all programs. This task is fundamental to strategic and service planning at the Area level and requires Area Health Services to take into account a range of considerations, including:

- Additional funding provided by the Government linked to specific service requirements (for example additional funding provided for mental health and dental services).
- The Area's plans for strategically changing the shape of service delivery to better reflect Government and local priorities and strategies.
- The current shape of service delivery compared to State averages. While State averages are not necessarily a benchmark, they may help to identify issues where greater priority should be given. For example, an Area that has a much larger than average proportion of resources allocated to acute inpatient services may need to give greater priority to community based services. Similarly an Area that has relatively high standardised acute inpatient separation ratios (weighted for the costs of care and adjusted for population health needs) may also consider whether greater emphasis should be given to non-inpatient services or a different mix of services.
- Major service and capital developments that will impact on the level, cost and mix of services provided.

## 2 Overview of the Funding Models

The funding models are designed to fairly share financial risk between Area Health Services and hospitals and to create incentives that are in the best interests of patients. Area Health Services will need to ensure that hospitals carry the financial risk for those factors that are within their control (eg efficiency). However, hospitals should not be required to carry all financial risk for factors outside their control (eg differences in severity or complexity between patients that are not adequately measured in the AR-DRG classification, differences in severity or complexity between ED and IC patients).

Each of the models features a prospectively determined budget that is linked to the expected outputs of each service at each hospital. These prospective budgets have two main components:

- An *activity* payment. This is based on the expected case weighted volume to be produced in the acute inpatient and ED models, and on the expected number of bed days to be provided in the IC model; and
- An *infrastructure* payment. This is to address underlying differences in costs between hospitals/services. These differ amongst the models.

Key features of each of the models are described in the following sections.

### 2.1 Acute inpatients

Feature	Description
<b>Scope</b>	Acute inpatients (excluding designated psychiatric services) and unqualified neonates in A1a to C2 peer hospitals.
<b>Basis of peer grouping</b>	As per NSW Peer Hospital Groups 2001/02 (NSW Health 2003b)
<b>Activity component (prospective)</b>	Yes, approximately 65% of the benchmark cost. For 2003/04, no specific value has been determined, however, \$1,700 (based on the lowest benchmark cost) is being suggested.
<b>Model boundary</b>	Should encompass the full range of acute inpatient services, excluding services provided in the ED and ICU, and any services provided in designated psychiatric units.
<b>Treatment of diagnostics and pharmacy</b>	For patients that are admitted from the ED, includes diagnostics and pharmacy ordered whilst the patient was still in ED. Excludes diagnostic and pharmacy cost of patients treated solely in the ED, and those associated with patients whilst in ICU.
<b>Measure of activity</b>	AR-DRGs (excluding ED, ICU and depreciation components). See classes and weights in NSW Costs of Care Standards 2003/04 (NSW Health 2003a)
<b>Infrastructure component (prospective)</b>	Yes, approximately 35% of the benchmark cost.
<b>Justifiable additional infrastructure factors</b>	Factors that are found to a greater extent in a hospital than in the other hospitals in the peer group. Areas and hospitals will need to provide justification that these costs are essential and unavoidable to the operation of the hospital and achievement of its designated role and function.

Feature	Description
Incentive component (prospective)	Used to reward and encourage achievement of performance targets set at an Area or state-wide level. Should be used strategically to encourage the take up of best practice. Examples: providing identified funds to undertake quality improvement activities or providing financial rewards if same day admission targets are achieved.
Volume component (retrospective)	Optional. Used to share financial risk between the Area and the hospital. Funding adjustments are made through the year depending on whether the level of activity through the year is well above or below agreed levels of activity at the start of the year. This will recognise that those who do more will require more funding (within the allocation available to the Area Health Service). The expectation is that marginal payment rates for the activity component will apply to any volume adjustment.
Cost benchmarks	Benchmark payment rates are provided in Appendix E. Benchmarks are by peer hospital group.
Transition payments	N/A (except Specialist paediatric hospitals until end of 2003/04)
Other requirements/ comments	Area Health Services need to meet government requirements in relation to performance targets such as targets for booked patients. Areas will need to continue to link activity targets for acute inpatient services and the management of their waiting lists. Acute inpatient funding should be used to identify the resources and additional activity that is required to meet targets set for booked patients.

## 2.2 Emergency departments

Feature	Description
Scope	EDs with a role delineation of level 3 or higher.
Basis of peer grouping	<ul style="list-style-type: none"> <li>· ED Peer Group A1/B1: hospitals with a peer group classification (see NSW Peer Hospital Groups 2003a) of A1 or B1.</li> <li>· ED Peer Group A2: hospitals with a peer group of A2 (ie two children's hospitals)</li> <li>· ED peer group B2/C1: hospitals with a peer group of B2 or C1</li> </ul>
Model boundary	Should encompass the full range of services within the physical boundary of the ED.
Treatment of diagnostics and pharmacy	For patients that are subsequently admitted to a ward, if these are ordered while the patient is in the ED, the service costs should be allocated through the acute inpatient funding model. For patients that are solely treated within the ED, they are funded under the ED funding stream.
Activity component (prospective)	Yes, approximately 20% of the benchmark cost for ED (which excludes Area overheads and depreciation). For 2003/04, the activity payment is \$68 per cost weighted ED attendance, to reflect the variation in costs of pharmacy, pathology, imaging and disposables .
Measure of activity	Urgency and Disposition Groups (UDGs) (NSW adaptation). See classes and weights in NSW Costs of Care Standards 2003/04 (NSW Health 2003a).
Infrastructure component (prospective)	Yes, approximately 80% of the benchmark cost for ED (which excludes Area overheads and depreciation). See Appendix F for the values by peer hospital group.
Justifiable infrastructure factors	Factors that are found to a greater extent in a hospital than in the other hospitals in the peer group. Areas and hospitals will need to provide justification that these costs are essential and unavoidable to the operation of the hospital and achievement of its designated role and function.

Feature	Description
Incentive component (prospective)	N/A
Volume component (retrospective)	N/A
Cost benchmarks	Benchmark payment rates are provided in Appendix F. There are three benchmarks – one for hospitals in acute care peer groups A1 and B1, one for the A2 hospitals and another for hospitals in peer groups B2 and C1.
Transition payments	Until end of 2003/04. In 2003/04, if an allocation to an individual hospital cannot be justified and exceeds State benchmarks, this additional allocation will be transparently identified as a transition grant.
Other requirements/comments	Area Health Services should look at the funding for EDs that are operating well below benchmark to ensure the work undertaken by the department is recognised and funded appropriately to enable the provision of quality care. Likewise, Area Health Services have the opportunity to reward efficient hospitals that are operating at or below the benchmark for their peer group through funding of higher activity or enhanced services.

### 2.3 Intensive care units

Feature	Description
Scope	<ul style="list-style-type: none"> <li>· Level 5 and 6 ICUs in metropolitan and rural Areas; and</li> <li>· Selected rural level 3 and 4 units that are staffed to provide a minimum nursing ratio of 1:2 for a minimum of 6 beds and have a minimum throughout of 150 ventilated patients or 600 IC bed days per year.</li> </ul> <p>Note that:</p> <ul style="list-style-type: none"> <li>· A mechanical ventilation co-payment applies to Level 3 and 4 units where an IC model has not been implemented. Guidelines for this are in Appendix D.</li> <li>· NICUs are funded under the acute inpatient model.</li> <li>· All other subspecialty units, including PICUs, are included in the IC funding model.</li> </ul>
Basis of peer grouping	N/A
Model boundary	<p>Encompasses the full range of services provided to IC patients within the physical boundary of the ICU.</p> <p>A major issue that may be encountered by hospitals in applying this model is the integration ICUs and HDUs, which is an increasing trend, intended to improve the flexibility in the way that beds are used. In the planning and development of the IC funding model, it was decided to exclude high dependency. This was done to avoid the anomaly of having HD patients in ICUs funded through the IC stream while HD patients in HDUs were funded through the acute inpatient stream. This is also an equity issue in that hospitals treating a greater proportion of HD patients should not receive the same level of funding under the IC stream as hospitals with a higher ratio of ICU patients. This then raises the issue of how to classify and fund HD care provided in an ICU.</p> <p>The approach adopted in 2002 to estimate the IC/HD patient split was to use a periodic survey (of one week a quarter) in each hospital within the</p>

Feature	Description
	<p>scope of the IC funding model. Hospitals may continue to collect data on the IC/HD split in this way through 2003/04.</p> <p>From 1 July 2002 the, Inpatient Statistics Collection (ISC) also includes additional Bed Types that hospitals can use to capture data on bed use for a range of critical care beds including intensive care, high dependency and coronary care. Hospitals can set up virtual wards in their ICUs to report data directly into their hospital's Patient Administration System (PAS) using the Bed Type field for IC and HD patients. These hospitals will not be required to undertake the periodic survey and are required to report the data relating to the IC/HD split from their PAS.</p> <p>The ISC is also able to collect hours on Mechanical Ventilation (MV) which can potentially be used to estimate total IC hours rather than using the ISC data or the periodic survey. For example, the survey found that the number of patient hours on mechanical ventilation explains a large proportion of the total number of IC patient days i.e. receiving 1 to 1 nursing. Overall, 92% of all IC patient days in the surveys were explained by the total number of hours on mechanical ventilation (converted to days). Therefore, to estimate the total number of IC days, the 92% needs to be scaled to 100%. Using the example of a unit with the equivalent of 800 patient days on MV a year, the total estimated IC patients in that unit would be <math>800 * 1/0.92 = 870</math>.</p>
<p><b>Treatment of diagnostics and pharmacy</b></p>	<p>If these are ordered while the patient is in the ICU, the service costs should be allocated through the IC funding model.</p> <p>The implementation of these arrangements is easy when the costs associated with pathology, imaging and pharmaceuticals ordered can be linked to individual patients and time stamped to the ICU. This occurs routinely when there are internal charging arrangements in place. Areas without patient level cost assignment information systems need to assign costs by estimating the proportion of pathology, pharmacy and imaging attributable to IC patients. For Areas with systems that are designed to link costs to the admitting medical officer rather than the patient, while the patient remains formally under the care of the admitting medical officer, all such costs are thus linked to the clinical unit of the admitting medical officer rather than the ICU. In these cases, best estimates will be necessary and action will be required during 2003/04 to allow more precise identification of the circumstances in which diagnostic tests are ordered, and appropriate allocation of budgetary responsibility. Similar issues will apply in relation to pharmaceutical treatments commenced whilst the patients is still located within the ICU<sup>1</sup>.</p>
<p><b>Activity component (prospective)</b></p>	<p>Yes, approximately 20% of the cost of the average NSW IC patient day, adjusted to remove the costs of Area overheads and depreciation. The activity payment reflects the variation in costs of pharmacy, pathology, imaging and disposables.</p>
<p><b>Measure of activity</b></p>	<p>Bed days. A distinction is made between an IC and a High Dependency (HD) patient day, even if both occur within the one ICU. However, there are no measures in routine use that capture differences in the complexity of patients receiving IC level care.</p>

<sup>1</sup> Appendix M contains NSW average cross charges for 2003/04. These rates should be used if more accurate local data are not available.

<b>Feature</b>	<b>Description</b>
<b>Infrastructure component (prospective)</b>	Yes, approximately 80% of the cost of the average NSW IC patient day (multiplied by expected volume), adjusted to remove the costs of Area overheads and depreciation. The precise share of infrastructure costs will vary from hospital to hospital depending on role, functions and local organisational arrangements. Appendix M gives a guide.
<b>Justifiable infrastructure factors</b>	Factors that are found to a greater extent in a hospital than in the other hospitals in the peer group. Areas and hospitals will need to provide justification that these costs are essential and unavoidable to the operation of the hospital and achievement of its designated role and function.
<b>Incentive component (prospective)</b>	N/A
<b>Volume component (retrospective)</b>	N/A
<b>Cost benchmarks</b>	Benchmark payment rates are provided in Appendix M. There is also a mechanical ventilation (MV) co-payment to be paid under the acute inpatient model for hospitals with Level 3 and 4 ICUs with the capacity for short term MV. The co-payment is \$78 per hour. See Appendix D for guidelines for MV payment.
<b>Transition payments</b>	Until end of 2003/04
<b>Other requirements/ comments</b>	As with ED model.

### **3 NSW Funding Guidelines**

Seven steps are suggested to apply the funding models within an Area Health Service:

- Step 1 Determine In-Scope Hospitals
- Step 2 Determine In-Scope Services
- Step 3 Determine Incentive and optional volume components
- Step 4 Determine activity levels for 2002/2003
- Step 5 Determine activity budgets
- Step 6 Determine infrastructure budgets
- Step 7 Implement

The steps are described below.

#### **3.1 Step 1 Determine In-Scope Hospitals**

##### **3.1.1 Hospitals in-scope for funding models**

All hospitals in peer groups up to C2 - District Group 2 are included.

#### **3.2 Step 2 Determine In-Scope Services**

##### **3.2.1 Services in-scope for acute inpatient funding**

Services other than acute inpatient care (eg designated mental health acute facilities) are not in scope for acute inpatient funding.

Assemble the activity data set for analysis. The following types of inpatients are excluded from the acute inpatient funding model:

- Patients treated in designated psychiatric facilities (Psychiatric Patient Status = "1").
- Patients whose Service Category is one of the following:
  - 2 - Rehabilitation Care
  - 3 - Palliative Care
  - 4 - Maintenance Care (Non-Acute Care including NHTP)
  - 6 - Other
  - 7 - Geriatric Evaluation and Management
  - 8 - Psychogeriatric.
- Patients admitted and discharged from an ED without being transferred to a ward (if these cannot be identified, exclude same day admissions through the ED).
- Renal dialysis (see Appendix B for suggested payments on a patient basis).
- Same day chemotherapy. This should be funded with chemotherapy provided on an outpatient basis.
- Selected quaternary services. See over page for further details.

In certain circumstances, patients excluded under these criteria may have been identified and funded by hospitals under programs 2.2/2.3 (Overnight and Same Day Acute Inpatient Services.) In these instances, the activity and costs associated with these patients should be excluded from the acute inpatient funding model at the rates included in Appendix C. However, in the first instance it will be appropriate to review the coding of patients to ensure they have been appropriately allocated to their service category and/or program.

Use the cost weights excluding ED and ICU components to calculate the cost weighted separations for the remaining acute patients and unqualified neonates. These cost weights include the full costs of patients treated in Neonatal Intensive Care Units (NICUs) as funding for NICUs are included in the acute inpatient funding stream (see discussion in section 2.2.3).

Assemble a financial data set for analysis that excludes all programs (and their share of both Area and hospital overheads) with the exception of Programs 2.2 and 2.3. Include Program's 2.2 and 2.3 share of Area overhead costs as a separate line item.

### **Emergency Departments**

For ED services funded through the ED funding model (see 3.2.2), the acute inpatient funding file should exclude all ED cost centres, ED overhead costs (both Area and hospital) and the costs of all diagnostics and pharmacy ordered by the ED except where the patient is subsequently admitted. Where patients are treated in the ED and subsequently admitted, the diagnostic and pharmacy costs are to be funded through the acute inpatient funding stream. This recognises that clinical management of patients treated in EDs is often shared between the ED and the attending medical officer who will ultimately manage treatment in the ward. Frequently diagnostic tests are ordered whilst the patient is still located within the ED, but not utilised until the patient is in the ward. The ED fraction of other direct cost centres such as resident medical officers should be excluded from the acute inpatient funding file and added as separate line items to the ED funding file.

For ED services outside the scope of the ED funding model, the acute inpatient funding file should include all costs centres associated with patients treated in the ED and subsequently admitted. The costs for patients treated only in the ED should be excluded and these services funded through a block grant. Expenditure recorded under program 2.1 will need to be apportioned between ED only and subsequently admitted patients.

### **Intensive Care**

For IC services funded through the IC funding model (see 3.2.3), remove all ICU services from the acute funding file. This includes all ICU cost centres, ICU overhead costs (both Area and hospital) and the costs of all diagnostics and pharmacy ordered by the ICU, which should be put in the ICU funding file. The ICU fraction of other direct cost centres such as resident medical officers should be excluded from the acute funding file and added as separate line items to the ICU inpatient funding file.

Where there is a joint ICU/HDU in the IC funding model, costs need to be split between IC and HD patients as outlined in the ICU Funding Guidelines. The method suggested in the ICU Funding Guidelines, if no more accurate local data are available, is that the cost of an IC patient day be calculated as twice the cost of a HD patient day.

Costs of NICUs will remain in the acute funding file.

## **Quaternary services**

Decide whether and which low volume, high cost quaternary services should be excluded from the activity model and funded on a per patient basis or through a block grant. Consider only low volume, high cost services such as Nationally Funded Centres and organ transplant units. The preferred position is that they should be included in the inpatient funding model.

If selected quaternary services are to be excluded, remove all relevant activity from the acute inpatient file. Note that this will have the effect later in the process of reducing the level of severity payments for the relevant hospital through the acute inpatient funding stream.

If selected quaternary services are to be excluded, assemble an excluded quaternary services file and remove all relevant costs from the acute inpatient funding file. The funding file should include all dedicated cost centres, overhead costs and the costs of all diagnostics and pharmacy. The fraction of other direct cost centres such as resident medical officers should be excluded from the acute inpatient funding file and added as separate line items to the funding file. Note that the ED and ICU costs are to be included as part of ED and ICU and not as part of the quaternary service.

### **3.2.2 Services in-scope for Emergency Department funding**

The ED funding model is to apply to hospitals with an ED with a delineated role of 4 or above. EDs with a delineated role of 4 and above “can manage most emergencies, including stabilisation and assisted ventilation” and have experienced medical officers on site 24 hours a day.

EDs with a role delineation of less than 4 are excluded from mandatory inclusion in the ED funding model. This is because these Departments do not generally have 24 hour access to the range of services available to higher level Departments and do not incur a similar level of fixed availability costs. However, there is capacity for an Area Health Service to include a Level 3 unit in the model if appropriate.

Areas need to resolve how to fund ED-type services in hospitals where the ED has a delineated role of less than Level 4. There are 3 possibilities.

1. If the ED service has appropriate medical staffing, provides primarily an ED service and is on the EDIS system, classify it as an ED and include it in the funding model in ED Peer Group C irrespective of the formally delineated role or general peer group. As a general guide, these units would be expected to treat more than 15,000 (weighted) attendances in 2003/2004.
2. If the ED service is not on EDIS or does not provide sufficient volume and level of services to be included in the ED funding model, then the costs of patients treated solely in the ED (‘ED Only patients) should be funded using a block grant. The costs associated with patients who are subsequently admitted to a ward should be met through the acute inpatient funding allocation to the hospital. The cost of ED services for patients who are subsequently admitted is to be included in the DRG cost by use of an ED inpatient fraction (IFRAC) in the hospital’s DRG cost.
3. If the ED service provides primarily a primary care/outpatient service, classify it as an outpatient service for funding purposes. If so, it is out of scope for ED funding in 2003/2004 and is funded in a block grant based on the actual costs of running the unit until appropriate funding models are developed for outpatient services.

All services provided in the EDs in the ED Funding Model are in-scope for funding through the ED stream, including the ED component of an admitted patient's stay. This is based on the general principle that the scope of ED activity to be subject to separate funding should encompass the full range of services managed by clinical managers of EDs so funding and clinical decisions are aligned.

For hospitals in scope, there are several broad types of patients and several groups of costs that are included in the model.

The types of patients include:

- A: Non-admitted patients;
- B: Admitted patients who are admitted within the ED, and then discharged from the ED, without transfer of clinical responsibility to another doctor;
- C: Admitted patients who are admitted within the ED, dealt with jointly by the ED team and another non-ED doctor, but then discharged from the ED;
- D: Admitted patients who are admitted within the ED and then clinical responsibility is transferred to another doctor, and the patient is transferred to a ward for further treatment; and
- E: Patients dealt with by retrieval services, where ED staff are involved or consulted during the retrieval, but the patient is never actually treated in the ED itself.

Table 4.1 describes what costs are to be included in the ED funding stream for 2003/2004.

**Table 4.1 The scope of the ED funding model 2003/04.**

<b>Cost Type:</b>	<b>A: Non-Admitted Patients</b>	<b>B and C: Patients Admitted and Discharged from the ED</b>	<b>D: Patients Admitted in ED and transferred to Ward</b>
Medical – ED	ED Funding Stream	ED Funding Stream	ED Funding Stream
Nursing – ED	ED Funding Stream	ED Funding Stream	ED Funding Stream
Allied Health – ED	ED Funding Stream	ED Funding Stream	ED Funding Stream
Other – ED	ED Funding Stream	ED Funding Stream	ED Funding Stream
Pharmacy – Imprest	ED Funding Stream	ED Funding Stream	ED Funding Stream
Pharmacy – Prescribed	ED Funding Stream	ED Funding Stream	DRG Funding Stream
Pathology/Imaging Ordered in ED	ED Funding Stream	ED Funding Stream	DRG Funding Stream
Overheads (related to ED cost centres)	ED Funding Stream	ED Funding Stream	ED Funding Stream
Teaching and Research	T&R Program Stream	T&R Program Stream	T&R Program Stream
Consultation and Liaison from non-ED staff	DRG Funding Stream	DRG Funding Stream	DRG Funding Stream

Assemble an EDIS activity data set for analysis. The appendices to this paper include relevant data for 2001/2002.

Include all admitted patients who were treated exclusively within the ED (ie. the patient is admitted to and discharged from the ED) without being transferred to a ward. Also include the ED component of an episode for a patient who is subsequently admitted and transferred elsewhere.

Note that this activity also includes activity occurring in 'short-stay wards' (however named) that is part of the ED and under the clinical management of the Director of ED. If possible, identify and remove activity that is a substitute for outpatient activity such as methadone clinics funded through the drug and alcohol program but run in the ED. It may not be possible to remove all such activity for the 2003/2004 funding model. In this case, adopt the method used in the appendices to these guidelines and classify all such activity as ED Only, Triage Category 5.

Assemble a financial data set for analysis that includes a total operating budget for each ED, including their share of both Area and hospital overheads. In most cases, this should reconcile with the hospital's program allocation under Program 2.1 (Emergency Services). However, Program 2.1 may need to be purified to ensure that it includes the cost of all in-scope ED services shown in 3.2.2 and excludes the cost of out of scope services (such as methadone clinics) if the equivalent activity can be excluded (see above).

The ED funding file should include all ED cost centres, ED overhead costs (both Area and hospital) and the costs of all diagnostics and pharmacy ordered by the ED, irrespective of whether the patient is subsequently admitted. An adjustment to deal with the costs of diagnostics and pharmacy ordered by the ED but covered by acute inpatient funding will need to be made subsequently in Step 3 when determining the activity component for ED funding. The ED fraction of other direct cost centres such as resident medical officers should be excluded from the acute inpatient funding file and added as separate line items to the ED funding file.

Note that the ED funding file will contain two types of costs. Most will be the direct costs of ED that form an ED budget at the hospital level. But the file will also contain other hospital costs (overheads, RMOs etc) that will not necessarily be passed on from the hospital to the ED.

### **3.2.3 Services in-scope for intensive care funding**

The IC funding model is to apply to hospitals with a delineated ICU of level 5 or 6 (including Paediatric ICUs and Cardiothoracic ICUs). 19 hospitals with such units in NSW are to be included in 2003/2004. They are:

Bankstown	Blacktown
Children's Hospital at Westmead	Concord
Gosford	Hornsby
John Hunter	Lismore
Liverpool	Nepean
Prince of Wales	Royal North Shore
Royal Prince Alfred	St George
St Vincent's	Sutherland
Sydney Children's	Westmead (General ICU only)
Wollongong	

Rural Level 4 units that meet the new criteria for inclusion in the model need to be identified and included in the model on a shadow basis in 2003/2004. The new criteria are:

- Be staffed to provide a minimum nursing ratio of 1:2 for a minimum of 6 beds and
- Have a minimum throughput of 150 ventilated patients or 600 IC bed days per year.

On the basis of survey data to date, 9 additional units would potentially meet these criteria and could be included in the future – Albury, Bathurst, Coffs Harbour, Dubbo, Orange, Manning, Tweed Heads and Tamworth, Port Macquarie. However, this could change in the next year, as further data are available.

### **Exclusions**

1. ICUs that do not meet the criteria. Instead, those hospitals with the capacity for short-term mechanical ventilation (MV) are to receive a mechanical ventilation co-payment (on top of the DRG-based inpatient payment) to recognise the extra resources they consume while providing periods of MV. This co-payment will be based on the number of MV hours expected to be required in 2003/2004, whether the MV is provided in an ICU or elsewhere in the hospital. It is incorporated into the infrastructure component of the acute inpatient funding stream rather than through the IC funding stream.
2. Coronary Care Units, irrespective of their delineated level. Coronary care is well accommodated in the DRG funding model and is excluded from the IC Funding Model.
3. NICUs, irrespective of their delineated level. Neonatal IC is well accommodated in the DRG funding model and is excluded from the IC Funding Model.
4. High dependency patient bed days, irrespective of whether the patient receives care in an ICU or in a separate HDU. HD care is to be funded by DRG in the acute inpatient payment model and is excluded from the IC Funding Model.

### **In scope costs**

The scope of costs to be included in the IC funding stream is:

1. IC patient costs incurred within an ICU cost centre, such as medical, nursing, allied health and other staff employed directly within the ICU. Operational and consumable expenses such as imprest drugs will also be incurred under the ICU cost centre.
2. IC patient clinical costs sometimes incurred under another cost centre. These include pathology and diagnostic imaging ordered for patients within the ICU, and drugs prescribed for patients treated within the ICU. Unless there is an internal charging system through which these costs are charged back to the ICU cost centre, these costs will be met by another cost centre. A number of major hospitals have internal charging systems of this nature, but not all. Irrespective, these costs were included in the IC funding model from 2002/03, even if some level of estimation is necessary in the first year<sup>2</sup>.
3. Overhead costs, including costs such as maintenance, cleaning, hospital administration, superannuation and workers compensation.
4. Consultation and Liaison costs undertaken by ICU staff.

T&R costs are to be included when comparing cost for benchmarking, but for funding purposes are to be met through an allocation to the T&R program of the hospital.

---

<sup>2</sup> Appendix M contains NSW average costs for 2003/2004. These rates should be used if more accurate local data are not available.

---

### **3.3 Step 3 Determine Incentive and Optional Volume Component of the Inpatient Funding Model**

#### **3.3.1 Incentive funding**

Area Health Services are expected to achieve performance targets set by the Department such as targets for the number of long wait (over 12 months) patients on waiting lists. Health Services must identify locally determined performance issues and strategies to meet these targets. In doing so, Area Health Services are required to determine, in addition to other strategies, how this can be achieved through some form of prospective or retrospective incentive funding. The establishment of an incentive funding pool is mandatory although Area Health Services have discretion over the size and nature of the incentive funding arrangements.

Area Health Services are to identify required performance improvement targets and strategies then decide which, if any, will be eligible for funding from a retrospectively allocated Incentive Pool or which will be built into a prospective payment to the hospital.

Retrospective incentive funding can be structured so that payments at an agreed level are made for performance that exceeds a specified threshold such as waiting time targets based on those set by the Department. The incentive payments can also be expressed as a proportion of an agreed target. For example, the payment for meeting waiting time targets could be in proportion to the progress made, with full payment reached when the target is exceeded. Such approaches require a proportion of funding to be held in an incentive pool and allocated retrospectively if the target is met.

Once those issues are resolved, decide on the quantum of funds to be allocated to the Area Incentive Pool and arrangements to ensure the claims on the Incentive Pool do not exceed this quantum. Where claims on the pool are larger than anticipated due to higher than expected performance or activity improvement, the rate used to calculate the incentive payment can be reduced proportionately. Alternatively, the Area Health Service could choose to carry the financial risk and calculate the size of the pool according to the risk involved.

Prospective incentive funding can be used to fund increased activity for specific services or support performance and quality enhancing activities. For example, if the Area Health Service wished to encourage increased activity in particular procedures to address the size of the waiting list, it could agree to pay facilities at a variable rate for agreed levels of additional procedures above historic or target levels. In addition, Areas may choose to provide hospitals with a fixed prospective payment on the condition that they participate in specified benchmarking and quality improvement activities. These approaches can be accommodated within the prospective element of the funding model.

Where retrospective incentive funding is to be used to fund increased activity, estimate the activity to be funded retrospectively and remove it from the data set to be used to fund the prospective element of the funding model.

Adjust financial data by creating a separate funding pool for retrospective incentive funding in line with Area policy. This funding will be allocated during the year as facilities achieve performance targets.

The continuation of prospective incentive funds in future years should depend on performance during the previous year.

### **3.3.2 Area Volume Adjustment Pool**

Inclusion of this optional volume element is a matter for Area Health Services to determine.

Decide whether to establish a Volume Adjustment Pool to incorporate retrospective volume adjustments into the model whereby a hospital budget is adjusted (up or down) if its volume of activity varies from the agreed level that has been funded.

If retrospective volume adjustments are to be incorporated, first decide on whether to have risk sharing boundaries or not. If risk-sharing boundaries are to be introduced, agree on the thresholds (eg, +/- 5%, +/-2% or different thresholds for different services). Note that no budget adjustments (up or down) are made for activity that falls within these bounds. Budgets for activity above or below the risk-sharing boundary are adjusted each quarter based on the standard activity rate per case weight.

Finally, decide on the quantum of funds to be allocated to the Volume Pool (in case hospitals exceed activity targets) and agree on what to do with surplus funds if they accumulate through the year. Accumulation could occur either because a hospital budget is reduced in response to low volumes or because claims on the pool are less than anticipated.

Adjust financial data by separating out provisions for retrospective funding in line with Area policy.

### **3.4 Step 4 Determine Activity Levels for 2003/2004**

Decide on the budget entities to be funded. For acute inpatient services, Area Health Service may choose to fund either:

- Hospitals; or
- "Clinical streams" (however termed) which may cut across inpatient, outpatient hospital and community based services.

Both are valid approaches and the core principle applies to each: that funding is linked to planned output. For convenience, these guidelines refer to 'hospitals', but this term can be taken to mean clinical stream or any other organisational unit that is allocated a budget for the provision of acute inpatient care.

In consultation with clinicians, decide on the volume of services to be delivered under each funding stream by each hospital in 2003/2004. For acute inpatients and emergency care volume will be in cost weighted separations/attendances using the cost weights in the *NSW Costs of Care Standards 2003/04*. For IC services the volume will be a number of IC bed days or MV hours. To determine the volumes, start with existing levels then increase/decrease in line with strategic service development plans, waiting time management strategies, activity forecasts based on historic trends and population growth, government initiatives and so on. Unless there are major service changes in progress, there is a high level of predicability in the demand for services on an annual basis.

All Area Health Services are expected to have established formal processes for planning and managing elective workloads that link to the activity targets set for acute inpatient care in episode funded hospitals. Areas are free to use their own model based on the principles in Appendix A, or can adapt models such as the one used in the Hunter Area Health Service.

- Activity target setting through inpatient funding should provide Areas with a tool to implement a more planned approach to elective hospital admissions. This will

require all Areas to define activity targets separately for elective and emergency workloads, both in terms of separations and case weighted separations.

In order to link booked activity with inpatient funded activity, Areas will need to undertake analysis of historical data on emergency admissions, elective workloads, and waiting list trends to identify the number of admissions required to meet waiting list targets negotiated with the Department of Health. This should result in determination of activity targets to be incorporated in funded activity targets for hospitals, both as separations and case-weighted separations by relevant DRG or specialty. A more detailed discussion of the steps involved in linking waiting lists with activity targets is provided in Appendix A.

Modify the existing activity files to incorporate changes in expected volumes for 2003/2004. For acute inpatients this could be projected using broad categories such as surgical and medical admissions, NICUs and obstetrics/perinatology or at the more detailed SRG, clinical specialty or DRG level. Note that the levels of proposed activity are tentative only at this point as the final volumes will need to be refined in the final steps to match funding levels and activity levels.

Calculate the total quantum of funding to be distributed through each funding model in 2003/2004. Start with the 2003/04 program allocation and expenditure budget (incorporating the 2003/04 recurrent allocation and revenue budget estimate). Exclude the expenditure budget allocated to programs, hospitals and services that are out of scope. Divide the remaining expenditure between the funding models. Separately identify the diagnostic and pharmacy costs for ED patients subsequently admitted and ED T&R costs to leave these in the ED pool when comparing against benchmark costs in Appendix F. Areas should use the NSW average cross charges provided in Table F2 if they are unable to identify these costs from their own information systems. Remove Area overhead costs from the pool of funds that will be distributed through to hospitals. If depreciation is not passed onto hospitals, exclude it from the pool of funds. Set aside any funding to be allocated retrospectively for volume adjustments or as incentive funding.

### **3.5 Step 5 Determine Prospective Budget Allocation - Activity Component**

For each in-scope service activity is to be funded through the allocation of a prospective budget to each hospital consisting of both an activity and an infrastructure component.

#### **3.5.1 Activity component – acute inpatients**

In the 2001/02 Episode Funding Guidelines the Department set a standard activity payment rate of \$1,300 for all Health Services to use. In reviewing Episode Funding in 2001/02, several Area Health Services pointed out the \$1,300 rate is effectively the variable rate that Areas are expected to use in identifying the enhancement funding for additional activity. However, the variable rate will vary from hospital to hospital depending on the fixed costs of the hospital and nature of the enhancements proposed. In particular, there are some DRGs where the \$1,300 rate does not cover the cost of prostheses, for example in hip and knee replacements.

Accordingly, a standard activity payment rate will not be set in 2003/04. Health Services will need to determine their own payment rate per cost weighted separation for the variable component. Based on a 65:35 split between the variable and infrastructure component of

payments<sup>3</sup> a rate of \$1,700 is suggested based on the lowest benchmark reference cost set for peer hospital groups in Appendix E.

Calculate the budget for the activity component based on projected activity for each hospital (using case weighted separations excluding the ED and ICU) and the activity payment determined by the Area. Health Services will need to adjust the size of the infrastructure component to reflect the payment rate decided for 2003/04.

### **3.5.2 Activity component – Emergency Departments**

Calculate the budget for the activity component based on projected case weighted activity for each hospital and the standard NSW activity payment per ED case weight shown in Appendix F.

Split this activity component into 2 budgets so that the hospital can receive specific information about each by:

- First calculating an allocation for pharmacy and diagnostics for 'Subsequently Admitted' patients based on hospital data on cross charges or by utilising the averages in Appendix F and allocating this amount to the relevant clinical units.
- Allocating the remaining amount as an activity allocation for the hospital's ED.

### **3.5.3 Activity component – Intensive Care**

Calculate the funding for the activity component of the IC model based on projected IC activity for each hospital and the standard NSW activity payment per IC patient day shown in Appendix M.

Calculate the acute care inpatient funding for the ICU based on the projected HD activity. Costs for these days should be based on local data (where available). If local data are not available, assume that a HD day costs 0.5 of an IC day.

## **3.6 Step 6 Determine Prospective Budget Allocation - Infrastructure Component**

### **3.6.1 Infrastructure component – acute inpatients**

The infrastructure component must be transparent and justifiable. Transition grants were phased out in 2002/03. The only allocations above benchmark that should be made for all peer groups other than A2 Specialist Paediatric Hospitals, are those that can be justified. Because, A2-Specialist Paediatric Hospitals were set a Benchmark Reference Cost for the first time in 2002/03, these hospitals will have three years from 2002/03 to remove any transition grants.

The level of benchmarks for peer groups are described in Appendix E.

Area claims that budget allocations above benchmark are justified must be accompanied by a written statement provided to the Department that quantifies the unavoidable cost that other hospitals in their peer group do not incur. These statements will be subject to review by the Department. Areas with comparable peer hospitals will be consulted in this process.

---

<sup>3</sup> The 65:35 split is based on studies by other States that identify this as an appropriate share of variable to fixed costs.

---

The benchmarking method used with acute inpatient funding assumes that the benchmark cost set for each peer hospital group fully reflects an efficient cost structure that could be achieved by all hospitals in the peer group over a 3 year period. However, there may be underlying differences in costs between hospitals within the same peer group that are unavoidable and not within the discretion of hospitals to alter.

In order to identify costs as justifiable payments above benchmarks, Area Health Services need to prove that the hospital in question incurs unavoidable costs that other hospitals in the peer group do not incur to the same extent. This requires the Area to document the following:

- Identify a cost driver that is found to a greater extent in the hospital than in the other hospitals in the peer group;
- Provide justification that these costs are essential and unavoidable to the operation of the hospital and achievement of its designated role and function;
- Identify whether this cost differential is a fixed or variable cost;
- Where the cost driver is a fixed cost, identify the difference between the fixed cost for the hospital and the corresponding cost found in other hospitals. The justified payment would be the value of this difference;
- Where the cost driver is a variable cost, quantify the higher cost per weighted separation that arises from this cost driver relative to the cost in other peer hospitals. The justified payment would be the cost differential times the planned level of cost weighted separations.

It is acknowledged, that while several Area Health Services have assigned justified grants in previous years and identified cost drivers in qualitative terms, the quantification has been difficult because each Area has limited access to information on cost drivers for peer hospitals in other Areas. To better understand this issue, the Department has initiated a peer hospital cost project that will examine cost drivers within hospital peer groups and provide information for use by Area Health Services when justifying grants above benchmark levels as part of the acute inpatient funding model. It is intended that this project will also support and encourage cross-Area participation in the review of peer hospital cost performance and benchmarking. A Steering Group comprising Health Service representatives is undertaking this project and will have results available in the latter part of 2003.

Review the clinical workload of any hospital where the proposed allocation is significantly below the minimum for the peer group. Where appropriate, increase the hospital budget closer to the benchmark in order to increase service levels and quality. Appropriate reasons could include to improve equity between hospitals or 'reward' efficient practice.

Hospitals with level 3 and 4 ICUs which have the capacity for short-term mechanical ventilation (MV) are to receive a mechanical ventilation co-payment (on top of the DRG-based inpatient payment) to recognise the extra resources they consume while providing periods of MV. This co-payment will be based on the number of MV hours expected to be required in 2003/04, whether the MV is provided in an ICU or elsewhere in the hospital. Appendix D provides guidelines for the MV co-payment, which is \$75 per hour of MV.

A final issue to be managed is to ensure the rate for the infrastructure component is adjusted to reflect available funds to the Area Health Service.

Calculate the volume of planned MV hours in the hospital.

Build up a fixed infrastructure budget for each hospital. The level of fixed payments will vary between hospitals, although 35% of activity payments are a guide to the average. Model the effects of the proposed fixed infrastructure grants by:

- Comparing with each hospital's previous year budget adjusted to incorporate any projected changes in role or volumes;
- Comparing with the budget for 35% of expected case weighted volume; and
- adding the fixed and the activity components together, and comparing the difference with the NSW cost for the peer group (minimum, maximum and average).

### **3.6.2 Infrastructure component – Emergency Departments**

The infrastructure component must be transparent and justifiable. Any infrastructure component that when combined with the activity component results in a total allocation above the benchmark for the peer group that cannot be justified will have to be allocated as a transition grant and then phased out within 3 years. For cost benchmarking purposes these allocations should include the share of Area overhead attributable to in-scope ED activity, diagnostic and pharmacy costs for patients subsequently admitted and T&R costs.

Benchmarks for each peer group are provided in Appendix F.

Agree on criteria to be considered in determining infrastructure grants. In 2003/04, the infrastructure payment will include payments for both differences in costs between hospitals that can be justified and differences that cannot be justified. Area Health Services should also take this opportunity to look at the funding for the EDs that are operating well below benchmark to ensure the work undertaken by the department is recognised and funded appropriately to enable the provision of quality care.

A final issue to be managed is to ensure the rate for the infrastructure component is adjusted to reflect available funds to the Area Health Service.

Build up a fixed infrastructure allocation for each hospital's ED. If retrieval costs are held in the ED cost centre, allocate these as a separate line item in the infrastructure payment. The level of fixed payments will vary between hospitals, although 80% of the total cost of running the ED is a guide to the average. Model the effects of the proposed fixed infrastructure grants by:

- comparing with each hospital's previous year budget adjusted to incorporate any projected changes in role or volumes; and
- adding the fixed and the activity components together, and comparing the difference with the NSW cost for the peer group (minimum, maximum and average)<sup>4</sup>.

### **3.6.3 Infrastructure component – Intensive Care**

The infrastructure component must be transparent and justifiable. Any allocation above the benchmark that cannot be justified will have to be allocated as a transition grant and then phased out within 3 years.

The 2003/2004 benchmark is provided in Appendix M.

---

<sup>4</sup> Note that NSW benchmarks include superannuation and workers compensation and that, if these costs are not passed onto hospitals, Areas will need to take this account when comparing costs with benchmarks.

---

Agree on criteria to be considered in determining infrastructure grants. In 2003/04, the infrastructure payment will include payments for both differences in costs between hospitals that can be justified and differences that cannot be justified. Justifiable cost differences are defined as the fixed costs of running an ICU taking into account the factors outlined in Section 1.6. Area Health Services should also take this opportunity to look at the funding for ICUs that are operating well below benchmark to ensure the work undertaken by the ICU is recognised and funded appropriately to enable the provision of quality care.

The Department will work with Areas to review the justifiable infrastructure components incorporated into 2003/04 budgets and to refine the methodology to be used to calculate infrastructure payments in subsequent years.

A final issue to be managed is to ensure the rate for the infrastructure component is adjusted to reflect available funds to the Area Health Service.

Build up a fixed infrastructure payment for each hospital with an in-scope ICU. The infrastructure payment will need to cover the fixed costs of maintain the planned average number of IC patient days over the course of the year and the planned number of HD days. The former are funded through the IC stream, the latter through the acute care (DRG) stream. These costs should reflect the staffing levels and mix necessary to meet Faculty standards and role delineation requirements, particularly with respect to staff to bed ratios.

The level of fixed payments will vary between hospitals, although 80% of the total cost of running the ICU is a guide to the average. Model the effects of the proposed fixed infrastructure grants by:

- comparing with each hospital's previous year budget adjusted to incorporate any projected changes in role or volumes; and
- adding the fixed and the activity components together (including relevant share of Area overheads and T&R costs) and comparing the difference with the NSW benchmark cost.

### **3.7 Step 7 Implementation of Funding Models**

Areas that have not already done so need to bring together clinicians, hospital managers, and area staff to review the implementation of the funding models at an Area and hospital level. Area Health Services are expected to continue to involve clinicians in the process of determining and monitoring funded activity and budgets.

The Area needs to take the following policy and financial actions:

- As part of Funding Service Agreement with each hospital covering ED, IC and acute inpatient funding streams, including an explicit agreement about reporting arrangements, specify the amount to be allocated to the hospital for each service and the target levels of activity in 2003/04. Agreements should also identify the difference between the amount allocated to the hospital for each service and the amount that would be calculated through applying the benchmark rate.
- As outlined in the reporting requirements to be issued as part of the allocation letter to Areas, provide information on target levels of activity for 2003/04, the allocation of funding by stream and hospital and the difference between the amount allocated to the hospital and the amount that would be calculated through applying the benchmark rate.

- Report quarterly through the year estimates of expenditure by the acute inpatient funding stream.
- Develop costing capacity to provided quarterly reporting and monitoring of activity on costs by the ED and IC Funding streams.
- Implement prospective and retrospective components.
- Develop work programs for each stream to better understand costs and to more precisely calculate justifiable infrastructure grants.
- Continue to build capacity to better identify the value of pharmacy, imaging and pathology tests ordered by EDs and ICUs and assign them to the appropriate stream.
- If relevant, undertake further analysis to better justify variations in infrastructure grants and to allow reductions in ED and IC transition payments in subsequent years.
- Some Area Health Services have developed broader performance agreements with hospitals that place ED, IC and acute inpatient funding in the context of achieving overall performance priorities and extends the concept of performance agreements that apply between the Department and Area down to a hospital level. While such performance agreements are not mandatory they are seen as good practice since they clarify joint responsibilities of the Area and its facilities in meeting health system requirements and can do so using the NSW Health's Framework for Managing the Quality of Health Services.
- Review performance of hospitals in meeting the elective activity targets and waiting list benchmarks. Where targets are not being met, Areas will need to consider if a redistribution of both activity and associated funding is required between hospitals to achieve targets.
- Agree on activity flow and review monthly.
- Areas must ensure that the proposed allocations are within the expenditure that can be funded from their 2003/04 budget allocation and revenue estimates. If this is not the case, review the proposed infrastructure, activity and incentive components in line with available funds.
- Combine prospective activity, infrastructure and incentive components to form Budgets for each stream at each hospital. Add in funding from other program budgets and excluded services. Agree on cash flow. Allocate retrospective incentive and volume payments for acute inpatients through the year based on performance.

### **3.8 Aids for Implementing the Funding Models**

The Department has been working with Area Health Services to provide support and information necessary to implement the funding models. The following assistance has been provided or is available from the Department.

The Health Information Exchange (HIE) provides cost weight data for Area Health Services to monitor progress against targets and generate their own inpatient funded activity reports. The cost weights to be applied in 2003/04 are available through the HIE.

An intranet web site has been established and information on inpatient funding and costs of care standards on cost weights can be found on the HealthNet at <http://internal.health.nsw.gov.au/policy/sfp/>.

A database will be released to Health Services that contains costs by cost component for all hospitals that submitted data to the 2001/02 NSW Hospital Cost Data Collection. It has a

number of built-in reports that show the cost by cost component for different hospitals for the same DRG and can be used for benchmarking purposes.

## **4 Conclusion**

Continued cooperation and involvement of Area staff, hospital managers and clinicians is required in order to implement acute care funding.

The Department will continue to work with Area Health Services to provide the data, information and support required. Areas are also encouraged to share experience and expertise to assist those Health Services that are building the capacity to implement inpatient funding.

## **5 References**

Faculty of Intensive Care, Australian and New Zealand College of Anaesthetists (2000) *Minimum Standards for Intensive Care Units*.

Faculty of Intensive Care, Australian and New Zealand College of Anaesthetists (2000) *Minimum Standards for High Dependency Units seeking accreditation for training in Intensive Care*.

Faculty of Intensive Care, Australian and New Zealand College of Anaesthetists (1998) *Guidelines for Intensive Care Units seeking Faculty accreditation for training in Intensive Care*.

Faculty of Intensive Care, Australian and New Zealand College of Anaesthetists (2000) *Quality Assurance*.

NSW Health (2003a) *NSW Costs of Care Standards 2003/04*, NSW Health Department.

NSW Health (2003b) *NSW Peer Hospital Groups 2001/02*, NSW Health Department.

NSW Health (2002a) *NSW Episode Funding Guidelines for Acute Inpatient Services 2002/2003*, NSW Health Department.

NSW Health (2002b) *NSW Funding Guidelines for Emergency Department Services 2002/2003*, NSW Health Department.

NSW Health (2002c) *NSW Funding Guidelines for Intensive Care Services 2002/2003*, NSW Health Department.

NSW Health (2002d) *NSW 2001/02 Program and Product Data Collection Standards*, NSW Health Department.

NSW Health (2000) *Report of the NSW Health Council*, NSW Health Department.

NSW Health Department (1999a) *NSW Resource Distribution Formula: Technical Paper 1998/99 Refinement*. Sydney: Structural and Funding Policy Branch, NSW Health Department.

NSW Health Department (1999b) *Refinement of the NSW Health Program Structure*, Structural and Funding Policy Branch, NSW Health Department.

## Appendix A: Linking Targets for Booked Surgery and Inpatient Activity

Several Areas have been using the activity target setting process under inpatient funding to manage their waiting lists and access to booked surgery. The Hunter Area Health Service has been using their booked surgery model for several years to better manage the available resources for surgery and to maximise patient access.

The benefits of such models are:

- Greater certainty for hospital managers and surgeons, within overall planning for emergency, chronic and obstetric activity.
- Fairer mix of surgery for Area residents and more equitable access to specialties and procedures with historically longer waiting times.
- More rational planning of booked surgical activity, particularly during peak times.
- Funding incentives through inpatient funding can support achievement of performance targets in relation to waiting lists.

Areas are free to use their own model or can adapt the Hunter Area Health Service model to local use.

The key elements expected in the procedures to be implemented by each Area are the following:

- Analysis of historical data on elective workloads and waiting list trends.
- Definition of waiting list targets as negotiated with the Department of Health.
- Definition of the requisite elective activity targets to be incorporated in inpatient funded activity targets, both as separations and case-weighted separations.
- Determination of the distribution of these elective activity targets and associated funding between hospitals as part of inpatient funding activity and budget setting.
- Monthly review of performance of hospitals in meeting the elective activity targets and waiting list benchmarks.

Where targets are not being met, Areas will need to consider if a redistribution of both activity and associated funding is required between hospitals to achieve targets.

### Step 1. Assess Trends in Elective Workloads and Waiting Lists

Areas will have good historical data on patterns of elective admissions, both for elective surgery and for other elective procedures. There will be trends over time in additions to waiting lists, admissions from waiting lists and in the numbers on the waiting lists. This information is available either from WLCOS or from the local Health Information Exchange. In analysing trends, seasonal variations will have to be taken into account.

These data can provide information on current elective activity and on the patterns of change in waiting lists, both in total and by indicator procedure codes (IPCs) or speciality grouping used by the Area. Assuming previous levels of additions to waiting lists and admissions from waiting lists, it is possible to estimate with reasonable accuracy the level of elective activity in separations required to maintain stable waiting lists.

As a related process Areas would also be assessing trends in obstetric care and emergency admissions when projecting overall activity targets for inpatient funded hospitals.

## **Step 2. Assess Impact of Waiting List Targets**

The Department of Health and Areas will negotiate targets for waiting list benchmarks and the size of the total waiting list for elective surgery in each financial year.

Review of current waiting lists in the Area, either from WLCOS or in the Health Information Exchange, can be used to define required reductions in waiting lists, both in total and by IPCs or disciplines. These numbers should be added to those defined in Step 1, to provide the level of elective activity in separations required to meet waiting list targets.

## **Step 3 Definition of Elective Activity Targets**

Elective activity targets will have to be defined in terms of both separations and case weighted separations. Step 2 has provided information on the required separations. However, conversion of this information to case weighted separations is essential for determination of the financial resources required to fund elective activity targets. This conversion can only be achieved by analysis of the DRG casemix in each relevant speciality group or IPC.

By linking previous data from both the WLCOS and ISC systems in the local Health Information Exchange, it is possible to determine the relationship in each hospital between IPCs or speciality groups and associated DRGs. For example, each IPC can be related to a number of DRGs. It is important to note that this relationship will vary from hospital to hospital, and that use of the relationship for predicting future requirements in terms of case weighted separations is dependent on the quality and reliability of IPC coding in each hospital's Admission Office.

The historical relationship between IPCs or speciality group and DRGs may be expressed either in terms of an IPC cost weight or in terms of the actual mix of DRGs for the hospital. Using either of these measures, the projected required activity in separations may be converted to weighted separations and consequently to the requirements for funding.

## **Step 4 Distribution of Elective Activity Targets**

A variety of factors, such as the planned level of emergency activity, the roles of hospitals, AMO appointments, availability of operating theatre time, availability of beds, capacity to increase activity (where this is required) and efficiency of service provision may be taken into account in determining the distribution of elective activity targets among hospitals in each Area. As Areas become increasingly confident in projecting requirements for elective workload, it is expected that the processes for distribution of workload between hospitals will become more open and transparent.

The basis for estimating the targets and the expectation of the Area for each hospital should be communicated as clearly as possible and involve consultation with affected clinicians.

## **Step 5 Monitoring of Performance**

Achievement of the activity targets that have been defined for each hospital and for the Area as a whole must be reviewed monthly. The review process should ensure that the more urgent cases are given priority over less urgent cases within the overall requirement to meet the Area wide targets negotiated with the Department. In this regard, Areas may wish to monitor performance by hospitals at the IPC level, speciality or DRG level for each urgency category.

Where significant reductions in waiting lists are required during the year, Areas are encouraged to set progressive monthly targets of the number of patients on the list to facilitate monitoring of progress.

**Step 6 Redistribution of Activity Targets and Funding, where Required**

Areas may decide to establish a process for redistribution of activity targets and associated funding between hospitals during the year where monitoring of performance indicates failure to meet targets in a particular hospital. There should be active involvement of relevant managers and clinicians in coming to such decisions and such an arrangement should be agreed as part of the activity setting process. This arrangement could be included in the incentive component of inpatient funding.

## Appendix B: Funding of Renal Dialysis

Areas should pool funds for renal dialysis services provided across all settings. This is the approach used in other states. It recognises the long term treatment provided to people with end stage renal failure and the fact that patients move between settings as their condition changes.

The approach suggested is to identify the current budget for admitted and non-admitted dialysis (including home maintenance) and the average annual number of patients funded by the current budget. The relative values implied by the Victorian payment rates can be used to derive annual payments per patient year. Based on projected patient numbers by modality, an expenditure budget can be derived for 2003/04.

Treatment Modality	Total recommended payment per patient per year <sup>a</sup> , 2003/04 prices <sup>b</sup>	Relative value
In-Centre dialysis	\$45,975	1.39
Home haemodialysis	\$33,024	1.00
Continuous ambulatory peritoneal dialysis	\$41,553	1.26
Satellite dialysis	\$47,337	1.43

<sup>a</sup> Figures based on the Victorian funding model 2002/03. Source: <http://www.health.vic.gov.au/pfg2002/>

<sup>b</sup> Escalation factor used is 4.24%, representing escalation from 2002/03 to 2003/04. Source: Finance Branch, NSW Health Department

For example, consider an Area that had 25 patients on average in each of the four modalities in 2002/03 and expended \$3m in direct and associated hospital overheads. By applying the relative values above, the price for a home haemodialysis patient would have been at a rate of \$23,622 per patient (calculated by dividing \$3m by  $\{25*1.39+25*1.43+25*1.00+25*1.26\}$ ).

If the annual average growth in patients in 2002/03 is expected to result in an 6 additional patients on average, comprising 2 home haemodialysis, 2 satellite and 2 in-centre patients, then an additional expenditure of \$180,472 is required (calculated by  $\{2*1.392+2*1.421+2*1.000\}*\$23,622$ ).

The Report of the NSW Dialysis Casemix Development Project has suggested the following classification:

Maintenance	In-centre Dialysis	Country Unit
		Metro/Urban
	Satellite dialysis	to 14 km
		to 25 km
		to 299 km
Home dialysis	plus 300 km	
	CAPD	
Training		Haemodialysis
		HD training
		CAPD training
Not on dialysis		Transplantation
		Predialysis

## Appendix C: Sub and Non-acute Inpatient Adjustment

In certain limited circumstances, patients in sub-acute and non-acute service categories may be treated in units funded by hospitals under either program 2.2 or 2.3 (Overnight and Same Day Acute Inpatient Services.) In these instances patients funded by hospitals under Programs 2.2 or 2.3 are to be excluded from the inpatient funding model at the bed day rates identified below.

**Table C1 Sub- and non-acute inpatient adjustment factors**

Service category	2003/04 bed day rate (\$)
Palliative Care	631
Rehabilitation	588
Maintenance	325

*Source: NSW SNAP Costing Study 2000/01, escalated to 2003/04 values.*

## Appendix D: Guidelines for Mechanical Ventilation Co-payments

### Definition of mechanical ventilation

Continuous ventilatory support (CVS) also known as mechanical ventilation (MV) is a process by which gases are moved into the lungs by means of a mechanical device that assists respiration by augmenting or replacing the patient's own respiratory effort. With ventilatory support, a patient is intubated or has a tracheostomy and receives continuous variable degrees of assistance to meet respiratory requirements in an uninterrupted continuous fashion. It includes CPAP and BiPAP when they are via an endotracheal tube or tracheostomy tube but not when they are via a mask. It excludes IPPB<sup>5</sup>.

### Calculation of Mechanical Ventilation Co-Payments

#### Scope

This model applies to funding hospitals with Level 3 and 4 ICUs in 2003/2004, both metropolitan and rural. Hospitals with the capacity for mechanical ventilation (MV) as defined above will receive a mechanical ventilation co-payment (on top of the DRG-based inpatient payment) to recognise the extra resources that are consumed during the periods that the patient is being ventilated. For many of these hospitals, this includes additional overtime payments and the short-term use of agency staff.

#### Exclusions

Neonatal MV is excluded from MV co-payments as the neonatal DRG cost weights are appropriate and no additional co-payment is warranted.

MV provided only in the operating theatre during the course of a surgical procedure is also excluded as the DRG cost weights are appropriate and no additional co-payment is warranted. MV provided after the operating theatre procedure should be included.

#### Determination of activity levels for 2003/2004

Areas should start by calculating the number of hours provided in 2002/03, then increase/decrease this amount in line with strategic service development plans, activity forecasts based on historic trends and population growth. Actual hours of MV are not routinely captured in the current inpatient collection by all hospitals. This means that Areas will need to use local data collections as the data source for hours of MV.

Note that only MV that meets the above definition is to be included in the calculation of MV hours.

#### Rate

The co-payment for 2003/04 will be \$78 per MV hour. This co-payment is based on the number of MV hours expected to be required in 2003/2004, whether the MV is provided in an ICU or elsewhere in the hospital. This is equivalent to \$1 872 per 24-hour period and is on top of the relevant DRG payment for the inpatient.

---

<sup>5</sup> This definition is based on the definition in the current ICD-10-AM Australian Coding Standards. Note however that the required information cannot be collected simply by using existing coded data as the current national coding standards include 3 codes for MV based on grouping the number of hours of MV. For example, MV of less than 24 hours duration is coded as 13882-00. Actual hours of MV are used in the funding model. Some hospitals, but not all, routinely record actual hours of MV in the ISC while others simply record the code.

---

### **Method of funding**

This co-payment will be incorporated into the infrastructure component of the acute inpatient funding stream rather than through the ICU funding stream. The acute model has both prospective and retrospective elements and there are thus several options about how the MV co-payment is paid, each of which allocates financial risk in different ways. The method to be used is a matter for each Area Health Service to determine:

- A prospective allocation paid at the beginning of the year based on the estimated hours of MV to be provided in 2003/04 with no adjustments throughout the year if the number of hours of MV actually provided is significantly more or less than originally estimated.
- A prospective allocation paid at the beginning of the year based on the estimated hours of MV to be provided in 2003/04 with retrospective adjustments throughout the year if the number of hours of MV is significantly more or less than originally estimated.
- A retrospective allocation paid throughout the year (perhaps monthly or quarterly) based on the hours of MV actually provided during the period.
- The MV co-payment is to be specified as a 'justifiable additional cost' line item in the acute infrastructure component of the model. MV co-payments will be excluded from the calculation of the benchmark cost for acute inpatient care.

### **Conditions of hospitals receiving MV co-payments**

As part of inpatient Funding Service Agreements with each hospital, Areas are required to include an explicit agreement about the conditions under which the MV co-payment will be paid. These conditions are designed as a quality assurance mechanism and hospitals will need to gain agreement from relevant clinicians prior to entering into an agreement with the Area.

- *MV co-payment for rural hospitals with Level 4 ICU services:* Agreement to provide a consultation service for hospitals with Level 3 ICU services.
- *MV co-payment for metropolitan hospitals with Level 4 ICU services.* MV to be provided for no more than 3 days without a consultation with a Level 5 or 6 ICU.
- *MV co-payment for both rural and metropolitan hospitals with Level 3 ICU services.* MV to be provided for no more than 24 hours without a consultation with a Level 4, 5 or 6 ICU.

## Appendix E: Acute Inpatient Cost Benchmarks for 2003/2004

### Benchmarks for Peer Hospitals

Cost benchmarks for acute inpatient costs are calculated annually from data submitted to the NSW Hospital Cost Data Collection (HCDC). The cost benchmarks for acute inpatient care exclude the ED, IC and depreciation components.

The 2003/04 benchmarks use data from the 2001/02 HCDC. There were 79 hospitals in this collection, and close to 800 thousand separations. The cost weights applied were the cost weights from the *NSW Costs of Care Standards 2003-04*. The benchmarks are as follows:

**Table E.1: Acute inpatient cost benchmarks**

Peer hospital group	2003/04 Benchmark
A1a Principal referral 1a	\$ 2,950
A1b Principal referral 1b	\$ 2,725
A2 Specialist paediatric	\$ 3,125
A3 Ungrouped acute	\$ 2,700
B1 Major metropolitan	\$ 2,675
B2 Major non metropolitan	\$ 2,850
C1 District group 1	\$ 2,900
C2 District group 2	\$ 2,800

### Reconciliation with acute inpatient benchmarks

As part of the budget allocation process, Areas will be required to advise the Department of the proposed expenditure budget allocation for 2003/04 by inpatient funded hospital and reconcile this against the funding that would be implied using the benchmarks for each peer group.

The benchmark level of funding in 2003/04 can be derived by multiplying the target level of case weighted activity<sup>6</sup> by the benchmark reference cost given in Table E.1 above. Because the benchmarks have been derived after adjusting for a mechanical ventilation co-payment for hospitals with level 3 and 4 ICUs, these payments have to be added. The budget derived in this way should be compared to the proposed allocation. The allocation should not be greater than the benchmark level, unless there is sufficient evidence of justifiable additional costs.

### Calculation of acute inpatient cost benchmarks

The preparation of the data for the calculation of the benchmarks is a very complex process. Firstly, the data from the various files provided by the hospitals for the Collection is edited and reconciled. In particular, the activity files are matched with the cost-per-episode file for the cost modeling hospitals, and any large mismatches are noted and fixed. For cost modeling hospitals, a range of checks such as cost centre mapping and the application of inpatient fractions are checked and the results re-processed if required.

Secondly, the data from the HCDC is merged with the Inpatient Statistics Collection (ISC) contained in the HIE. In some instances the costs are at an episode level (ie for clinical costing hospitals), and in others they are at a DRG level, separate for same day and overnight cases, and for public and private patients (ie for cost modeling hospitals). The totals for each hospital resulting from this process are checked with the original totals

<sup>6</sup> The cost weights should be those excluding the ED and ICU component.

provided by the hospitals through their HCDC files. Again, large discrepancies are checked and fixed.

Thirdly, cases outside the scope of Episode Funding are excluded from the analysis. This includes:

- All cases other than acute and newborns (ie qualified and unqualified);
- Error DRGs;
- The dialysis DRG;
- The chemotherapy DRG;
- The rehabilitation DRGs;
- ED only cases;
- Episodes with any days in designated psychiatric units; and
- Mismatched cases between the two collections (ie episodes in the HIE but not in the HCDC and vice versa).

Fourthly, the average cost per casemix weighted separation is calculated for each episode using the rules in the NSW Costs of Care Standards. The Standards adjust for long stay outliers (per diem inflation), indigenous status (10% inflation to the overall cost weight), same day (discounted cost weight for selected DRGs), private patients (9% discount to the overall cost weight), and transfers (discounted cost weights for transfers with a one day length of stay). In addition, ED and ICU costs are removed for hospitals with separate funding models for these services, and depreciation is removed for all hospitals. The calculation is as follows:

Cost per Casemix Weighted Inpatient Excl ED & ICU, Excl Deprec=

$$\frac{(\text{Total Acute Expenditure Excl ED, ICU \& Deprec Costs})}{(\text{Total Acute AR-DRG Weighted Seps Excl ICU \& ED})}$$

Lastly, the 33<sup>rd</sup> percentile cost is calculated for each peer hospital group. A percentile rather than an average is used to minimise the impact of high and low cost outlier hospitals within each group. Also, the 33<sup>rd</sup> percentile is chosen over the median for example to ensure that hospitals are striving for savings. The benchmarks are the rounded value (to the nearest \$25) of the 33<sup>rd</sup> percentile for each peer group.

There are differences in the way that the benchmarks and the underlying costs were calculated in the previous set of benchmarks (based on the 2000-01 HCDC). These are as follows:

- *Hospitals in the HCDC.* In 2001-02 we obtained HCDC data from Canterbury Hospital, which was not provided in the previous year.
- *Exclusion of out-of-scope cases.* Two important categories of out-of-scope cases are mismatched and ED only cases. There were differences in how both of these were identified between the two years. There were no mismatched cases in 2000-01 for cost modelling hospitals as the DRG averages reported through the HCDC were applied to the DRG-hospital combinations in the HIE. In 2001-02, the activity file submitted by the cost modelling hospitals was matched with the HIE data (as for clinical costing hospitals) and any mismatched cases were excluded.
- *Exclusion of private diagnostic costs.* These costs were included for some hospitals in the previous year and included for others.

- *Exclusion of ED and ICU costs.* ED and ICU costs are only excluded from the total cost for ED and ICU funded hospitals, and these changed from one year to the next.
- *Source of ICU costs.* The ICU costs excluded in 2000-01 were according to a survey carried out for the ICU funding model. In 2001-02 the ICU costs were from the HCDC.
- *Change of peer group for Tweed Heads Hospital.* The costs of this hospital are now included in the B2 Major non-metropolitan group rather than C2 District group 1.
- *Exclusion of chemotherapy cases.* All chemotherapy cases were excluded in 2001-02, whereas in 2000-01, only same day chemotherapy was excluded.

Also, different cost weights were used to calculate the average cost per casemix weighted separation in the two years. The differences between the cost weights are documented elsewhere.

Further details of the impact of the differences between the 2003/04 benchmarks and associated cost averages with the current set are shown in the table below.

**Table E2: Impact of changes in cost averages and resulting benchmarks**

Peer hospital group	2001/02 Cost results excluding ED, ICU and depreciation		2000/01 Cost results excluding ED, ICU and depreciation		Escalation by 8.6% to 2003/04 cost per weighted separation excluding ED, ICU and depreciation		Differences			
	Average (A)	Achieved by 1/3 of hospitals (B)	Average (C)	Achieved by 1/3 of hospitals (D)	Achieved by 1/3 of hospitals (E)=B*8.66%	2003/04 Benchmark (F)=(E) rounded to nearest \$25	% Difference in 33rd percentile costs (G)=(B-D)/D	% cost weight change (using different cost weights) (H)	Minus cost escalation (4.33%) and cost weight change (I)=G+H-4.33%	Diff b/w average costs in 2000/01 and 2001/02 (J)=(A-C)/C
A1a	\$ 2,710	\$ 2,716	\$ 2,768	\$ 2,640	\$ 2,954	\$ 2,950	3%	1%	0%	-2%
A1b	\$ 2,603	\$ 2,503	\$ 2,482	\$ 2,413	\$ 2,723	\$ 2,725	4%	1%	0%	5%
A2	\$ 2,883	\$ 2,883	\$ 2,723	\$ 2,725	\$ 3,135	\$ 3,125	6%	0%	1%	6%
A3	\$ 2,834	\$ 2,475	\$ 2,785	\$ 2,562	\$ 2,692	\$ 2,700	-3%	1%	-7%	2%
B1	\$ 2,579	\$ 2,467	\$ 2,422	\$ 2,376	\$ 2,683	\$ 2,675	4%	0%	0%	6%
B2	\$ 2,673	\$ 2,614	\$ 2,651	\$ 2,552	\$ 2,843	\$ 2,850	2%	2%	0%	1%
C1	\$ 2,794	\$ 2,654	\$ 2,622	\$ 2,529	\$ 2,886	\$ 2,900	5%	-1%	0%	7%
C2	\$ 2,721	\$ 2,576	\$ 2,484	\$ 2,416	\$ 2,801	\$ 2,800	7%	-3%	-1%	10%

The average cost by peer group is provided in column A. The cost achieved by 1/3 of hospitals (ie the 33<sup>rd</sup> percentile cost) for each peer group is in column B. It is the 33<sup>rd</sup> percentile that forms the basis of the proposed benchmarks.

The costs in column B were escalated by 8.6% to 2003/04 prices to inform the proposed benchmarks in column F. The escalation rate of 8.6% is based on funded CPI and award increases for 2002/03 (4.33%) and 2003/04 (4.24%). This information was obtained from the Finance Branch in July 2003.

The costs from the 2000/01 NSW HCDC are also shown in columns C and D. The differences between the 33<sup>rd</sup> percentile costs between the two collection years are shown in column G as a percentage change. This percentage is then adjusted by the % change in

cost weights by peer hospital group used in the calculation of the two sets of figures (column H) and the escalation factor for the increase in costs expected in the latter year (4.33%). The adjusted difference is in column I. The A3 Ungrouped acute peer group is showing the largest difference in the 33<sup>rd</sup> percentile costs adjusted for cost weight changes and increased costs between the two years. The difference is -7%. The skewed casemix and the small number of hospitals particularly affect this group. Even so, \$2,700 is considered an appropriate benchmark when examining the costs for the peer group (apart from one major outlier, the rest of the hospitals are within a short range of the benchmark being proposed).

As for 2002/03, a benchmark has been set for A2 - Paediatric specialist hospitals. The results of national benchmarking studies for Children's Hospitals indicate that SCH and CHW are around the national average cost. In past years there has been concern that setting benchmark for the A2 hospitals will lock in inefficient cost structures. With A2 benchmarks set in 2002/03, A2 hospitals have three years from 2002/03 to remove any transition grants. This change will impact mainly on SCH which historically has been more expensive than CHW and it will encourage the children's hospitals to better understand their cost differences and cost drivers.

## Appendix F: ED Cost Benchmarks

Benchmark has been calculated for 2003/2004. The details are shown below.

**Table F1 ED Benchmarks**

ED Peer Group	Benchmark per case weighted ED episode	Standard activity payment	Average infrastructure payment
ED Peer Group A1/B1 and Sydney Hospital (all A1 and B2 hospitals)	\$355	\$68	\$287
ED Peer Group A2 (The two Children's Hospitals)	\$305	\$68	\$237
ED Peer Group B2/C1 and Newcastle Mater Hospital (All B2 and C1 hospitals)	\$270	\$68	\$202
<b>All</b>	<b>\$330</b>	<b>\$68</b>	<b>\$262</b>

A case weighted ED episode is an ED attendance weighted according to the ED Classification shown in Appendix G.

The benchmarks set for 2003/2004:

1. Are based on 2000/2001 information provided by Areas and hospitals in a special ED cost data collection undertaken in the first half of 2002.
2. Includes all of the direct costs of running the ED except any reported retrieval costs.
3. Includes share of Area and hospital overhead costs of running the ED. Where these were available from the Area or hospital or through the 2000/2001 cost of care collection, each hospital's own overhead costs were used. Where these were not available, the state-wide average rate of 32% was applied.
4. Excludes depreciation (excluding any superannuation and workers compensation managed at Area level).
5. Includes superannuation and workers compensation for all hospitals, including those where these items are retained at the Area level. Where actual figures were available, each hospital's own costs were used. Where these were not available, State-wide average rates were applied.
6. Includes all costs associated with T&R currently included in ED cost centres.
7. Include cross-charges or costs of pharmacy and diagnostic tests for ED patients, whether or not they were subsequently admitted. Hospital-specific costs were used where these were reported. If not, State-wide average costs were applied. These State-wide average costs are calculated across all patients (except those classified as 'Did Not Wait') in those hospitals able to report cross-charges, whether or not the patient received pharmaceuticals or diagnostic services. No overhead costs were applied to these costs, irrespective of whether they were cross-charged. The rates are shown in Table F2.
8. Include cost escalation factors of 4.25% from 2000/01 to 2002/03 and 4.24% from 2002/03 to 2003/04.

The placement of Sydney in the A1/B1 group and Newcastle Mater in the B2/C1 group will be reviewed for 2003/04 in light of improved cost data that is expected from Sydney Hospital and comparison of Newcastle Mater with other peer group hospitals.

**Table F2 NSW average cross charges**

Cost type	Average cost per case weighted attendance
Pharmacy	\$10
Pathology	\$21
Radiology	\$39
<b>All</b>	<b>\$70</b>

Table F3 summarises the cost components included for both costing and funding purposes.

**Table F3 Costs included for costing and funding purposes**

Cost Type	ED Funding Model		ED Cost Model
	ED Only Patients	Subsequently Admitted Patients	Is item included in ED cost model for all patients (both ED Only and those SA)?
Medical – ED	ED Funding Stream	ED Funding Stream	Yes
Nursing – ED	ED Funding Stream	ED Funding Stream	Yes
Allied Health – ED	ED Funding Stream	ED Funding Stream	Yes
Other – ED	ED Funding Stream	ED Funding Stream	Yes
Pharmacy – Imprest	ED Funding Stream	ED Funding Stream	Yes
Pharmacy – Prescribed	ED Funding Stream	DRG Funding Stream	Yes
Pathology/Imaging Ordered in ED	ED Funding Stream	DRG Funding Stream	Yes
Overheads (related to ED cost centres)	ED Funding Stream	ED Funding Stream	Yes
Teaching and Research	T&R Program Stream		Yes
Consultation and Liaison from non-ED staff	DRG Funding Stream	DRG Funding Stream	No

From 2003/2004, hospitals will receive up to 3 allocations for their ED services:

- An ED allocation through the ED funding model for direct clinical activity comprising both an activity and an infrastructure component;
- An allocation through the DRG stream for the pharmacy and diagnostic costs of patients subsequently admitted; and
- An allocation through the T&R Program for their T&R role.

The benchmarks shown above include all three components.

## Appendix G: NSW ED Classification

**Table G1 ED classification and weights**

Description	Cost Weight
Subsequently Admitted/Priority 1	2.665
Subsequently Admitted/Priority 2	1.668
Subsequently Admitted/Priority 3	1.505
Subsequently Admitted/Priority 4	1.346
Subsequently Admitted/Priority 5	1.328
ED Only/Priority 1	1.381
ED Only/Priority 2	1.191
ED Only/Priority 3	1.008
ED Only/Priority 4	0.848
ED Only/Priority 5	0.695
Did not wait	0.497
All	1.000

Weights are recalibrated from original UDAG weights to exclude age as a splitting variable and for the mix of ED attendances in NSW. UDAG weights incorporate all ED costs for patients subsequently admitted and are the only ones that do so.

ED attendances are allocated to classes using the following algorithm:

1. If a record has missing data, the episode is classified as 'ED Only, Triage Category 5'.
2. If the disposition status is 'Did Not Wait', the episode is classified as 'Did Not Wait'.
3. If the visit type is 1 (Emergency Presentation), 3 (Unplanned Return Visit for continuing condition), 5 (Referred, non-admitted person) or 9 (Person in transit) the episode is classified according to the triage score and the disposition class recorded for the visit.
4. If the visit type is 2 (Return visit - Planned ED), 4 (Outpatient Clinic) 6-8 (various types of pre-arranged admissions) the episode is reclassified to 'ED Only, Triage Category 5'.
5. If the visit type is 10 (DOA), the episode is assigned a cost weight equivalent to 'Subsequently Admitted, Triage Category 5'.
6. Note that ED separation modes of 01 (admitted to ward/inpatient unit), 03 (admitted – died in ED), 08 (Dead on arrival), 10 (admitted to critical care ward), 11 (admitted via operating suite) or 12 (admitted – transferred to another hospital) are considered subsequently admitted. Separation modes 02 (admitted and discharged as an inpatient within ED), 04 (departed – treatment completed), 05 (departed – transferred to another hospital), 07 (departed – left at own risk) or 09 (departed – for another facility) are considered ED only and separation mode 06 (departed – did not wait) is considered did not wait.

## Appendix H: ED Workload Profile of Each Hospital

Table H1 2001/2002 ED raw activity data by hospital (sorted by total volume)

Facility Code	Peer	Facility Name	Total raw volume
Q230	A1a	John Hunter Hosp	50,463
B202	A1b	Gosford Hosp	47,551
C213	A1a	St. George Hosp	46,019
D209	A1a	Liverpool Hosp	44,909
A208	A1a	Royal Prince Alfred Hosp	44,517
A207	A2	Children's Hosp at Westmead	43,719
P208	A1b	Wollongong Hosp	42,231
B218	A1a	Royal North Shore Hosp	42,041
D210	A1b	Penrith DHS - Nepean Hosp	40,221
B206	B1	Wyong Hosp	38,189
C208	A1a	POW	37,695
D224	A1a	Westmead (all units)	37,219
J216	B2	Tamworth Base Hosp	35,343
D215	D1a	Campbelltown	34,128
A212	A1a	St. Vincent's Public Hosp	33,709
H223	C1	Tweed Heads District Hosp	32,834
R219	B2	Wagga Wagga Base Hosp	32,436
D227	A1b	Bankstown/Lidcombe HS - Hosp. units	32,010
K211	B2	Dubbo Base Hosp	29,305
C238	A2	Sydney Children's Hosp	28,907
P207	C1	Shoalhaven and District Hosp	28,769
C214	B1	Sutherland Hosp	28,690
H208	B2	Coffs Harbour and District Hosp	28,177
D218	B1	Mt Druitt	26,655
D203	B1	Blacktown	26,333
D206	B1	Fairfield Hosp	25,701
L216	B2	Orange Base Hosp	25,687
A202	B1	Canterbury District Hosp	25,352
Q211	A3	Newcastle Mater Misericordiae Hosp	25,246
A237	A1a	Repatriation Hosp, Concord	24,751
M201	B2	Albury Base Hosp and NH	23,926
Q206	C1	Maitland Hosp	23,701
H214	B2	Lismore Base Hosp	23,077
P211	C1	Shellharbour Hosp	22,134
B210	B1	Hornsby & Ku-Ring-Gai Hosp	21,525
B214	B1	Mona Vale & District Hosp	21,177
D201	B1	Auburn District Hosp	20,296
B224	B1	Ryde Hosp	20,128
J225	B2	Manning River Base Hosp	19,799
R205	C1	Griffith Base Hosp	19,685
H307	B2	Port Macquarie Base Hosp	19,588
L201	C1	Bathurst Base Hosp	19,494
A216	A3	Sydney	19,229
A231	A3	Sydney Eye	19,048
S201	C1	Broken Hill Base Hosp	19,012
L213	C2	Lithgow District Hosp	18,311
B212	B1	Manly District Hosp	17,556
Q214	C1	Belmont Hosp	17,267
N219	C1	Bowral and District Hosp	16,669
D204	C1	Blue Mountains DHS - Katoomba Hosp.	16,214
N209	C1	Goulburn Base Hosp	15,450
D205	D1a	Camden	12,061
M207	C2	Deniliquin Hosp	10,604

**Note:**

All data in this and subsequent tables are for 2001/02 and include those hospitals using the EDIS(Emergency Department Information System).

Table H2 2001/2002 ED raw activity data (triage and disposition) by hospital

Peer	Facility Code	Facility Name	Total raw volume	SA Triage 1	SA Triage 2	SA Triage 3	SA Triage 4	SA Triage 5	SA All	ED only Triage 1	ED only Triage 2	ED only Triage 3	ED only Triage 4	ED only Triage 5	ED Only All	Did not wait
A1a	A208	RPAH	44517	0.6%	3.7%	13.1%	8.2%	2.4%	<b>27.9%</b>	0.1%	3.1%	20.6%	26.5%	14.2%	<b>64.6%</b>	7.5%
	A212	St. Vincent's	33709	1.2%	4.6%	13.4%	2.0%	0.7%	<b>21.9%</b>	0.9%	6.8%	28.6%	27.7%	5.3%	<b>69.3%</b>	8.8%
	A237	Concord	24751	0.8%	3.7%	13.4%	13.9%	1.5%	<b>33.2%</b>	0.3%	2.5%	14.1%	28.4%	16.4%	<b>61.7%</b>	5.1%
	B218	RNSH	42041	1.3%	5.7%	16.0%	11.3%	1.4%	<b>35.6%</b>	0.2%	3.7%	18.2%	28.7%	8.4%	<b>59.2%</b>	5.1%
	C208	POW	37695	1.4%	3.4%	13.3%	7.7%	1.2%	<b>27.1%</b>	0.4%	2.8%	18.1%	30.1%	11.8%	<b>63.1%</b>	9.8%
	C213	St. George	46019	0.9%	4.5%	13.3%	8.4%	0.1%	<b>27.3%</b>	0.1%	3.8%	21.5%	36.5%	2.9%	<b>64.7%</b>	8.0%
	D209	Liverpool	44909	1.0%	3.9%	22.1%	5.6%	0.3%	<b>32.9%</b>	0.3%	2.0%	27.4%	24.0%	3.7%	<b>57.4%</b>	9.8%
	D224	Westmead	37219	1.3%	6.7%	12.0%	11.8%	0.4%	<b>32.2%</b>	0.1%	4.4%	13.2%	33.3%	8.9%	<b>60.0%</b>	7.8%
	Q230	John Hunter	50463	0.9%	3.3%	10.5%	10.8%	0.2%	<b>25.7%</b>	0.1%	2.3%	15.6%	46.4%	4.9%	<b>69.3%</b>	5.0%
A1a Total			361323	1.1%	4.4%	14.2%	8.8%	0.9%	<b>29.2%</b>	0.3%	3.4%	19.9%	31.8%	8.0%	<b>63.4%</b>	7.4%
A1b	B202	Gosford	47551	0.6%	5.1%	11.1%	13.0%	1.1%	<b>30.9%</b>	0.1%	3.7%	18.9%	31.5%	9.5%	<b>63.6%</b>	5.4%
	D210	Nepean	40221	1.4%	9.5%	15.0%	4.2%	0.1%	<b>30.2%</b>	0.5%	8.3%	27.9%	23.0%	1.6%	<b>61.3%</b>	8.5%
	D227	Bankstown/Lidcombe	32010	0.6%	3.1%	18.9%	8.2%	0.0%	<b>30.8%</b>	0.1%	1.6%	26.3%	30.5%	0.8%	<b>59.3%</b>	9.8%
	P208	Wollongong	42231	1.0%	3.6%	11.6%	6.5%	2.0%	<b>24.7%</b>	0.3%	4.1%	21.2%	28.5%	14.8%	<b>69.0%</b>	6.4%
A1b Total			162013	0.9%	5.4%	13.8%	8.2%	0.9%	<b>29.1%</b>	0.2%	4.5%	23.2%	28.4%	7.2%	<b>63.6%</b>	7.3%
A2	A207	Childrens @ Westmead	43719	0.5%	1.9%	9.1%	3.5%	2.0%	<b>17.1%</b>	0.3%	1.3%	15.4%	27.0%	31.1%	<b>75.1%</b>	7.8%
	C238	Sydney Childrens	28907	0.2%	1.2%	6.8%	4.3%	1.7%	<b>14.2%</b>	0.1%	0.8%	10.0%	30.4%	41.2%	<b>82.5%</b>	3.3%
A2 Total			72626	0.4%	1.6%	8.2%	3.8%	1.9%	<b>15.9%</b>	0.2%	1.1%	13.3%	28.3%	35.1%	<b>78.1%</b>	6.0%
A3	A216	Sydney	19229	0.0%	0.8%	5.5%	4.1%	0.4%	<b>10.8%</b>	0.1%	2.2%	18.7%	47.0%	16.0%	<b>84.1%</b>	5.0%
	A231	Sydney Eye	19048	0.0%	0.0%	0.2%	2.0%	0.3%	<b>2.5%</b>	0.0%	0.0%	0.3%	18.9%	75.0%	<b>94.2%</b>	3.3%
	Q211	Newcastle Mater	25246	0.5%	6.2%	11.7%	3.7%	0.1%	<b>22.2%</b>	0.1%	3.8%	14.7%	42.5%	14.0%	<b>75.2%</b>	2.6%
A3 Total			63523	0.2%	2.7%	6.4%	3.3%	0.2%	<b>12.9%</b>	0.1%	2.2%	11.6%	36.8%	32.9%	<b>83.6%</b>	3.6%
<b>All A group</b>			<b>659485</b>	<b>0.9%</b>	<b>4.2%</b>	<b>12.7%</b>	<b>7.5%</b>	<b>0.9%</b>	<b>26.1%</b>	<b>0.2%</b>	<b>3.3%</b>	<b>19.2%</b>	<b>31.1%</b>	<b>13.2%</b>	<b>67.0%</b>	<b>6.9%</b>
B1	A202	Canterbury District	25352	0.6%	3.8%	11.0%	6.9%	0.3%	<b>22.6%</b>	0.1%	3.4%	25.0%	30.5%	3.0%	<b>62.1%</b>	15.3%
	B206	Wyong	38189	0.4%	4.6%	8.4%	7.0%	0.2%	<b>20.5%</b>	0.0%	4.4%	20.8%	41.4%	4.0%	<b>70.6%</b>	8.8%
	B210	Hornsby & Ku-Ring-Gai	21525	0.6%	4.4%	9.1%	9.6%	0.7%	<b>24.4%</b>	0.2%	5.0%	18.3%	32.5%	16.4%	<b>72.3%</b>	3.3%
	B212	Manly District	17556	0.5%	3.3%	11.2%	9.5%	1.3%	<b>25.9%</b>	0.0%	2.8%	17.4%	30.7%	18.9%	<b>69.9%</b>	4.2%
	B214	Mona Vale & District	21177	0.6%	2.9%	11.4%	9.4%	1.4%	<b>25.6%</b>	0.1%	2.9%	16.9%	32.9%	18.4%	<b>71.2%</b>	3.1%
	B224	Ryde	20128	0.6%	2.1%	9.3%	9.9%	0.6%	<b>22.6%</b>	0.1%	1.6%	14.1%	45.9%	12.0%	<b>73.6%</b>	3.8%
	C214	Sutherland	28690	1.0%	5.7%	14.7%	7.2%	0.8%	<b>29.4%</b>	0.1%	4.9%	25.4%	27.2%	8.4%	<b>66.0%</b>	4.6%
	D201	Auburn District	20296	0.4%	2.9%	8.3%	7.2%	0.9%	<b>19.7%</b>	0.1%	2.3%	15.2%	31.3%	26.3%	<b>75.3%</b>	5.0%

**NSW Funding Guidelines 2003/2004**

	D203	Blacktown	26333	0.7%	4.6%	13.4%	5.0%	0.1%	<b>23.7%</b>	0.4%	4.5%	26.0%	23.0%	3.3%	<b>57.3%</b>	19.0%
	D206	Fairfield	25701	0.5%	3.3%	13.2%	5.0%	0.3%	<b>22.3%</b>	0.1%	2.4%	26.7%	31.3%	7.8%	<b>68.3%</b>	9.4%
	D218	Mt Druitt	26655	0.7%	3.5%	12.2%	5.4%	0.2%	<b>22.0%</b>	0.3%	3.2%	23.8%	37.7%	5.9%	<b>70.8%</b>	7.2%
<b>B1 Total</b>			<b>271602</b>	<b>0.6%</b>	<b>3.9%</b>	<b>11.1%</b>	<b>7.3%</b>	<b>0.6%</b>	<b>23.4%</b>	<b>0.2%</b>	<b>3.5%</b>	<b>21.4%</b>	<b>33.3%</b>	<b>10.2%</b>	<b>68.6%</b>	<b>8.0%</b>
B2	H208	Coffs Harbour	28177	0.8%	4.7%	13.5%	4.6%	0.4%	<b>23.9%</b>	0.1%	2.5%	20.3%	33.7%	12.4%	<b>69.1%</b>	7.0%
	H214	Lismore	23077	0.9%	4.6%	15.9%	8.3%	0.7%	<b>30.5%</b>	0.1%	2.4%	18.6%	33.2%	9.8%	<b>64.1%</b>	5.4%
	H307	Port Macquarie	19588	0.5%	4.3%	10.5%	13.7%	1.6%	<b>30.6%</b>	0.1%	2.3%	13.2%	37.6%	12.6%	<b>65.7%</b>	3.7%
	J216	Tamworth	35343	0.4%	3.5%	7.4%	4.9%	0.5%	<b>16.8%</b>	0.0%	2.8%	14.2%	37.6%	24.5%	<b>79.2%</b>	4.0%
	J225	Manning River	19799	0.4%	3.0%	11.6%	10.1%	0.7%	<b>25.8%</b>	0.0%	1.4%	20.1%	37.7%	9.3%	<b>68.6%</b>	5.7%
	K211	Dubbo Base	29305	0.4%	2.5%	13.2%	3.3%	0.6%	<b>20.0%</b>	0.1%	1.7%	30.0%	23.7%	20.2%	<b>75.7%</b>	4.3%
	L216	Orange	25687	0.5%	3.3%	8.7%	7.1%	0.5%	<b>20.0%</b>	0.1%	2.2%	13.6%	43.7%	17.2%	<b>76.8%</b>	3.1%
	M201	Albury Base	23926	0.5%	1.4%	7.9%	7.4%	0.6%	<b>17.9%</b>	0.1%	1.1%	14.2%	43.8%	17.5%	<b>76.7%</b>	5.4%
R219	Wagga Wagga	32436	0.4%	2.3%	8.3%	8.2%	0.9%	<b>20.1%</b>	0.1%	1.6%	9.3%	34.7%	29.4%	<b>75.0%</b>	4.9%	
<b>B2 Total</b>			<b>237338</b>	<b>0.5%</b>	<b>3.2%</b>	<b>10.6%</b>	<b>7.1%</b>	<b>0.7%</b>	<b>22.2%</b>	<b>0.1%</b>	<b>2.0%</b>	<b>17.0%</b>	<b>35.9%</b>	<b>18.0%</b>	<b>73.0%</b>	<b>4.8%</b>
<b>B1 and B2 Total</b>			<b>508940</b>	<b>0.6%</b>	<b>3.6%</b>	<b>10.9%</b>	<b>7.2%</b>	<b>0.6%</b>	<b>22.8%</b>	<b>0.1%</b>	<b>2.8%</b>	<b>19.3%</b>	<b>34.5%</b>	<b>13.8%</b>	<b>70.6%</b>	<b>6.5%</b>
C1	D204	Katoomba	16214	0.3%	4.1%	7.8%	6.5%	0.5%	<b>19.2%</b>	0.2%	4.1%	12.8%	46.3%	12.3%	<b>75.8%</b>	5.0%
	H223	Tweed Heads	32834	0.5%	2.9%	7.3%	5.6%	0.8%	<b>17.2%</b>	0.1%	2.4%	17.8%	36.0%	22.8%	<b>79.1%</b>	3.7%
	L201	Bathurst	19494	0.2%	1.8%	6.7%	7.8%	1.6%	<b>18.1%</b>	0.0%	0.8%	6.8%	34.3%	37.9%	<b>79.8%</b>	2.0%
	N209	Goulburn	15450	0.2%	2.0%	9.0%	4.5%	1.6%	<b>17.3%</b>	0.0%	0.7%	19.8%	22.5%	35.0%	<b>78.0%</b>	4.7%
	N219	Bowral	16669	0.1%	2.0%	8.6%	4.0%	0.3%	<b>15.0%</b>	0.1%	1.9%	23.1%	47.7%	8.7%	<b>81.5%</b>	3.5%
	P207	Shoalhaven	28769	0.4%	3.2%	9.7%	6.1%	1.0%	<b>20.4%</b>	0.0%	1.5%	15.6%	34.3%	20.8%	<b>72.2%</b>	7.4%
	P211	Shellharbour	22134	0.2%	2.3%	5.9%	5.3%	0.4%	<b>14.1%</b>	0.0%	2.3%	15.5%	43.4%	15.6%	<b>76.9%</b>	9.0%
	Q206	Maitland	23701	0.3%	2.7%	12.0%	9.0%	0.5%	<b>24.6%</b>	0.1%	1.4%	15.7%	32.5%	20.7%	<b>70.4%</b>	5.0%
	Q214	Belmont	17267	0.2%	1.2%	6.1%	4.4%	0.1%	<b>12.0%</b>	0.1%	1.2%	15.7%	50.1%	8.0%	<b>75.0%</b>	13.0%
	R205	Griffith	19685	0.4%	2.1%	9.3%	2.6%	0.3%	<b>14.7%</b>	0.0%	0.7%	9.9%	49.4%	23.5%	<b>83.5%</b>	1.8%
S201	Broken Hill	19012	0.2%	1.1%	5.1%	6.2%	1.3%	<b>13.8%</b>	0.1%	0.6%	6.8%	30.9%	43.9%	<b>82.3%</b>	3.9%	
<b>C1 Total</b>			<b>231229</b>	<b>0.3%</b>	<b>2.4%</b>	<b>8.0%</b>	<b>5.8%</b>	<b>0.8%</b>	<b>17.2%</b>	<b>0.1%</b>	<b>1.6%</b>	<b>14.6%</b>	<b>38.4%</b>	<b>22.7%</b>	<b>77.4%</b>	<b>5.4%</b>
<b>All B and C Group</b>			<b>740169</b>	<b>0.5%</b>	<b>3.2%</b>	<b>10.0%</b>	<b>6.7%</b>	<b>0.7%</b>	<b>21.1%</b>	<b>0.1%</b>	<b>2.5%</b>	<b>17.9%</b>	<b>35.7%</b>	<b>16.6%</b>	<b>72.7%</b>	<b>6.2%</b>
<b>Grand Total</b>			<b>1399654</b>	<b>0.7%</b>	<b>3.6%</b>	<b>11.2%</b>	<b>7.1%</b>	<b>0.8%</b>	<b>23.5%</b>	<b>0.2%</b>	<b>2.9%</b>	<b>18.5%</b>	<b>33.5%</b>	<b>15.0%</b>	<b>70.0%</b>	<b>6.5%</b>

## Appendix I: Impact of the 2003/2004 ED Model by Hospital

Table I1 Impact of case weighting by hospital

ED Peer	Hosp	Name	Raw Activity	Case Weighted Activity	Difference	Difference %
A/B1	B218	Royal North Shore	42,041	45,842	3,801	9%
A/B1	A237	Concord	24,751	26,625	1,874	8%
A/B1	B202	Gosford	47,551	50,403	2,852	6%
A/B1	D224	Westmead	37,219	39,377	2,158	6%
A/B1	D209	Liverpool	44,909	47,385	2,476	6%
A/B1	C214	Sutherland	28,690	30,213	1,523	5%
A/B1	D210	Nepean	40,221	41,968	1,747	4%
A/B1	D227	Bankstown	32,010	33,353	1,343	4%
A/B1	B214	Mona Vale	21,177	21,932	755	4%
B2/C1	H307	Port Macquarie	19,588	20,245	657	3%
A/B1	B212	Manly	17,556	18,134	578	3%
A/B1	A208	Royal Prince Alfred	44,517	45,972	1,455	3%
A/B1	Q230	John Hunter	50,463	51,917	1,454	3%
A/B1	C213	St. George	46,019	47,268	1,249	3%
B2/C1	H214	Lismore	23,077	23,701	624	3%
A/B1	B210	Hornsby	21,525	22,107	582	3%
A/B1	C208	POW	37,695	38,396	701	2%
A/B1	P208	Wollongong	42,231	42,946	715	2%
A/B1	B224	Ryde	20,128	20,405	277	1%
A/B1	D218	Mt Druitt	26,655	26,587	-68	0%
A/B1	D215	Campbelltown	34,128	33,997	-131	0%
B2/C1	J225	Manning River	19,799	19,716	-83	0%
A/B1	D201	Auburn	20,296	20,119	-177	-1%
B2/C1	Q206	Maitland	23,701	23,480	-221	-1%
A/B1	D206	Fairfield	25,701	25,461	-240	-1%
A/B1	A212	St. Vincent's	33,709	33,375	-334	-1%
B2/C1	Q211	Newcastle Mater	25,246	24,824	-422	-2%
A/B1	B206	Wyong	38,189	37,474	-715	-2%
B2/C1	H208	Coffs Harbour	28,177	27,590	-587	-2%
A/B1	A202	Canterbury	25,352	24,581	-771	-3%
B2/C1	L216	Orange	25,687	24,846	-841	-3%
A/B1	C238	Sydney Children's	28,907	27,858	-1,049	-4%
A/B1	A207	Children's Westmead	43,719	42,130	-1,589	-4%
B2/C1	K211	Dubbo	29,305	28,220	-1,085	-4%
A/B1	D203	Blacktown	26,333	25,321	-1,012	-4%
B2/C1	R219	Wagga Wagga	32,436	31,179	-1,257	-4%
B2/C1	L201	Bathurst	19,494	18,690	-804	-4%
B2/C1	P207	Shoalhaven	28,769	27,470	-1,299	-5%
A/B1	D205	Camden	12,061	11,507	-554	-5%
B2/C1	H223	Tweed Heads	32,834	31,080	-1,754	-5%
B2/C1	M201	Albury	23,926	22,619	-1,307	-5%
B2/C1	N209	Goulburn	15,450	14,581	-869	-6%
B2/C1	J216	Tamworth	35,343	33,337	-2,006	-6%

ED Peer	Hosp	Name	Raw Activity	Case Weighted Activity	Difference	Difference %
A/B1	A216	Sydney	19,229	17,989	-1,240	-6%
B2/C1	S201	Broken Hill	19,012	17,575	-1,437	-8%
B2/C1	P211	Shellharbour	22,134	20,098	-2,036	-9%
A/B1	A231	Sydney Eye	19,048	16,953	-2,095	-11%

*Note: Maitland adjusted to take account of co-located GP primary care service.*

## Appendix J: Impact of the 2003/2004 ED Model Within Each Area Health Service

**Table J1 Impact within each Area Health Service**

<i>Hosp</i>	<i>Name</i>	<i>Weighted % of Area case Volumes 2000/2001</i>	<i>weighted ED attendances 2000/2001</i>	<i>Weighted % of Area case Volumes 2001/2002</i>	<i>weighted ED attendances 2001/2002</i>	<i>% Change in weighted activity between 2000/01 and 2001/02</i>
A202	Canterbury	24,741	24.4%	24,581	25.3%	-0.6%
A208	Royal Prince Alfred Hosp	49,088	48.5%	45,972	47.3%	-6.3%
A237	Concord	27,381	27.1%	26,625	27.4%	-2.8%
<b>CSAHS</b>		<b>101,211</b>	<b>100.0%</b>	<b>97,179</b>	<b>100.0%</b>	<b>-4.0%</b>
B202	Gosford	51,259	59.9%	50,403	57.4%	-1.7%
B206	Wyong	34,306	40.1%	37,474	42.6%	9.2%
<b>CCAHS</b>		<b>85,565</b>	<b>100.0%</b>	<b>87,876</b>	<b>100.0%</b>	<b>2.7%</b>
B210	Hornsby & Ku-Ring-Gai	21,955	17.2%	22,107	17.2%	0.7%
B212	Manly	17,746	13.9%	18,134	14.1%	2.2%
B214	Mona Vale	19,911	15.6%	21,932	17.1%	10.1%
B218	Royal North Shore	47,992	37.5%	45,842	35.7%	-4.5%
B224	Ryde	20,338	15.9%	20,405	15.9%	0.3%
<b>NSAHS</b>		<b>127,943</b>	<b>100.0%</b>	<b>128,419</b>	<b>100.0%</b>	<b>0.4%</b>
A212	St. Vincent's	36,008	18.0%	33,375	17.1%	-7.3%
A216	Sydney (excl. Sydney Eye)	16,074	8.0%	17,989	9.2%	11.9%
C213	St. George	49,142	24.6%	47,268	24.2%	-3.8%
C214	Sutherland	28,881	14.4%	30,213	15.5%	4.6%
C208	Prince of Wales	41,033	20.5%	38,396	19.7%	-6.4%
C238	Sydney Children's	28,987	14.5%	27,858	14.3%	-3.9%
<b>SESAHS</b>		<b>200,125</b>	<b>100.0%</b>	<b>195,099</b>	<b>100.0%</b>	<b>-2.5%</b>
D201	Auburn	19,439	17.6%	20,119	18.1%	3.5%
D203	Blacktown	25,289	22.9%	25,321	22.7%	0.1%
D218	Mount Druitt	24,205	22.0%	26,587	23.9%	9.8%
D224	Westmead	41,301	37.5%	39,377	35.3%	-4.7%
<b>WSAHS</b>		<b>110,234</b>	<b>100.0%</b>	<b>111,404</b>	<b>100.0%</b>	<b>1.1%</b>
D215	Campbelltown	33,651	24.2%	33,997	24.2%	1.0%
D206	Fairfield	24,259	17.5%	25,461	18.2%	5.0%
D209	Liverpool	48,960	35.3%	47,385	33.8%	-3.2%
D227	Bankstown	31,953	23.0%	33,353	23.8%	4.4%
<b>SWSAHS</b>		<b>138,823</b>	<b>100.0%</b>	<b>140,196</b>	<b>100.0%</b>	<b>1.0%</b>
D210	Nepean	41,186	100.0%	41,968	100.0%	1.9%
<b>WAHS</b>		<b>41,186</b>	<b>100.0%</b>	<b>41,968</b>	<b>100.0%</b>	<b>1.9%</b>
P207	Shoalhaven	24,729	28.4%	27,470	30.3%	11.1%
P208	Wollongong	43,772	50.3%	42,946	47.4%	-1.9%
P211	Shellharbour	18,569	21.3%	20,098	22.2%	8.2%
<b>IAHS</b>		<b>87,071</b>	<b>100.0%</b>	<b>90,514</b>	<b>100.0%</b>	<b>4.0%</b>
Q206	Maitland	19,768	20.6%	23,480	23.4%	18.8%
Q211	Newcastle Mater	23,831	24.8%	24,824	24.8%	4.2%
Q230	John Hunter	52,535	54.6%	51,917	51.8%	-1.2%
<b>HAHS</b>		<b>96,133</b>	<b>100.0%</b>	<b>100,222</b>	<b>100.0%</b>	<b>4.3%</b>
H208	Coffs Harbour	26,988	59.1%	27,590	58.3%	2.2%
J225	Manning River	18,672	40.9%	19,716	41.7%	5.6%
<b>MNCAHS</b>		<b>45,660</b>	<b>100.0%</b>	<b>47,306</b>	<b>100.0%</b>	<b>3.6%</b>
H214	Lismore	23,104	48.1%	23,701	43.3%	2.6%

Hosp	Name	Weighted % of Area case Volumes 2000/2001	weighted ED attendances 2000/2001	Weighted % of Area case Volumes 2001/2002	weighted ED attendances 2001/2002	% Change in weighted activity between 2000/01 and 2001/02
H223	Tweed Heads	24,962	51.9%	31,080	56.7%	24.5%
<b>NRAHS</b>		<b>48,066</b>	<b>100.0%</b>	<b>54,781</b>	<b>100.0%</b>	<b>14.0%</b>
J216	Tamworth	32,691	100.0%	33,337	100.0%	2.0%
<b>NEAHS</b>		<b>32,691</b>	<b>100.0%</b>	<b>33,337</b>	<b>100.0%</b>	<b>2.0%</b>
K211	Dubbo	27,326	100.0%	28,220	100.0%	3.3%
<b>MAHS</b>		<b>27,326</b>	<b>100.0%</b>	<b>28,220</b>	<b>100.0%</b>	<b>3.3%</b>
L201	Bathurst	17,486	41.6%	18,690	42.9%	6.9%
L216	Orange	24,520	58.4%	24,846	57.1%	1.3%
<b>MWAHS</b>		<b>42,006</b>	<b>100.0%</b>	<b>43,536</b>	<b>100.0%</b>	<b>3.6%</b>
M201	Albury	22,720	42.6%	22,619	42.0%	-0.4%
R219	Wagga Wagga	30,630	57.4%	31,179	58.0%	1.8%
<b>GMAHS</b>		<b>53,351</b>	<b>100.0%</b>	<b>53,798</b>	<b>100.0%</b>	<b>0.8%</b>
N209	Goulburn Base Hosp	13,899	100.0%	14,581	100.0%	4.9%
<b>SAHS</b>		<b>13,899</b>	<b>100.0%</b>	<b>14,581</b>	<b>100.0%</b>	<b>4.9%</b>
S201	Broken Hill Base Hosp	18,277	100.0%	17,575	100.0%	-3.8%
<b>FWAHS</b>		<b>18,277</b>	<b>100.0%</b>	<b>17,575</b>	<b>100.0%</b>	<b>-3.8%</b>

## Appendix K: Definition of an IC Patient

An IC patient is a patient who:

1. Is treated in a designated level 5 or 6 ICU AND
2. Receives more than 4 hours of IC treatment or dies in the ICU AND
3. Receives care in accordance with the Minimum Standards for ICUs set by the Faculty of Intensive Care, Australian and New Zealand College of Anaesthetists (February 2000) AND
4. Is currently receiving MV (see definition below) OR
5. Is, in the opinion of the treating medical officer, likely to require MV within the next 24 hours OR
6. Has recently been in receipt of MV and, following the withdrawal of MV, requires intensive clinical monitoring while adjusting to the withdrawal of MV<sup>7</sup> OR
7. Is receiving IC for any other reason.

### Definition of mechanical ventilation

Continuous ventilatory support (CVS) also known as mechanical ventilation (MV) is a process by which gases are moved into the lungs by means of a mechanical device that assists respiration by augmenting or replacing the patient's own respiratory effort. With ventilatory support, a patient is intubated or has a tracheostomy and receives continuous variable degrees of assistance to meet respiratory requirements in an uninterrupted

<sup>7</sup> As a clinical guide, the term 'recent' should be interpreted to mean a shoulder of approximately 10% of the time that the patient was in receipt of MV.

continuous fashion. It includes CPAP and BiPAP when they are via an endotracheal tube or tracheostomy tube but not when they are via a mask. It excludes IPPB<sup>8</sup>.

---

<sup>8</sup> This definition is based on the definition in the current ICD-10-AM Australian Coding Standards. Note however that the required information cannot be collected simply by using existing coded data as the current national coding standards include 3 codes for MV based on grouping the number of hours of MV. For example, MV of less than 24 hours duration is coded as 13882-00. Actual hours of MV are used in the funding model. Some hospitals, but not all, routinely record actual hours of MV in the ISC while others simply record the code.

---

## Appendix L: Results of IC Surveys

Four one-week surveys were conducted over 2001/02 and 2002/03 financial years to calculate the mix of IC and HD patients in each unit. The 1<sup>st</sup> survey involved only level 5 and 6 units. Level 4 units participated from the 2nd survey.

**Table L1 Summary results of ICU activity surveys**

Hospital	1st		2nd		3rd		4th	
	Total bedday	% IC beddays	Total bedday	% IC beddays	Total bedday	% IC bedday	Total bedday	% IC bedday
Albury			33	78%				
Bankstown	66	72%	69	37%	57	49%	76	54%
Bathurst			27	10%	29	30%	60	39%
Blacktown	38	91%	44	74%	46	82%	37	83%
CHW	74	86%	83	66%	101	65%	76	82%
Coffs Harbour			27	33%	22	40%	42	22%
Concord	70	92%	45	84%	57	86%	55	61%
Dubbo					64	12%	44	32%
Gosford	63	90%	58	83%	62	70%	51	93%
Hornsby	53	56%	45	51%	56	54%	61	89%
John Hunter	84	93%	90	80%	82	95%		
Lismore			33	68%	36	62%	36	67%
Liverpool			128	40%	141	50%	156	43%
Manning Base			20	54%	57	30%	55	8%
Nepean	105	66%	101	47%	107	61%	109	49%
Newcastle Mater	17	15%	19	11%			20	24%
Orange			34	72%	36	60%	40	31%
POW	90	82%	80	91%	105	79%	109	84%
RNSH	165	61%	176	73%	161	74%	181	94%
RPAH	210	63%	222	55%	182	66%	138	43%
SCH	59	94%	59	75%	52	99%	56	90%
St George	95	85%	88	85%	87	90%	78	71%
St Vincents			76	61%	77	74%	76	71%
Sutherland	36	60%	40	96%	42	98%	44	100%
Tamworth			36	65%	31	49%	27	59%
Tweed Head			27	80%	31	93%	24	62%
Westmead	120	96%	90	97%	109	100%	116	100%
Wollongong			84	53%	80	53%	197	51%
All-weighted	1342	76%	1,828.5	65%	1951	68%	1962	64%
unweighted		75%		63%		66%		62%

As shown below, about a third of bed days reported in NSW ICUs are for patients receiving HD level care. For the IC patients, MV accounts for about 92% of total days.

**Table L2 Reasons for Intensive Care Unit bed days as reported in the periodic survey**

<b>Reason for IC</b>	<b>% of total</b>
Currently in receipt of MV 1	58%
Likely MV within 24 hours	2%
Recently in receipt of MV	5%
IC patient for reasons unrelated to MV	6%
High dependency patient	28%
Unknown	1%
Total	100%

*The first survey data were excluded because of data quality*

## Appendix M: NSW IC Benchmark Costs

A benchmark has been calculated for 2003/2004. The details are shown below.

**Table M1 2003/2004 ICU Benchmark for Level 5 and Level 6 ICUs**

Patient type	Benchmark per IC patient day	Standard activity payment	Average infrastructure payment
Chargeable patients	\$2,950	\$590	\$2,360
Non chargeable patients	\$3,242	\$882	\$2,360

The benchmark set for 2003/2004:

- Is based on 2000/01 information provided by Areas and hospitals in a special ICU cost data collection undertaken in the first half of 2002.
- Includes all of the direct costs of running the ICU.
- Includes Area and hospital overhead costs of running the ICU. Where these were available from the Area or hospital through the 2000/2001 cost of care collection, each hospital's own overhead costs were used. Where these were not available, the State-wide average rate of 30.1% was applied.
- Excludes depreciation.
- Includes superannuation and workers compensation for all hospitals, including those where these items are retained at the Area level. Where actual figures were available, each hospital's own costs were used. Where these were not available, State-wide average rates were applied.
- Includes all costs associated with T&R currently included in ICU cost centres.
- Includes cross-charges or costs of pharmacy and diagnostic tests for IC patients. Hospital-specific costs were used where these were reported. If not, State-wide average costs were applied. These State-wide average costs are calculated across all IC patients in those hospitals able to report cross-charges, whether or not the patient received pharmaceuticals or diagnostic services. No overhead costs were applied to these costs, irrespective of whether they were cross-charged. The rates are shown in Table M1.
- Excludes the cost of HD patient care provided in integrated ICU/HDUs. Costs were split on a 2:1 basis so that the cost of an IC patient day was calculated as being twice the cost of a HD patient day. This ratio is based on Faculty standards on the nursing staff levels to be provided for IC and HD patients. Total weighted bed days were calculated based on the results of the periodic surveys held in 2001/02. The funding of HD bed days in ICUs then occurs through the acute inpatient funding stream.
- Includes a cost escalation factor of 8.6% from 2000/2001 to 2003/2004.
- Includes a discount of 9% for chargeable patients. This is the same method used in the DRG funding model for acute care.

**Table M2 NSW average cross charges**

<b>Cost type</b>	<b>Average cost per IC patient day</b>
Pharmacy	\$192
Pathology	\$217
Radiology	\$112
<b>All</b>	<b>\$522</b>

Hospitals receive 3 allocations for their ICU services:

- Funding through the IC funding model for IC bed days,
- Funding through the acute inpatient funding model for high dependency bed days treated in an ICU and
- Funding through the T&R program for T&R in ICU.

The benchmark costs on the previous page include costs associated with T&R.