

NSW Funding Guidelines for Intensive Care Services 2002/2003

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1. Background and Introduction

These guidelines are the second issued by NSW Health for the funding of Intensive Care episodes. Their background lies in the report of the NSW Health Council. The Health Council report recommended that the improved management of Intensive Care Units should concentrate on improving the coordination and networking of Intensive Care Units and the implementation of a new method of funding. Funding should reflect the high fixed costs of Intensive Care Units, the need to be available at all times to the most critically ill and the role of Intensive Care Units within a broader network of critical care services. Decisions by Area Health Services on the distribution and level of ICU services must reflect agreed Statewide planning guidelines.

These guidelines outline the design principles of the Intensive Care (IC) Funding Model to be implemented in 2002/03. Like its counterparts for acute inpatient episode funding and Emergency Department funding, it provides guidelines designed to assist Area Health Services implement the IC Funding Model for their hospitals in 2002/03. It also outlines the issues that need to be addressed in refining and improving the model beyond 2002/03.

At the NSW level, the Intensive Care Implementation Group and the Funding Models Implementation Group share responsibility for developing the funding model for Intensive Care Units. A sub group was established to develop recommendations on the implementation of a funding model for Intensive Care Units for implementation from July 2001 and Professor Kathy Eagar from the Centre for Health Service Development at the University of Wollongong was engaged to design the actual model.

Consultation with clinicians and Area Health Services has been important in shaping the model outlined in this paper. This has largely occurred through the Intensive Care Implementation Group but also through on-site consultations with a range of ICUs in 2001/02 and a workshop with Area Health Services conducted in mid 2002.

The model for implementation in 2002/03 is based on what can feasibly be achieved in 2002 and is a refinement of the model introduced in 2001. The model will be further refined and developed over the next two years. Proposed developments are included in the paper.

2 Funding Policy

Under the Government's Action Plan for Health introduced in 2000, funding for Health Services was substantially increased and guaranteed over the next three years. This funding is allocated to Area Health Services to reflect population growth and health needs.

The Department's Resource Distribution Formula has been used to guide the allocation of three year growth funds and 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 reflect Government and local priorities and strategies.

From 1 July 2000, Areas were required to use episode funding to allocate budgets to hospitals to meet the cost of admissions under the acute inpatient program. This did not include the Emergency Department component or Intensive Care 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 episode classifications (for example, triage category and severity).
- The cost weights derived for DRGs average out the ED and ICU costs across all hospitals and all episodes 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 continue to apply to three different types of episodes of care:

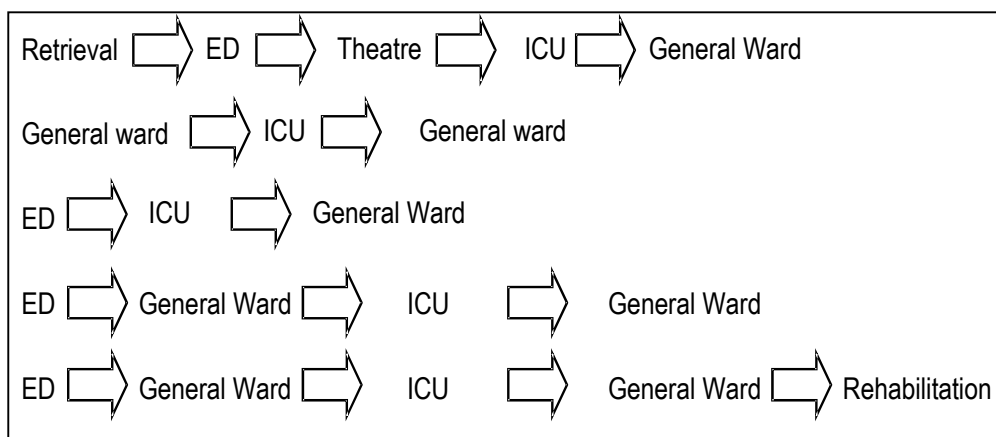
- Acute inpatient episodes (exclusive of the Emergency Department component and/or Intensive Care component of such episodes);
- Emergency Department (ED) episodes defined as all of the care that a patient receives in an ED irrespective of whether the patient is subsequently admitted or discharged;
- Intensive Care (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.

ICU funding has always been a problem in the DRG context. The cost weights originally derived for DRGs averaged out the ICU cost incurred in treating the most severely ill patients across all hospitals and all episodes in each DRG. This meant that, if used for funding, hospitals with an ICU would be systematically under-funded whilst those without an ICU would be systematically over-funded.

In consequence, NSW resolved to remove the ICU component from the AR-DRG (the DRG version in current use) and, instead, to only fund ICU services in those hospitals that provide high level ICU services. This approach recognises that the costs incurred by ICUs varies depending on the complexity of service provided, that full ICU services are concentrated in a relatively small number of hospitals and that ICU services are resources for the whole health system and not simply the hospital in which the unit is located.

Various pathways for patients who access ICUs hospitals are shown in Figure 1 to illustrate the diversity of patterns that are possible when a patient is admitted to the ICU.

Figure 1 Examples of pathways of care requiring ICU services



The funding model will continue to be expanded in subsequent 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 overall episode of care classification schema for NSW is shown in Figure 2.

The next phase in implementing new model 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 and data collection are to be undertaken in 2002/03 with a view to extending funding models to rehabilitation and palliative care services for admitted patients in all designated units from 2003/04, and then to all units in future years.

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

Figure 2 NSW Episode of Care Classification Model

Setting/ Type of care	Primary & Community Care	Acute		Sub- & Non-Acute	
Inpatient	N/A	Emergency Department	AR- DRGs	ICU	AN-SNAP
Same day	N/A		AR-DRGs with same day weights		AN-SNAP
Outpatient	N/A		Select/modify available clinic based system		AN-SNAP
Community	Progressive development of specific modules for Primary & Community Care. Linkage with SNAP & MH-CASC.			AN-SNAP	

Irrespective of whether the funding model is being applied to acute inpatient episodes, ED episodes or IC episodes, the objectives of episode funding 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 local level in the context of improving efficiency and effectiveness; and
- To provide mechanisms to reward good practice and support quality initiatives.

In addition, there are specific objectives in the design and implementation of the IC funding model:

- To recognise the particular features of Intensive Care Units and the nature of their business.

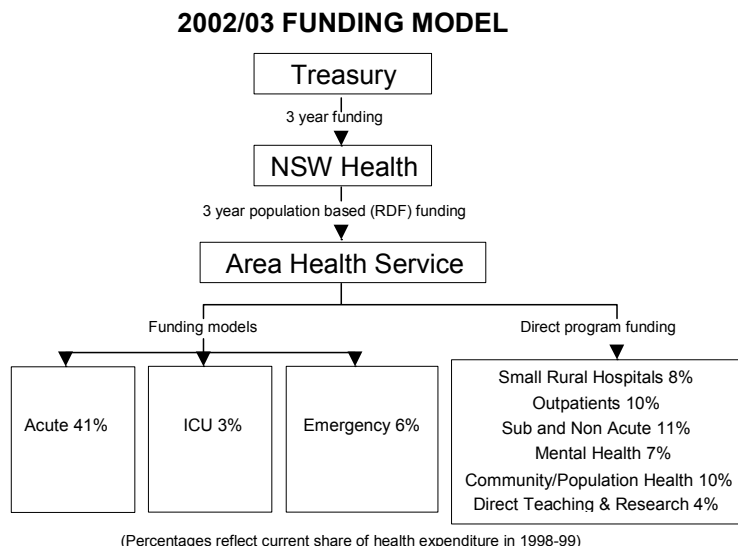
- To recognise that Intensive Care Units in NSW are networked and are resources for the whole of the NSW health system and not simply for the hospital in which they are located. Planning processes, in particular the Metropolitan and ICU Services Planning processes, are establishing the appropriate distribution, size and role of particular Intensive Care Units. This includes their responsibilities in supporting other hospitals.
- To recognise the availability role of Intensive Care Units.
- To ensure a component of funding is related to the services delivered (or planned to be delivered) by an Intensive Care Unit.
- To provide balanced incentives to ensure patients are appropriately dealt with as they move across the Intensive Care Unit/Inpatient boundary.
- To build a capacity and incentive to benchmark and improve performance.
- To take account of information infrastructure required to implement the funding model.
- To minimise complexity so that the model can be understood by the relevant stakeholders.

As with episode funding for acute inpatient care, the IC funding model will provide capacity to benchmark costs between comparable ICUs. Due to limitations of information and classification systems, benchmarking did not commence in 2001/02. With benchmarking now being introduced in 2002/03, any efficiencies arising from implementing the episode funding model 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 Health Department will negotiate global activity and performance targets with Area Health Services, particularly in the context of ensuring value in the use of enhancement funding. Activity and access to ICUs will be part of these targets. 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 statewide planning guidelines and requirements.

Figure 3 illustrates the role of the IC funding model in the context of the funding model that NSW will use in 2002/03 to fund health services.

Figure 3



2.1 Scope of IC Funding Guidelines

These guidelines are designed to assist Area Health Services implement the NSW IC Funding Model in 2002/03. These guidelines do not concern broad strategic issues in the allocation of Area funding or in the planning and management of ICU services 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 specific ICUs. The process of funding clinical units within hospitals is a matter for Area Health Services and hospitals to determine within the funding framework and incentives provided by episode funding at hospital level.

It is important to recognise that, before being in a position to implement the funding models for 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 services, intensive care units, and emergency departments);
- 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 benchmarks; and
- Major service and capital developments that will impact on the level, cost and mix of services provided.

Likewise, these guidelines do not address in any detail the funding of services other than those to be funded in 2002/2003 through the IC Funding Model. Separate guidelines are issued on the funding of ED and acute inpatient services.

Finally, these guidelines do not include reporting requirements except in broad terms. Minimum reporting standards will be set by the Department to meet its responsibilities with more detailed levels of disaggregation to be determined by Areas. As far as possible, the Department will use routinely reported data through the ISC to generate reports for monitoring targets and performance. The Department of Health's reporting requirements in terms of activity and financial management will be issued separately and Areas will be required to provide information on target level of IC activity for 2002/03 and the allocation of IC funding by hospital.

2.2 Overview of the NSW IC Funding Model

The IC Funding Model is 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).

As with acute inpatient services, the core feature of the IC Funding Model is the allocation of a prospectively determined budget that is linked to the expected outputs of each hospital. This is a

prospective funding model in which the funding for a particular hospital or service is agreed at the beginning of the financial year and does not change through the year. However, there can be changes in funding levels between years based on revisions to activity targets.

For the 19 hospitals with Level 5 and 6 ICUs covered under the IC Funding Model¹ in 2002/03, this prospective budget has two main components – an **activity** payment that is based on the expected workload of the ICU and an **infrastructure** or **capacity** payment. There is no intention at this stage to introduce any retrospective components into the IC funding model. However, retrospective adjustments during the year in response to actual activity levels or performance may be considered in future years.

A key feature of the model for Level 5 and 6 units is that each hospital receives **infrastructure** funding to address the capacity of the ICU and underlying differences in costs between hospitals. On average, the infrastructure payment will represent 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.

In 2002/03, 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 expected **annual volume** of patients presenting to each ICU. This is by far the single biggest determinant of the costs of running an ICU. About 80% of ICU costs are fixed (at least in the short-term) and those fixed costs are largely determined on an expected number of occupied patient days and planned level of ICU bed capacity. While there are daily and seasonal fluctuations, the annual number of patient days at each ICU is able to be estimated with a reasonable level of accuracy and is driven by the number of funded beds available on average over the course of the year;
- The **role** of the hospital and its ICU with specific reference to its role in teaching and research relative to other Level 5 and 6 units²; and
- **Hospital-specific factors** such as layout, scope and other factors beyond the control of the hospital itself. Some Intensive Care Units are physically designed to allow for more efficiencies than others and some hospitals are unable to recruit to essential positions on a permanent basis and thus incur unavoidable additional costs for casual staff. The definition of a justifiable hospital-specific cost is clear. If the cause of the additional cost is within the control of the hospital and its clinicians, the additional cost is not justifiable. If the factor causing the additional cost is beyond the control of the hospital and its clinicians, it is a justifiable additional cost. As with teaching and research, additional costs are assessed relative to other hospitals with an equivalent role. Each Area Health Service will be responsible for identifying any hospital-specific factors that warrant additional funding in the infrastructure payment.

In addition, hospitals with Level 5 and 6 units will be funded based on marginal payment rates for **Activity**. The activity payment rate will be standard across NSW. It applies to all in-scope hospitals. It is based on 20% of the cost of the average NSW IC patient day, adjusted to remove the costs of Area overheads and depreciation. This figure has been determined in consultation

¹ The Newcastle Mater ICU is excluded from the IC episode funding model, as is the CICU at Westmead Hospital. Some Level 4 rural units will be included on a shadow basis in 2002/03 (see Section 2.3.2.1).

² In 2002/2003, teaching and research costs currently sitting in ICU cost centres are incorporated into the cost benchmark for comparative purposes.

with clinicians and hospitals and a review of ICU budgets indicating that about 80% of ICU costs are fixed (at least in the short-term). Only about 20% of costs are variable. These variable costs – pharmacy, pathology, imaging and disposables - are determined by the volume and mix of patients seen in the ICU.

Whilst there is evidence to suggest that there are differences between hospitals in the **complexity** of patients treated, there are no routinely collected measures of complexity that can be incorporated into the 2002/03 model. 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. The variable cost per patient day is thought to be higher for some patients, especially severe burns patients. However there are no reliable data on variable costs for different types of patients. This issue will continue to be investigated further during 2002 to inform Year 3 of the model (see Section 2.3.4 below).

An activity payment rate of **\$620 per IC patient day for non-chargeable patients and \$340 for chargeable patients** has been determined for use in 2002/03. These activity payments are based on a benchmark of **\$3,110** for use in 2002/03. The methodology used to determine this benchmark is outlined in Appendix D.

2001/2002 was a shadow year and benchmarking of ICUs begins in 2002/2003. From this point, 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. Area Health Services will be required to phase out the transition grant over three years, beginning in 2002/03.

In all instances the focus will be on unexplained differences in cost between hospitals. There are justified differences in cost between hospitals within peer groups and Area Health Services will have the capacity to justify variations above benchmarks for legitimate reasons at Area and facility level. 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. 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.

A separate approach will continue to be taken with respect to funding hospitals with Level 3 and 4 ICUs in 2002/2003, both metropolitan and rural. Hospitals with the capacity for short-term mechanical ventilation (MV) will receive a mechanical ventilation co-payment of **\$75 per hour** (on top of the DRG-based episode payment) to recognise the extra resources that are consumed during the periods that the patient is being ventilated. For many such hospitals, this includes additional overtime payments and the short-term use of agency staff. This co-payment will be based on the number of MV hours expected to be required in 2002/2003, whether the MV is provided in an ICU or elsewhere in the hospital. It will be incorporated into the infrastructure component of the acute inpatient funding stream rather than through the IC funding stream. Guidelines for Level 3 and 4 units are included in Appendix A.

However, the criteria for inclusion in the IC funding model is being expanded to include Level 4 rural ICUs that, in the following year, are expected to:

- 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 beddays per year.

2002/2003 is to be regarded as a shadow year for units that meet these criteria, with benchmarking to begin in 2003/2004.

2.3 Specific issues in the design of the NSW IC Funding Model

2.3.1 Aligning clinical responsibilities and costs

As a general principle, the scope of IC activity to be subject to separate funding should encompass the full range of services managed by clinical managers of ICUs so funding and clinical decisions are aligned.

The issue of diagnostics and pharmacy ordered for patients who are being treated in the ICU but remain formally under the care of their admitting medical officer was the subject of consideration during 2000/2001. The clinical management of patients treated in Intensive Care Units is often shared between the ICU and the attending medical officer who is managing the rest of the full episode in hospital. The key issue to resolve was where to allocate funding for prescribed pharmacy and diagnostic (both pathology and imaging) costs ordered within the ICU. One option was to allocate these funds through the IC funding stream. The alternative was to allocate them through the DRG funding stream covering the medical officer and clinical unit under which the patient was admitted.

The model adopted in 2001/2002, and maintained in 2002/03, is to allocate costs for pharmacy and diagnostic services costs ordered while the patient is in the ICU through the IC funding model.

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.

Some AHS have indicated that their information systems still cannot allow for such an approach to be fully implemented in the 2002/2003 model because their systems 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 2002/03 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 ICU³.

2.3.2 Scope

2.3.2.1 Level 3 and 4 ICUs

Three options were considered for 2002/03:

1. The previous approach to level 4 and below units is continued (MV co-payments rather than inclusion in the funding model)
2. Level 4 units with a sufficient number and percentage of IC patients are included in the IC model with smaller units continuing to receive MV co-payments
3. All Level 4 units are included in the IC funding model.

³ Appendix D contains NSW average costs for 2000/2001 from those hospitals able to report them. These rates should be used if more accurate local data are not available.

Based on the survey results to date, option 3 was not realistic. Some level 4 units reported both small volumes and low percentages while some reported low volumes but high percentages. In both cases, inclusion in the IC funding model would seem to have little advantage. That then left the question of the desirability of including some level 4 units but not others. A related issue is the situation of the Newcastle Mater. While classified as a level 5 unit, it does not meet any of these criteria and has been withdrawn from the IC funding stream.

The approach adopted for 2002/2003 is to expand the scope of the IC funding model to include Level 4 rural ICUs that, in the following year, are expected to:

- 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 beddays per year.

On the basis of survey data to date, 5 additional units would potentially meet these criteria and could be included in future – Albury, Orange, Manning, Tweed and Tamworth. However, this could change in the next year as further survey data are available.

2002/2003 is to be regarded as a shadow year for units that meet these criteria, with benchmarking to begin in 2003/2004.

The mechanical ventilation (MV) co-payment model will continue for all Level 3 and Level 4 units in 2002/2003. Hospitals with the capacity for short-term mechanical ventilation (MV) will receive a mechanical ventilation co-payment (on top of the DRG-based episode payment) to recognise the extra resources that are consumed while they are managing a patient who is being mechanically ventilated. For many such hospitals, this includes additional overtime payments and the short-term use of agency staff. Guidelines for hospitals with Level 3 and 4 units are included in Appendix A.

2.3.2.2 Neonatal Intensive Care – a special case

Neonatal Intensive Care Units (NICU) are a special case because the key reasons to remove IC services from the DRG (discussed above) do not apply to NICUs. Neonates treated in NICUs fall into a small number of DRGs. Further, the problem of averaging across all hospitals and all episodes in each DRG does not apply. This is because almost all admissions in particular neonatal DRGs receive NICU level care. In consequence, hospitals with a NICU are not systematically under-funded if funded by DRG.

Accordingly, NICUs are excluded from the IC Episode Funding Model and will continue to be funded by DRG under the acute inpatient episode funding model. This approach has the support of the NSW Perinatal Network.

2.3.2.3 Sub-specialty IC units

With the exception of NICU, all other sub-specialty IC services are included in the IC funding model⁴. There are two reasons.

In the case of Paediatric ICU (PICU), exclusion would result in hospitals with specialist PICU services being disadvantaged under DRG-based acute episode funding. A review of paediatric ICU admissions in 1999/2000 showed that they fell into 228 DRGs, with 111 DRGs representing

⁴ Coronary Care is not classified as Intensive Care and is thus also excluded.

90% of admissions. Further, 75% of all paediatric ICU admissions occur at only two hospitals – the New Childrens and the Sydney Childrens Hospitals. Accordingly, PICUs are included under the IC funding model.

This reason does not apply to other sub-speciality ICUs such as Cardiothoracic ICUs (CICU). The arguments in relation to NICU above apply equally to other sub-speciality units. However, following consultation on the issue, the other sub-speciality units are included in the IC funding model. This is because the trend is for increasing integration of such units with general ICUs and because the care provided in a sub-speciality ICU at one hospital may be provided in a general ICU at another, making it difficult to separate the activity and cost for these units on a consistent basis.

The configuration of general and sub-speciality ICU beds is a planning, and not a funding, issue. Accordingly, for funding purposes, no distinction is being made between the two. If such a distinction is thought necessary at a later time, it should be based on the classification of the patient rather than the ICU to which they are admitted (see discussion on classification issues below).

2.3.2.4 Intensive Care Units or Intensive Care Patients?

Integrated Intensive Care/High Dependency Units are common in NSW and clinical consultation suggests that the trend is for increased integration and flexibility in the way that beds are used. These units treat a mix of IC and High Dependency (HD) patients.

One option considered in the design of the model was that the IC funding model be applied to both IC and HD patients in designated ICUs. This currently occurs in the costing process as both IC and HD patients are costed (on a 1:2 basis).

The difference is in the funding process:

- IC patient days funded through the IC model
- HD patient days funded through the acute care (DRG) model.

HD level care is excluded from the IC funding model. This decision was made 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 care stream. This then raises the issue of how to classify and fund HD care provided in an ICU.

The approach adopted in 2002/2003 is as follows:

- Each patient will need to be classified daily as being either an IC or HD patient⁵. While it would be preferable to count beddays by IC and HD patient on a daily basis, the position agreed is that, in 2002/2003, the periodic survey (one week a quarter) will continue to be used to determine the split between IC and HD patients in each unit, whether or not the unit is an integrated unit. Hospitals which already collect such data on a daily basis should continue to do so and Areas may decide that they prefer to move to a daily collection during 2002/2003 by using the Bed Type field for IC and HD beddays that is now available in the Inpatient Statistics Collection.

⁵ The definition of an IC patient is set out in Appendix B.

- Only IC patients will be funded under the Intensive Care Funding Model. As previously outlined, this model has two components – an **infrastructure** or **capacity** payment and an **activity** payment that is based on the expected number of intensive care patient bed days.
- High dependency patients treated in an ICU will be funded under the DRG-based episode funding model for acute inpatient care⁶.
- The **infrastructure** or **capacity** payment for an integrated ICU/HDU is to be built up based on its capacity to provide an agreed number of intensive care patient bed days over the course of the year.
- Likewise, the **activity** payment is to be built up provide an agreed number of intensive care patient bed days over the course of the year.
- Time as an IC patient will be removed from the DRG before the calculation of acute inpatient length of stay.
- Time as a HD patient will not be removed from the DRG before the calculation of acute inpatient length of stay. This is the same approach to that being taken in Level 3 and 4 ICUs and in separately designated HDUs.

2.3.2.5 Teaching and Research

At the NSW funding program level, Teaching and Research (T&R) is a separate funding program. Based on a formula model, it consists of the estimated costs of teaching, learning and research.

Table 7 on page 32 shows the T&R costs reported by each ICU. There is no apparent reason why the percentage of T&R costs should vary as they do. Nor, given the relatively homogenous nature of these units, does it make sense to attempt to separate T&R from the cost of clinical care in the ICU.

Accordingly, T&R costs (as reported) are thus included in the benchmark in 2002/03 and will be in future years. This inclusion is only for cost comparison purposes. Teaching and Research cost will continue to be met by an allocation to the Hospital through its Teaching and Research program.

2.3.3 Data issues

A range of data issues impact on the design of the IC funding model. These issues are discussed briefly below.

2.3.3.1 Definition of an ICU in the current inpatient statistics collection

The definition of an ICU in the 2001/2002 inpatient statistics collection defines the unit rather than the patient. It allows not only for data on IC patients to be collected but also coronary care and a range of high dependency patients. The major limitation is that, in this collection, it is not possible to distinguish between IC and other patients.

⁶ Thus, with the full implementation of the IC funding model, a hospital will receive up to three funding allocations for its ICU:

1. funding through the IC funding model for intensive care patients,
 2. funding through the acute inpatient funding model for high dependency patients treated in an ICU and
 3. funding through the Teaching and Research program for teaching and research in ICU.
-

The introduction of IC funding requires that the definitions guiding data collections are aligned to the definitions guiding the funding model. This is now occurring in the Statewide collection with new definitions introduced on 1 July 2002 for Bed Type for IC and HD patients. This is an optional data item for joint units, but separate HDUs are required to use the HD Bed Type when recording patient ward movements. Some collocated ICUs have set up virtual words to capture the movement within the ICU between IC and HD level of patient care.

The definition included in Appendix B will continue to be used in the IC funding model until it is replaced during 2002/03 by a definition being developed in consultation with intensive care clinicians on the Intensive Care Clinical Implementation Group.

This means that for 2002/03 Areas need to use activity data collected locally by each relevant hospital instead of information on ICU hours in the Statewide collection to identify ICU beddays. Results from the periodic survey are used to distinguish between IC and HD patients. These results are included in Appendix C. The survey instrument is included in Appendix F.

The periodic one-week survey should be completed at least three times in 2002/03 by the end of November 2002, February 2003 and May 2003. Hospital which set up virtual wards in their ICUs to report data directly into the hospitals Patient Administration System (PAS) using the Bed Type field for IC and HD patients, will not be required to undertake the periodic survey. A report from their PAS should be provided instead and the definition in Appendix B used to identify IC patients.

2.3.3.2 Admission criteria for ICU

Admission criteria for ICUs are a requirement of both NSW Health and the Faculty of Intensive Care and are in place in all ICUs in NSW. However, it became clear during consultations in 2001 that different standards were in place in relation to the threshold for admission to ICU when patients from other wards are treated in the ICU on a short-term basis. This typically occurred when a patient required a procedure that could not be safely carried out on a standard ward but did not require the use of an operating theatre (eg, insertion of a central line). Some ICUs admitted the patient to the ICU, even if ward staff accompanied them and even if they were in ICU for less than an hour. Others did not admit a patient to ICU unless they were formally transferred from the ward.

The NSW standard adopted from 1 July 2001 is that, in these situations, the patient is admitted to the ICU (and classified as an IC patient) if, and only if, they receive more than 4 hours of IC treatment or die in the ICU. This standard is used as the basis of measuring activity in the funding model.

2.3.3.3 Tracking costs to the ICU

The scope of costs included in the model (shown in Table 1 on page 17) requires information systems that can link the costs associated with pathology, imaging and pharmaceuticals ordered to individual patients and not simply to the admitting medical officer or clinical unit.

There are currently differences in the capacity of hospitals to track costs to the ICU and through to IC patients. This issue continues to be addressed by each Area.

2.3.4 Classification issues

In addition to volume and role, other important factors drive the costs of ICUs that relate to the mix of cases dealt with by the ICU. The issue of whether NSW needs to develop a classification of IC episodes remains on the agenda. While some preliminary studies have been undertaken, there are no IC classifications in use in Australia and work would be required to identify the patient-related cost drivers and to develop a classification and associated cost weights.

The key issue to be resolved is whether the development and implementation of an IC classification would lead to the more equitable, efficient and transparent allocation of resources. This is particularly the case in IC because the majority of ICU costs are determined by the number of staffed patient days (ie, capacity) rather than the complexity of the specific patients under care.

On the other hand, there are differences in the mix of patients being treated in different ICUs and this is likely to increase as the trend is towards integration of specialist ICU (such as Cardiothoracic ICUs) with general ICUs. Further, there are suggestions (but little quantitative evidence) that some IC patients are more complex and costly to treat than others and that some phases of treatment (eg, on admission to ICU and in the hours preceding the death of the patient) are more costly than others. Such distinctions could only be built into the IC funding model if an IC classification was developed and implemented.

Unless and until a casemix classification for intensive care is developed and implemented (and there is little clinical interest at present), no measure of the difference in complexity of patients receiving IC level care will be incorporated into the NSW IC Funding Model.

2.3.5 Summary of changes from the 2001/02 model to the 2002/03 model

- 2001/02 was a shadow year. Benchmarking of Intensive Care begins in 2002/03. 3 year transition grants begin in 2002/03.
- Teaching and research costs are now included in the benchmark cost in recognition that they are intrinsic component of providing intensive care. However for funding purposes these cost are allocated through the T&R program to the hospital.
- The number of intensive care and high dependency bed days by hospital in the 2002/03 model is based on the results of the quarterly periodic survey of intensive care units (see Appendix C). This method will continue during 2002/03 (unless the hospital sets up a virtual ward to collect regular data on IC and HD patients) and will thus be incorporated in the 2003/04 model. Level 4 units to be included in the Intensive Care funding model (see below) need to continue to participate in the periodic survey. There is no such requirement on other level 3-4 units.
- The definition of an IC patient included in Appendix B will continue to be used in the IC funding model until it is replaced during 2002/03 by a definition being developed in consultation with intensive care clinicians on the Intensive Care Clinical Implementation Group.
- Two units included in 2001/02 (Newcastle Mater and Westmead CICU) are excluded in 2002/03.
- Level 4 rural intensive care units meeting the following criteria are to be included in the intensive care model from 2003/04:

A rural 'ICU' (however named) that, in the following year, is expected to:

- 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 beddays per year.

2002/03 is a shadow year for these Level 4 units. Area Health Services need to identify units that meet these criteria and model their costs under the intensive care funding model. The necessary costing and activity data collection systems need to put into place to allow their inclusion model on a 'live basis' in 2003/2004.

3 NSW Intensive Care Funding Model Guidelines

These guidelines describe 5 steps required to implement the IC Funding Model within an Area Health Service. These 5 steps are:

- Step 1 Determine in-scope services
- Step 2 Determine activity levels for 2002/2003
- Step 3 Determine activity budgets
- Step 4 Determine infrastructure budgets
- Step 5 Implement

Each of these steps is described below. In each case, the guidelines define the issue to be addressed and identify those elements that are mandatory within the IC Funding Model. Decisions and actions that are required at the Area level are identified in relation to:

- Policy and management,
- Service planning and activity analysis, and
- Financial planning and analysis.

3.1 Step 1 Determine In-Scope Services

Mandatory element/s

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 2002/2003. They are:

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

Rural Level 4 units that meet the new criteria for inclusion in the model (see Section 2.3.2.1) need to be identified and included in the model on a shadow basis in 2002/2003.

Exclusions

- 1 Intensive Care Units 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 episode 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 2002/2003, 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 Neonatal Intensive Care Units, irrespective of their delineated level. Neonatal Intensive Care 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 episode 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. Intensive care 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. Intensive care 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 are to be included in the IC funding model from 2002/03, even if some level of estimation is necessary in the first year⁷.
3. Overhead costs, including costs such as maintenance, cleaning, hospital administration, superannuation and workers compensation.
4. Consultation and Liaison costs undertaken by ICU staff.

Teaching and research costs 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.

⁷ Appendix D contains NSW average costs for 2000/2001 from those hospitals able to report them. These rates should be used if more accurate local data are not available.

Table 1 describes the approach to be adopted for 2002/2003.

Table 1 The scope of the IC funding model 2002/03

<i>Cost Type</i>	<i>Funding stream</i>	<i>Basis of Funding</i>
Medical – ICU	IC funding stream	Capacity and Activity ⁸
Nursing – ICU	IC funding stream	Capacity
Allied Health – ICU	IC funding stream	Capacity
Other – ICU	IC funding stream	Capacity
Pathology/Imaging ordered in ICU	IC funding stream	Activity
Pharmacy – Imprest	IC funding stream	Capacity
Pharmacy – Prescribed in ICU	IC funding stream	Activity
Overheads	IC funding stream	Capacity
Medical – consultation and liaison provided by an ICU clinician	IC funding stream	Capacity
Teaching and Research	T&R program	Capacity
Medical – consultation and liaison provided to the ICU	Acute inpatient funding stream	Acute (infrastructure component)

Area action - policy and management

Nil.

Area action - activity analysis

Assemble an ICU activity data set for analysis. This is best done by using data collected locally by each relevant hospital.

Distinguish between IC and HD level patient days in the activity file. Appendix C includes the relevant information for 2001/2002.

Area action – financial

Assemble a financial data set for analysis that includes the cost of all in-scope IC services shown in Table 1. This is done by assembling an ICU cost centre file and then reconciling it against the IC component of all DRGs included under the acute inpatient funding program. Note that these costs may need to be purified to align with the scope of costs included in Table 1. The 2000/2001 cost data collection sought to align the definition of IC with this approach and will act as a useful reference point for this step in the process.

The ICU funding file should include all ICU cost centres, ICU overhead costs (both Area and hospital), the costs of all diagnostics and pharmacy ordered by the ICU and T&R costs. The ICU fraction of other direct cost centres such as resident medical officers should be excluded from the acute episode funding file and added as separate line items to the ICU funding file.

Note that the ICU funding file will contain two types of costs. Most will be the direct costs of ICU that form an ICU 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 ICU.

It will include costs for both IC and HD patients. It is thus necessary to distinguish between the two. The method used to determine the 2002/2003 benchmark cost is set out in the appendices.

⁸ Activity payment rates vary according to whether the patient is chargeable or non-chargeable (see Appendix D).

3.2. Step 2 Determine activity levels for 2002/2003

Mandatory element/s

Under the IC funding model, the IC funding budget is built up based on expected IC activity in 2002/2003 and the fixed capacity costs of the ICU.

Area action - policy and management

Decide on the volume of IC services to be delivered by each hospital in 2002/2003. 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 IC services on an annual basis.

In the case of in-scope units, this requires a decision on the expected number of IC bed days (linked to the annual average number of staffed IC-level beds) to be provided in 2002/2003, recognising that the number of beds available on any one day during the year will vary.

In the case of level 3 and 4 units, this requires an estimate of the number of MV hours required in 2002/2003. For those rural Level 4 units that are in scope for shadowing the IC funding model, parallel modelling of the IC funding model is also required. For these units, follow the same steps as for level 5/6 units.

Area action - activity analysis

Modify the existing activity file to incorporate changes in expected volumes for 2002/2003. Note that the level of proposed activity is 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.

Area action – financial

Calculate the total quantum of funding to be distributed to the hospital through the IC Episode Funding Model in 2002/2003. Start with the 2001/2002 expenditure budget of the hospital (incorporating the 2001/2002 recurrent allocation and revenue budget estimate). Exclude the expenditure budget allocated to out of scope hospitals and out of scope services (noting that this needs to be aligned with the activity adjustments in integrated units discussed above). Identify Area overhead costs that will be removed subsequently from the pool of funds when the ICU funding to hospitals is allocated and also identify the Teaching and Research costs that will be distributed through the T&R program to hospitals. If depreciation is not passed onto hospitals, exclude it from the pool of funds.

Also include the funding to be allocated through the acute care stream for HD patients treated in the ICU. Table 10 on page 35 shows the results of a costing study conducted using 2000/2001 data. The split between the IC and acute care episode funding streams is based on the mix of patients in each unit. Costs were apportioned between IC and HD patients on a 2:1 basis. T&R costs are as reported by Areas and hospitals.

⁹ Note that level 3 and 4 units are funded through the acute inpatient funding stream. However, it is suggested that the required number of MV hours be calculated in conjunction with working through the steps in the ICU model using the methodology outlined in Appendix A.

3.3. Step 3 Determine activity component

Mandatory element/s

Each hospital with an in-scope ICU is to be funded through the allocation of prospective funding consisting of both an activity and an infrastructure component.

Area action - policy and management

Nil.

Area action - activity analysis

Nil.

Area action – financial

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 of \$620 per IC patient day for non-chargeable patients and \$340 for chargeable patients per IC day.

Calculate the acute care episode 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.

3.4. Step 4 Determine infrastructure component

Mandatory element/s

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 2002/2003 benchmark is provided in Appendix D.

Area action - policy and management

Agree on criteria to be considered in determining infrastructure grants. In 2002/03, 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 2.2. 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 2002/03 budgets and to refine the methodology to be used to calculate infrastructure payments in subsequent years. These costs are likely to be based on staffing profiles of ICUs of comparable role and activity with comparable levels of patient complexity. Information from the 2001/2002 Hospital Cost Data Collection and a separate survey of ICU expenditure will again be used to derive these infrastructure costs.

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.

Area action - activity analysis

Nil.

Area action – financial

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 cost¹⁰.

3.6. Step 5 Implementation of the IC Funding Model

Mandatory element/s

IC funding must apply for the 2002/2003 financial year. Areas that have not already done so need to bring together clinicians, hospital managers, and area staff to review the implementation of IC episode funding at an Area and hospital level. Area Health Services are expected to continue to involve clinicians in the process of determining and monitoring IC episode funded activity and budgets.

Area action - policy and management

- Implement the IC Funding model.
- 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 IC services and the target level of activity in 2002/03. They should also identify the difference between the amount allocated to the hospital for IC services 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 2002/03, the allocation of IC funding by hospital and the difference between the amount allocated to the hospital and the amount that would be calculated through applying the benchmark rate;
- Develop a work program to better understand IC costs and to more precisely calculate justifiable infrastructure grants from 2002/2003;
- Continue to build capacity to better identify the value of pharmacy, imaging and pathology tests ordered by intensive care units which are outside the scope of ICU Funding;
- Develop costing capacity to provided quarterly reporting and monitoring of activity on costs by the ICU Funding stream;

¹⁰ Note that NSW benchmarks include superannuation, workers compensation and other overhead costs. If these costs are not passed onto hospitals, Areas will need to take this account when comparing costs with benchmarks.

- If relevant, undertake further analysis to better justify variations in infrastructure grants and to allow reductions in transition payments in subsequent years.
- A process of quarterly reporting on through the year estimates of expenditure by the IC Funding stream will be initiated from 2002/03. In recognition that the costing capacity in some Health Services is not sufficiently advanced to accurately provide this information, the quarterly reporting requirements will only apply to Health Services with such capacity. All Health Services will have 2002/03 to put systems in place to undertake quarterly reporting and monitoring of activity on costs by the IC Funding stream for implementation in 2003/04. Guidelines will be issued during 2002/03 to assist all Health Services build this capacity.
- Some Area Health Services have developed broader performance agreements with hospitals that place ICU 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.
- Conduct a period one-week survey of ICU patients based on the survey instrument at Appendix F. At least three surveys are required in 2002-03 with results submitted by the end of November 2002, February 2003 and May 2003. Hospitals that have set up virtual wards in their ICUs to report data directly into the hospitals Patient Administration System (PAS) using the Bed Type field for IC and HD patients, will not be required to undertake the periodic survey. A report from their PAS should be provided instead and the definition in Appendix B used to identify IC patients.

Area action - activity analysis

Agree on activity flow.

Area action – financial

Areas must ensure that the proposed allocations are within the expenditure that can be funded from their 2002/03 budget allocation and revenue estimates. If this is not the case, review the proposed activity levels, infrastructure and activity funding components in line with available funds.

Combine prospective activity and infrastructure components to form an IC Funding allocation for each hospital. Add in other program funding such as T&R program allocations and excluded services. Agree on cash flow.

4. Conclusion

Successful implementation of IC funding requires Area Health Services to identify the mix of staff, skills and resources that have to be devoted to achieve implementation in 2002/2003 and initiate discussion at facility level with senior managers and clinicians about the practical implementation of IC 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 face a difficult task to build the capacity to implement episode funding.

Area Health Services are encouraged to feedback comments and issues that arise during the implementation process so that they can be taken into account in refining the model to apply from 2002/2003. These comments can be directed to Rick Sondalini, Manager Funding Policy Unit on tel: 9391 9562, fax: 9391 9994 or e-mail at esond@doh.health.nsw.gov.au.

5 References

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

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

Appendix A

Guidelines for mechanical ventilation co-payments for hospitals with Level 3 and 4 Intensive Care Units

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 IPPB¹¹.

Calculation of Mechanical Ventilation Co-Payments

Scope

This model applies to funding hospitals with Level 3 and 4 ICUs in 2002/2003, 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 episode payment) to recognise the extra resources that are consumed during the periods that the patient is being ventilated. For many such 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 2002/2003

Areas should start by calculating the number of hours provided in 2001/02, then increase / decrease 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.

¹¹ 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.

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

Rate

The co-payment for 2002/03 will be **\$75 per MV hour**¹². This co-payment is based on the number of MV hours expected to be required in 2002/2003, whether the MV is provided in an ICU or elsewhere in the hospital. This is equivalent to \$1,800 per 24 hour period and is on top of the relevant DRG payment for the episode.

Method of funding

This co-payment will be incorporated into the infrastructure component of the acute inpatient funding stream rather than through the IC 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:

1. A prospective allocation paid at the beginning of the year based on the estimated hours of MV to be provided in 2002/03 with no adjustments throughout the year if the number of hours of MV actually provided is significantly more or less than originally estimated.
2. A prospective allocation paid at the beginning of the year based on the estimated hours of MV to be provided in 2002/03 with retrospective adjustments throughout the year if the number of hours of MV is significantly more or less than originally estimated.
3. 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 funding for hospitals receiving MV co-payments

As part of 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.

¹² Note that the baseline year for the calculation of the MV co-payment differs from the baseline year for the Level 5/6 cost benchmark. In consequence, the escalation rate varies between the two models.

Appendix B

Definition of an IC patient for episode funding purposes 2002/2003

Consultations are underway with ICU clinicians on the Intensive Care Clinical Implementation Group to develop a set of criteria that can be used to identify IC patients, particularly where mechanical ventilation is not occurring. When they become available, they will replace the following definition.

An Intensive Care patient is a patient who:

1. Is treated in a designated level 5 or 6 Intensive Care Unit 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 Intensive Care Units 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 MV¹³ OR
7. Is receiving IC for any other reason.

Counting IC bed days

It would be preferable to count beddays by IC and HD patient on a daily basis. However, following consultation with representatives from the Intensive Care and Funding Models Group, it was agreed that, from 2001/2002, there will be a periodic data collection (one week a quarter) to determine the split between IC and HD patients in each unit. This periodic survey is now undertaken in all units, whether they are stand alone or integrated. Hospitals that already collect such data on a daily basis should continue to do so and Areas may decide that they prefer to move to a daily collection instead of rely on the periodic collection. A copy of the survey instrument is included in these guidelines as Appendix F.

Each unit can select which week is the periodic collection week. At least three quarterly surveys are required in 2002/03 with results due by the end of November 2002, February 2003 and May 2003. The survey is used to identify other patient characteristics and circumstances requiring 1:1 nursing care in accordance with the Minimum Standards for Intensive Care Units. This will feed into a refinement of the IC patient definition during 2002/2003.

All patients in the unit are assessed once per day and classified as one of the following:

1. Currently in receipt of MV
2. Likely to require MV within the next 24 hours

¹³ 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.

3. Recently been in receipt of MV
4. Other patient requiring care in accordance with the Minimum Standards for Intensive Care Units (with patient characteristics and circumstances to be noted)
5. None of the above¹⁴.

Upon completion, the results of the periodic survey are forwarded to the Area Health Service and to the Funding and Systems Policy Branch of the Health Department. This survey is being reviewed in consultation with intensive care clinicians to refine the definitions during 2002/2003.

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 IPPB¹⁵.

¹⁴ Patients meeting none of the above criteria may include those who are awaiting a ward transfer as well as HD patients.

¹⁵ 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 C

Results of IC surveys to date

Three one week surveys were conducted in the 2001/02 financial year to calculate the mix of Intensive Care (IC) and High Dependency (HD) patients in each unit. The 1st survey involved only level 5 and 6 units. Level 4 units participated from the 2nd survey. Areas have received a report on the results of the 1st 2 surveys. The average of surveys 2 and 3 are used in the 2002/03 funding model.

Table 2 Summary results of ICU activity surveys

Level	Hospital	% IC days			Average across surveys 2 and 3 (or 1 and 2 if 3 not received)	
		Survey 1	Survey 2	Survey 3	% IC	% HD
5-6	Westmead	97%	97%	100%	99%	1%
5-6	Sutherland	52%	96%	98%	97%	3%
5-6	Concord	92%	100%	86%	92%	8%
5-6	POW	78%	91%	79%	84%	16%
5-6	John Hunter	95%	82%	95%	88%	12%
5-6	SCH	91%	76%	99%	87%	13%
5-6	St George	80%	86%	90%	88%	12%
5-6	Blacktown	88%	74%	82%	78%	22%
5-6	Gosford	97%	83%	70%	76%	24%
5-6	RNSH	56%	73%	74%	73%	27%
5-6	Lismore	0%	68%	62%	65%	35%
5-6	CHW	83%	66%	62%	64%	36%
5-6	RPAH	62%	61%	66%	63%	37%
5-6	St Vincents	0%	61%	74%	67%	33%
5-6	Nepean	59%	48%	61%	55%	45%
5-6	Wollongong	71%	53%	53%	53%	47%
5-6	Hornsby	39%	51%	54%	52%	48%
5-6	Liverpool	0%	43%	48%	46%	54%
5-6	Bankstown	69%	37%	47%	44%	56%
5-6	Newcastle Mater	13%	11%	0%	11%	89%
4	Tweed	0%	87%	93%	90%	10%
4	Albury Base	0%	80%	0%	80%	20%
4	Coffs Harbour	0%	33%	40%	36%	64%
4	Orange	0%	74%	60%	67%	33%
4	Port Macquarie	0%	57%	62%	59%	41%
4	Tamworth Base	0%	65%	49%	58%	42%
4	Manning Base	0%	56%	30%	37%	63%
4	Bathurst Base	0%	10%	30%	21%	79%
4	Shoalhaven	0%	20%	0%	20%	80%
4	Dubbo	0%	0%	12%	12%	88%
4	Goulburn	0%	1%	0%	1%	99%
All	Grand Total	73%	67%	64%	65%	35%

As shown in Table 3, just over a third of beddays reported in NSW ICUs are for patients receiving HD level care. For the IC patients, MV accounts for about 92% of total days.

Table 3 Reasons for Intensive Care Unit beddays as reported in the periodic survey

Reason for IC	% of total
Currently in receipt of MV 1	52%
Likely MV within 24 hours	2%
Recently in receipt of MV	5%
IC patient for reasons unrelated to MV	6%
High dependency patient	35%
Total	100%

Appendix D

NSW benchmark for Level 5 and 6 ICU and the methodology used to derive it

A benchmark has been calculated for 2002/2003. The details are shown in Table 4:

Table 4 2002/2003 ICU Benchmark for Level 5 and Level 6 ICUs

Patient type	Benchmark per IC patient day	Standard activity payment	Average infrastructure payment
Chargeable patients	\$2,830	\$340	\$2,490
Non chargeable patients	\$3,110	\$620	\$2,490

The benchmark set for 2002/2003:

1. 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.
2. Includes all of the direct costs of running the ICU.
3. 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 Statewide average rate of 30.1% was applied.
4. Excludes depreciation.
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, Statewide average rates were applied.
6. Includes all costs associated with teaching and research currently included in ICU cost centres.
7. Includes cross-charges or costs of pharmacy and diagnostic tests for IC patients. Hospital-specific costs were used where these were reported. If not, Statewide average costs were applied. These Statewide 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 5.
8. 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 episode funding stream (see Table 10 for details by hospital).
9. Includes a cost escalation factor of 4.5% from 2000/2001 to 2002/2003.

10. Includes a discount of 9% for chargeable patients. This is the same method used in the DRG funding model for acute care.

Table 5 NSW average cross charges

	Average cost per IC patient day
Pharmacy	\$176.83
Pathology	\$199.93
Radiology	\$102.72
All	\$479.48

From 2002/03, hospitals will receive 3 allocations for their ICU services:

- funding through the IC funding model for intensive care bed days,
- funding through the acute inpatient funding model for high dependency bed days treated in an ICU and
- funding through the Teaching and Research program for teaching and research in ICU.

The 2002/2003 (and subsequent) benchmark includes costs associated with teaching and research.

Appendix E

Intensive Care cost and activity data by hospital 2000/2001

This appendix summarises activity and cost data provided by Areas and hospitals in a special ICU activity and cost data collection undertaken in the first half of 2002 and covering the financial year 2000/2001.

Table 6 Intensive Care (IC) and High Dependency (HD) days by hospital

Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8	Col 9	Col 10	Col 11	Col 12
Hospital	Name	ICU seps	ICU days	IC days (HD excluded)	HD days	IC last year	HD last year	Difference	Weighted beddays total (IC equivalent days)	IC days as % of ICU days (weighted)	IC days as % of ICU days (weighted), reported last year
A237	Concord	516	2418	2227	191	2273	0	145	2322	96%	100%
C213	St George	833	3179	2792	387	3003	0	176	2986	94%	100%
C208	Prince of Wales	1328	4371	3665	706	4089	0	282	4018	91%	100%
B210	Hornsby	NA	2151	1441	710	1791	0	360	1796	80%	92%
D209	Liverpool	340	6384	2912	3472	6096	0	288	4648	63%	100%
D210	Nepean	1298	3950	2153	1797	2534	1282	134	3051	71%	80%
B202	Gosford	1630	3111	2224	887	2396	666	49	2668	83%	88%
A207	Children's Westmead	1030	3937	2515	1422	4561	0	-624	3226	78%	100%
D224	Westmead	652	4246	4193	53	5264	0	-1018	4220	99%	100%
B218	Royal North Shore	NA	7754	4667	3087	7595	0	159	6211	75%	100%
D227	Bankstown	150	3231	1431	1800	3253	0	-22	2331	61%	100%
P208	Wollongong	943	4099	2172	1927	1975	1546	578	3135	69%	72%
C238	Sydney Children's	610	3545	3073	472	3635	0	-90	3309	93%	100%
H214	Lismore	483	1630	1061	569	1628	1350	-1348	1345	79%	71%
D203	Blacktown	509	1856	1453	403	1679	169	8	1654	88%	95%
A208	Royal Prince Alfred	2698	9639	6088	3551	7558	2633	-552	7863	77%	85%
Q230	John Hunter	1358	4223	3730	493	4404	0	-181	3976	94%	100%
C214	Sutherland	234	3898	1509	2389	1564	2271	63	2704	56%	58%

Note: St Vincents Hospital excluded from this and all subsequent tables due to data problems.

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Activity data for level 5/6 units that have submitted cost data are shown in Table 6. Data in columns 3 and 4 were provided by each hospital. Columns 5 and 6 use the results from the periodic surveys to determine the split between IC and HD days in those hospitals unable to report this. The mean of survey 2 and survey 3 (with survey 1 disregarded) was used in the final model. Columns 7 and 8 show the data provided by hospitals last year and column 9 the difference between the 2 years. These are shown as percentages in the final 2 columns. Column 10 shows the activity figure used for costing purposes. In this column, a HD day is weighted as being equivalent to 0.5 an IC day. The total number of days at most units was very similar to that of the previous year. But the mix of IC and HD differs in some cases due to the change in the method used to classify patients.

Table 7 ICU costs reported (with adjustments for superannuation, workers compensation and overhead costs if not reported)

Hospital	Name	Total cost reported, with overheads	Teaching and Research (T&R) included	T&R as % of total ICU cost	Reported cost of IC patients only, with overheads	Reported cost of HD patients, with overheads
A237	Concord	\$7,952,135	\$315,583	4.0%	\$2,632	\$1,316
C213	St George	\$9,908,379	\$411,963	4.2%	\$3,319	\$1,659
C208	Prince of Wales	\$12,789,992	\$0	0.0%	\$3,183	\$1,592
B210	Hornsby	\$5,712,668	\$327,876	5.7%	\$3,181	\$1,590
D209	Liverpool	\$13,999,224	\$511,041	3.7%	\$3,012	\$1,506
D210	Nepean	\$7,977,473	\$685,881	8.6%	\$2,614	\$1,307
B202	Gosford	\$7,229,304	\$0	0.0%	\$2,189	\$1,095
A207	Children's Westmead	\$9,581,388	\$772,898	8.1%	\$2,970	\$1,485
D224	Westmead	\$10,417,031	\$0	0.0%	\$2,469	\$1,234
B218	Royal North Shore	\$18,262,218	\$327,876	1.8%	\$2,941	\$1,470
D227	Bankstown	\$6,450,280	\$0	0.0%	\$2,767	\$1,384
P208	Wollongong	\$8,944,362	\$320,500	3.6%	\$2,853	\$1,426
C238	Sydney Children's	\$9,032,792	\$700,324	7.8%	\$2,730	\$1,365
H214	Lismore	\$3,792,563	\$0	0.0%	\$2,819	\$1,410
D203	Blacktown	\$4,049,169	\$0	0.0%	\$2,448	\$1,224
A208	Royal Prince Alfred	\$17,587,926	\$770,658	4.4%	\$2,237	\$1,118
Q230	John Hunter	\$10,174,705	\$448,147	4.4%	\$2,559	\$1,279
C214	Sutherland	\$5,369,948	\$0	0.0%	\$1,527	\$763

Table 8 Staffing data by hospital

Hospital	Name	Average beds occupied by IC patients	Total Nursing FTE reported	Nursing FTE for IC days only	Total Medical FTE reported	Medical FTE for IC only	IC beddays per nursing FTE	Nursing FTE per IC bed	IC beddays per medical FTE	Medical FTE per IC bed
A237	Concord	6.1	45.1	43.2	10.4	10.0	51.5	7.1	223.7	1.6
C213	St George	7.7	64.2	60.0	16.5	15.5	46.5	7.8	180.6	2.0
C208	Prince of Wales	10.0	83.0	75.7	20.0	18.2	48.4	7.5	200.9	1.8
B210	Hornsby	3.9	31.0	24.9	11.3	9.1	57.9	6.3	158.5	2.3
D209	Liverpool	8.0	99.9	62.6	18.1	11.3	46.5	7.8	257.4	1.4
D210	Nepean	5.9	60.1	42.4	15.4	10.8	50.7	7.2	198.8	1.8
B202	Gosford	6.1	46.8	39.0	14.7	12.3	57.1	6.4	181.5	2.0
A207	Children's Westmead	6.9	71.8	56.0	17.4	13.6	44.9	8.1	185.4	2.0
D224	Westmead	11.5	83.4	82.9	21.8	21.7	50.6	7.2	193.5	1.9
B218	Royal North Shore	12.8	121.0	90.9	23.2	17.4	51.3	7.1	267.8	1.4
D227	Bankstown	3.9	44.4	27.2	8.6	5.3	52.5	6.9	271.1	1.3
P208	Wollongong	5.9	52.4	36.3	16.1	11.2	59.9	6.1	194.7	1.9
C238	Sydney Children's	8.4	66.7	61.9	15.7	14.6	49.6	7.4	210.8	1.7
H214	Lismore	2.9	22.0	17.3	3.0	2.4	61.2	6.0	448.4	0.8
D203	Blacktown	4.0	31.6	27.8	8.3	7.3	52.3	7.0	199.8	1.8
A208	Royal Prince Alfred	16.7	149.2	115.5	17.7	13.7	52.7	6.9	443.5	0.8
Q230	John Hunter	10.2	74.3	69.7	16.3	15.3	53.5	6.8	244.0	1.5
C214	Sutherland	4.1	37.5	21.0	6.5	3.6	72.0	5.1	417.9	0.9
Total		135	1,184	954	261	213				
Mean		7.5	65.8	53.0	14.5	11.8	53.3	6.9	248.8	1.6

The nursing staff level to provide 1:1 nursing is a **minimum** of 5.7 nursing FTE per IC bed. Units that are below this standard are excluded from the calculation of the benchmark. On the basis of the data above, this excludes Sutherland. Sutherland is thus excluded as an outlier from the cost data reported in all subsequent tables.

Table 9 Average cost by hospital 2000/2001

Hospital	Name	Overheads per day	Pathology / day	Pharmacy / day	Imaging /day	Nursing / day	Medical & Surgical Supplies / day	All medical \$ / day	All other costs / day	Reported cost per day (exclude depreciation)	Full cost per day	Last year	Difference
A237	Concord	\$792	\$0	\$189	\$0	\$1,188	\$249	\$902	\$162	\$3,424	\$3,727	\$2,671	\$1,056
C213	St George	\$611	\$192	\$188	\$0	\$1,266	\$197	\$555	\$309	\$3,318	\$3,421	\$3,645	-\$224
C208	Prince of Wales	\$324	\$384	\$253	\$0	\$1,215	\$222	\$651	\$135	\$3,183	\$3,286	\$3,553	-\$267
B210	Hornsby	\$619	\$291	\$164	\$97	\$1,037	\$140	\$705	\$128	\$3,181	\$3,181	\$2,353	\$828
D209	Liverpool	\$503	\$212	\$199	\$0	\$1,245	\$236	\$449	\$167	\$3,012	\$3,114	\$2,414	\$700
D210	Nepean	\$452	\$0	\$0	\$0	\$1,134	\$149	\$496	\$383	\$2,614	\$3,094	\$2,607	\$487
B202	Gosford	\$569	\$0	\$159	\$0	\$1,035	\$133	\$559	\$254	\$2,710	\$3,012	\$2,563	\$449
A207	Children's Westmead	\$627	\$216	\$216	\$123	\$1,110	\$122	\$555	\$3	\$2,970	\$2,970	\$2,193	\$777
D224	Westmead	\$407			\$0	\$1,069	\$215	\$401	\$377	\$2,468	\$2,948	\$2,594	\$354
B218	Royal North Shore	\$696	\$134	\$186	\$115	\$1,087	\$160	\$361	\$201	\$2,941	\$2,941	\$2,116	\$825
D227	Bankstown	\$586	\$197	\$171	\$0	\$1,109	\$159	\$502	\$43	\$2,767	\$2,870	\$1,960	\$910
P208	Wollongong	\$513	\$154	\$158	\$68	\$1,037	\$150	\$578	\$195	\$2,853	\$2,853	\$3,086	-\$233
C238	Sydney Children's	\$389	\$200	\$54	\$0	\$1,014	\$137	\$662	\$274	\$2,730	\$2,832	\$2,306	\$526
H214	Lismore	\$665	\$191	\$162	\$73	\$1,021	\$108	\$436	\$163	\$2,819	\$2,819	\$2,077	\$742
D203	Blacktown	\$474	\$0	\$219	\$0	\$1,098	\$154	\$365	\$137	\$2,448	\$2,751	\$2,167	\$584
A208	Royal Prince Alfred	\$526	\$0	\$0	\$0	\$1,149	\$187	\$255	\$120	\$2,237	\$2,716	\$2,436	\$280
Q230	John Hunter	\$527	\$96	\$137	\$107	\$1,063	\$143	\$384	\$102	\$2,559	\$2,559	\$2,536	\$23
Mean		\$533	\$192	\$174	\$103	\$1,120	\$174	\$482	\$186	\$2,643	\$2,938	\$2,501	\$437

As seen above, average cost per day has increased by \$437 (17.4%) between 1999/2000 and 2000/2001. This is largely because the data are better. Because of the introduction of the ICU survey, there are less beddays being classified as IC (see Table 6). The 17% increase in cost is more than offset by a 24% reduction in total beddays classified as IC. Across all units, total costs increased by 9% compared with the 4.5% inflation factor included in the funding model.

Table 10 Actual ICU costs (as reported) by funding stream

Hospital	Name	ICU allocation thru Teaching and Research stream	ICU allocation thru IC stream (IC patients)	ICU allocation thru acute care stream (HD patients)	Total allocation	ICU allocation thru Teaching and Research stream	ICU allocation thru IC stream (IC patients)	ICU allocation thru acute care stream (HD patients)	Total allocation
A237	Concord	\$315,583	\$7,997,167	\$343,042	\$8,655,792	3.65%	92.39%	3.96%	100.00%
C213	St George	\$411,963	\$9,168,031	\$634,595	\$10,214,589	4.03%	89.75%	6.21%	100.00%
C208	Prince of Wales	\$0	\$12,044,755	\$1,159,649	\$13,204,403	0.00%	91.22%	8.78%	100.00%
B210	Hornsby	\$327,876	\$4,320,778	\$1,064,452	\$5,713,106	5.74%	75.63%	18.63%	100.00%
D209	Liverpool	\$511,041	\$8,747,293	\$5,216,111	\$14,474,445	3.53%	60.43%	36.04%	100.00%
D210	Nepean	\$685,881	\$6,176,282	\$2,577,986	\$9,440,149	7.27%	65.43%	27.31%	100.00%
B202	Gosford	\$0	\$6,699,727	\$1,336,029	\$8,035,756	0.00%	83.37%	16.63%	100.00%
A207	Children's Westmead	\$772,898	\$6,866,129	\$1,942,090	\$9,581,116	8.07%	71.66%	20.27%	100.00%
D224	Westmead	\$0	\$12,360,305	\$78,828	\$12,439,133	0.00%	99.37%	0.63%	100.00%
B218	Royal North Shore	\$327,876	\$13,479,022	\$4,457,868	\$18,264,766	1.80%	73.80%	24.41%	100.00%
D227	Bankstown	\$0	\$4,107,147	\$2,582,524	\$6,689,670	0.00%	61.40%	38.60%	100.00%
P208	Wollongong	\$320,500	\$5,973,840	\$2,651,214	\$8,945,554	3.58%	66.78%	29.64%	100.00%
C238	Sydney Children's	\$700,324	\$8,052,966	\$618,652	\$9,371,943	7.47%	85.93%	6.60%	100.00%
H214	Lismore	\$0	\$2,990,025	\$802,408	\$3,792,433	0.00%	78.84%	21.16%	100.00%
D203	Blacktown	\$0	\$3,996,004	\$554,606	\$4,550,610	0.00%	87.81%	12.19%	100.00%
A208	Royal Prince Alfred	\$770,658	\$15,938,921	\$4,648,852	\$21,358,431	3.61%	74.63%	21.77%	100.00%
Q230	John Hunter	\$448,147	\$9,122,513	\$603,141	\$10,173,801	4.40%	89.67%	5.93%	100.00%
All		\$5,592,747	\$138,040,902	\$31,272,047	\$174,905,697	3.20%	78.92%	17.88%	100.00%

In the IC funding model, a hospital receives up to 3 allocations for its ICU. The costs of IC patients are through the IC stream, the costs of HD patients through the acute care (DRG) stream and teaching and research costs through the T&R stream. The costs reported by Areas and hospitals, divided into these streams by using data from the periodic survey, are shown in Table 10. Areas will need to reconcile these with the funds that they allocate through the acute care episode funding stream. This table shows the results of a costing study conducted using 2000/2001 data. The split between the IC and acute care episode funding streams is based on the mix of patients in each unit. Costs were apportioned between IC and HD patients on a 2:1 basis. T&R costs are as reported by Areas and hospitals.

Table 11 IC costs by hospital listed in order of cost

Hospital	Name	Cost per day with average cross charges where not reported	Difference from average
A237	Concord	\$3,727	\$750
C213	St George	\$3,421	\$445
C208	Prince of Wales	\$3,286	\$310
B210	Hornsby	\$3,181	\$204
D209	Liverpool	\$3,114	\$138
D210	Nepean	\$3,094	\$117
B202	Gosford	\$3,012	\$36
A207	Children's Westmead	\$2,970	-\$6
D224	Westmead	\$2,948	-\$29
B218	Royal North Shore	\$2,941	-\$36
D227	Bankstown	\$2,870	-\$107
P208	Wollongong	\$2,853	-\$123
C238	Sydney Children's	\$2,832	-\$144
H214	Lismore	\$2,819	-\$158
D203	Blacktown	\$2,751	-\$226
A208	Royal Prince Alfred	\$2,716	-\$260
Q230	John Hunter	\$2,559	-\$418
Average		\$2,977	\$0

Table 12 Reported cost by line item for hospitals able to report overheads

Hospital name	Wollongong	St George	John Hunter	POW	SCH	CHW	Lismore	Liverpool	Bankstown	Royal North Shore	Hornsby
Weighted days	3135	2986	3976	4018	3309	3226	1345	4648	2331	6211	1796
Both Direct and Indirect costs											
Administrative expenses	\$62.00	\$182.06	\$64.09	\$102.51	\$84.54	\$27.04	\$87.75	\$68.23	\$40.90	\$75.34	\$72.45
Depreciation	\$248.25	\$126.66	\$128.81	\$71.79	\$128.05	\$234.94	\$126.86	\$151.65	\$64.30	\$130.65	\$108.78
Domestic services	\$41.86	\$56.13	\$46.26	\$29.89	\$25.98	\$33.87	\$55.93	\$63.05	\$40.09	\$62.33	\$60.05
Food supplies	\$40.43	\$2.76	\$6.58	\$7.25	\$18.65	\$10.66	\$14.46	\$0.47	\$21.11	\$15.92	\$15.29
Grants	\$0.05	\$0.06	\$0.24	\$0.03	\$0.00	\$0.00	\$0.00	\$2.70	\$2.07	\$0.23	\$0.21
Imaging	\$68.26	\$0.00	\$107.21	\$0.00	\$0.00	\$122.62	\$73.05	\$0.00	\$0.00	\$114.96	\$97.13
Interest expenses	\$0.00	\$0.00	\$0.11	\$1.66	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.14	\$0.14
IPTAAS	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Medical and surgical supplies	\$150.09	\$196.86	\$144.80	\$221.55	\$136.79	\$121.85	\$108.04	\$236.42	\$158.54	\$159.84	\$139.91
Pathology	\$158.28	\$192.26	\$96.78	\$384.25	\$200.02	\$215.62	\$190.60	\$211.90	\$197.22	\$133.66	\$290.88
Patient transport excl IPTAAS	\$5.98	\$0.39	\$7.41	\$0.20	\$0.00	\$0.00	\$94.12	\$4.01	\$2.77	\$3.59	\$1.91
Payments to VMOs	\$89.75	\$0.55	\$0.02	\$188.07	\$9.93	\$0.00	\$228.36	\$0.00	\$194.97	\$15.87	\$0.38
Pharmacy	\$158.28	\$188.02	\$137.96	\$253.30	\$54.30	\$104.60	\$162.38	\$198.94	\$171.19	\$186.48	\$164.01
Prostheses	\$0.00	\$4.35	\$0.00	\$0.01	\$0.00	\$0.00	\$0.00	\$0.00	\$0.31	\$0.01	\$0.06
Repairs and maintenance	\$33.39	\$38.64	\$51.33	\$13.96	\$17.49	\$64.37	\$60.52	\$66.75	\$42.15	\$65.01	\$49.76
S&W Admin and clerical	\$139.80	\$159.52	\$99.59	\$106.02	\$124.64	\$187.18	\$136.85	\$171.74	\$120.89	\$189.52	\$171.08
S&W Allied Health	\$39.33	\$43.85	\$30.76	\$11.16	\$22.51	\$34.92	\$1.80	\$7.77	\$38.71	\$68.86	\$23.46
S&W Diagnostic & professionals	\$2.20	\$66.61	\$0.03	\$21.85	\$72.50	\$0.00	\$46.90	\$0.00	\$0.00	\$51.23	\$13.93
S&W Domestic & personal care	\$129.51	\$108.10	\$86.49	\$20.91	\$58.09	\$131.51	\$105.81	\$115.14	\$130.92	\$128.96	\$114.08
S&W Medical	\$488.08	\$554.94	\$383.59	\$462.80	\$651.99	\$554.60	\$207.35	\$448.92	\$306.80	\$345.38	\$704.98
S&W Nursing	\$1,037.32	\$1,266.27	\$1,093.59	\$1,214.62	\$1,013.56	\$1,110.11	\$1,021.38	\$1,245.19	\$1,109.28	\$1,087.36	\$1,036.90
Superannuation	\$130.90	\$185.49	\$148.51	\$85.82	\$0.00	\$219.02	\$145.10	\$110.87	\$135.22	\$161.60	\$172.70
Workers compensation	\$82.02	\$51.65	\$53.42	\$57.21	\$0.00	\$23.73	\$74.47	\$59.52	\$46.84	\$61.28	\$30.76
Other recurrent expenditure	\$16.60	\$20.07	\$0.00	\$0.00	\$34.29	\$8.58	\$4.13	\$0.41	\$7.08	\$12.99	\$20.71
Total, excluding depreciation	\$2,853	\$3,319	\$2,559	\$3,183	\$2,525	\$2,970	\$2,819	\$3,012	\$2,767	\$2,941	\$3,181
All medical	\$577.83	\$555.49	\$383.60	\$650.87	\$661.93	\$554.60	\$435.71	\$448.92	\$501.77	\$361.25	\$705.36
Add path, imaging, pharm if necessary	\$0.00	\$102.72	\$0.00	\$102.72	\$102.72	\$0.00	\$0.00	\$102.72	\$102.72	\$0.00	\$0.00
Add super and WC if necessary	\$0.00	\$0.00	\$0.00	\$0.00	\$204.55	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Final cost after adjustments	\$2,853	\$3,421	\$2,559	\$3,286	\$2,832	\$2,970	\$2,819	\$3,114	\$2,870	\$2,941	\$3,181

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Table 13 Reported cost by line item for hospitals costed without overhead cost data

Hospital name	Gosford	Repatriation Concord	Sutherland	Royal Prince Alfred Hospital
Weighted days	2668	2322	2704	7863
Percentage of overheads added	23.87%	30.10%	30.10%	30.10%
Administrative expenses	\$21.04	\$60.57	\$9.91	\$15.19
Depreciation	\$40.66	\$26.57	\$28.98	\$36.74
Domestic services	\$25.13	\$36.20	\$18.56	\$31.60
Food supplies	\$0.10	\$10.04	\$1.24	\$0.16
Grants	\$0.00	\$0.00	\$0.00	\$0.00
Imaging (both radiology and nuclear medicine)	\$0.00	\$0.00	\$0.00	\$0.00
Interest expenses	\$0.00	\$0.00	\$0.00	\$0.00
IPTAAS	\$0.00	\$0.00	\$0.00	\$0.00
Medical and surgical supplies excluding prostheses	\$165.09	\$324.12	\$98.25	\$228.98
Pathology	\$0.00	\$0.00	\$83.02	\$0.00
Patient transport excluding IPTAAS	\$0.38	\$0.48	\$0.00	\$0.00
Payments to VMOs	\$0.00	\$0.00	\$48.99	\$8.58
Pharmacy (both imprest and prescription)	\$197.01	\$246.34	\$165.52	\$0.00
Prostheses	\$0.00	\$0.00	\$0.00	\$0.00
Repairs and maintenance	\$19.02	\$16.55	\$17.94	\$17.32
Salaries and wages admin and clerical staff	\$42.63	\$25.07	\$27.03	\$22.42
Salaries and wages Allied Health	\$0.00	\$0.00	\$0.00	\$0.00
Salaries and wages Diagnostic and health professionals	\$0.00	\$0.00	\$0.00	\$0.00
Salaries and wages domestic and other personal care staff	-\$0.03	\$0.00	\$0.00	\$34.46
Salaries and wages Medical	\$692.31	\$902.40	\$344.35	\$303.63
Salaries and wages Nursing	\$1,282.62	\$1,545.65	\$1,020.63	\$1,408.66
Superannuation	\$160.34	\$0.00	\$122.97	\$85.96
Workers compensation	\$58.08	\$0.00	\$27.89	\$42.98
Other recurrent expenditure	\$46.41	\$0.00	\$0.00	\$0.00
Total	\$2,710	\$3,167	\$1,986	\$2,236.68
All medical	\$692.31	\$902.40	\$393.34	\$312.21
Add path, imaging, pharm if necessary	\$302.64	\$302.64	\$102.72	\$479.48
Add super and WC if necessary	\$0.00	\$256.56	\$0.00	\$0.00
Final cost after adjustments	\$3,012	\$3,727	\$2,089	\$2,716

Appendix F

Copy of the periodic quarterly survey used to determine the split of IC and HD days in the funding model
(patient version)

NSW Intensive Care Unit Periodic Data Collection (complete at least 1 week each quarter) – – Patient format – Version 3

Instructions

1. This periodic survey is to be undertaken in all 5 and 6 Intensive Care Units, whether stand alone or integrated, including sub-specialty ICUs.
2. Hospitals that already collect such data on a daily basis should continue to do so. All other units are required to complete the collection for a minimum of 7 consecutive days each quarter, supplying the Department with sheets for each patient treated in the ICU in the 7 day period. Note that Areas may decide to move to a daily collection from 2001/2002.
3. Include each patient treated in the unit in the last 24 hours and rate them at their most dependent during that period. Include only patients who received more than 4 hours of treatment in the ICU or who died in the ICU.
4. Enter information on the patient under the relevant column depending on the amount of nursing care each patient actually received in the last 24 hrs. Base this on the highest level of nursing care that was provided to the patient for a minimum of 6 hrs during the 24 hr period (or 25% of their time in ICU if in ICU less than 24 hrs). If a patient received more than 1:1 care for more than 6 hrs or 25% of their time in the ICU, record the nursing ratio as (3) and record the reason in the appropriate column. Be as specific as possible. If necessary, append an additional page setting out relevant information.
5. Record the code that best describes the reason for the level of nursing care provided in the last 24 hours. Patients whose clinical condition changed during the period should be classified based on their most dependent status during that period:

Dependent on MV is used to classify a patient who required continuous ventilatory support (CVS) of an invasive nature. This is also known as mechanical ventilation (MV). 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 (Note: Patients with CPAP and BiPAP via a mask may have other conditions and interventions requiring 1:1 nursing and this could be recorded under the next category). Code:

(1) Currently in receipt of MV.

(2) Likely to require MV within the next 24 hours.

(3) Recently been in receipt of MV. The term 'recent' should be interpreted to mean a shoulder of approximately 10% of the time that the patient was in receipt of MV.

IC patient for reasons unrelated to MV is used to classify patients who required care in accordance with the *Minimum Standards for Intensive Care Units* for reasons other than MV. For each such patient, state the patient characteristics and circumstances as specifically as possible. This may include patients requiring 1:1 nursing due to a combination of interventions (eg, continuous non-invasive ventilation in combination with dialysis) or any other reason related to patient characteristics or clinical interventions. If necessary, append an additional page setting out relevant information.

High dependency patient is used to classify patients who required care in accordance with the *Minimum Standards for High Dependency Units seeking accreditation for training in Intensive Care*.

If a patient did not meet criteria for either IC or HD, append an additional page setting out reasons why the patient was in the ICU.

6. Enter the appropriate code to signify the status of the patient at the end of the 24 hour period. For each patient still in the unit, indicate the total time that they have been in the unit. Record a code of 4 for patients in the unit for the entire 24 hours. For each patient transferred to the ward during the period, indicate by use of the appropriate code the time spent waiting for a ward transfer (there are separate codes for < 5 hrs, 5-23 hrs and > 24 hrs).

Upon completion, a copy of the collection should be forwarded to your Business Manager and a separate copy sent to the attention of: Manager, Funding Policy Unit, Health Department by fax on 9391 9994. If you have any questions regarding this form please contact Rick Sondalini on tel: 9391 9562, fax: 9391 9994 or e-mail to echoi@doh.health.nsw.gov.au. Please provide additional written comments if there were special circumstances affecting the operation of the unit during the survey period that may effect interpretation of the result