

Independent Hospital Pricing Authority

Costing Studies to Support the Development of the National Efficient Price 2015-16 (NEP15)

Home Enteral Nutrition, Home Total
Parenteral Nutrition and Home
Ventilation Services Costing Report

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GLOSSARY

Abbreviation	Description
ABF	Activity Based Funding
ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
AHS	Area Health Service
AIHW	Australian Institute of Health and Welfare
COPD	Chronic Obstructive Pulmonary Disease
CNC	Clinical Nurse Consultant
ENABLE	EnableNSW provides equipment and services to people in NSW with chronic health conditions or disability to assist them with mobility, communication and self-care
HCC	Health Care Card Holder
HEN	Home Enteral Nutrition
HENP	Home Enteral Parenteral Nutrition
HSD	Health Service District
HTPN	Home Total Parenteral Nutrition
HV	Home Ventilation
HV (I)	Home Ventilation – Invasive
HV(NI)	Home Ventilation – Non-Invasive
IHPA	Independent Hospital Pricing Authority
IV	Invasive
LHD	Local Health District
LHS	Local Health Service
MS	Medical and Surgical Supplies
MVP	Mechanical Ventilation Program
NEC	National Efficient Cost
NEP	National Efficient Price
NIV	Non-Invasive
NMD	Neuro-muscular Disease
NSW	New South Wales
NT	Northern Territory
OPD	Outpatient Department
PADP	Program Appliances for Disabled People
PHARMNPBS	Pharmacy Non-Pharmaceutical Benefits Schedule
QLD	Queensland
SA	South Australia
SWAH	Salaries and Wages Allied Health Professional
SWNURS	Salaries and Wages Nursing Staff
SWOther	Salaries and Wages Other Health Professionals
TAS	Tasmania
TIMES	Territory Independence and Mobility Equipment Scheme
TPN	Total Parenteral Nutrition
TRD	Thoracic Restrictive Disease
VDQ	Ventilator Dependent Quadraplegic
VIC	Victoria
WA	Western Australia

1. EXECUTIVE SUMMARY

Each year the Independent Hospital Pricing Authority (IHPA) undergoes a series of consultations and data collection processes in order to set a National Efficient Price for the funding of hospital auspiced services.

This study was commissioned by IHPA to collect data on a prospective basis for each of:

- Home enteral nutrition services (HEN);
- Home total parenteral nutrition services (HTPN); and
- Home ventilation support services (HV).

Each service is considered to be part of the non-admitted class of activity.

Whilst three different services were being costed, each stream adopted a similar approach; namely the:

1. conduct of a literature review;
2. recruitment of participants and conduct of stakeholder consultations;
3. design and implementation of a prospective data collection; and
4. costing of the respective services.

The following presents the findings of the study, with Chapter 2 providing more detail about the methodology employed in the conduct of the study.

1.1 Findings

1.1.1 Literature Review

The literature review identified the major cost drivers for home-based nutrition services to largely be driven by the costs of consumables (such as feeds) and disposables (such as syringes, gravity bags etc.). Interventions involving health care professionals was confined to home visits conducted every two months and largely by dietitians or nurses.

For home ventilation support services, apart from equipment costs that were seen to as a major cost driver, maintenance of equipment was deemed to be another significant cost driver. Various agencies and health care professionals were identified in the literature as being involved in the maintenance of ventilation equipment thereby affecting the overall cost of service delivery. Maintenance functions can be undertaken by:

- external company;
- hospital technician;

- doctor;
- or any combination of the above three.

The servicing is typically carried out on a six monthly cycle, although this also varies depending upon the country or jurisdiction (refer Chapter 3, Table 3.2). Very little appeared in the literature regarding the costs associated with support workers who monitor ventilated patients, largely because these costs sit outside of the hospital budget in overseas countries.

Findings from the literature review were used to develop study specific data collection tools which were discussed further with the participating sites nominated by jurisdictions.

1.1.2 Participating Hospitals and Stakeholder Consultations

Four jurisdictions nominated hospitals to participate in the collection of data relating to home ventilation services; and five nominated hospitals to participate in the collection of HEN and HTPN data as documented in Table 1.1.

Table 1.1: Participating hospitals by jurisdiction by study focus

State	Site	Study		
		HEN	HTPN	HV
SA	Adelaide Women's & Children's Hospital		X	X
	Flinders Medical Centre	X	X	
	Noarlunga Health Services	X		
	Repatriation General Hospital	X		
WA	Albany Health Campus	X		
	Armadale Health Service	X		
	Fremantle Hospital	X		
	Joondalup Health Campus	X		
	Princess Margaret Hospital			X
	Royal Perth Hospital	X		
	Sir Charles Gairdner Hospital	X	X	
	State-wide service - Ventilator Dependent Quadraplegic (VDQ) service			X
VIC	Austin Hospital			X
	Peter MacCallum Cancer Centre	X		
NSW	Bankstown Hospital	X		
	Royal North Shore Hospital	X	X	
	Royal Prince Alfred Hospital	X	X	
	Westmead Hospital			X
QLD	Caboolture/Redcliffe Hospital	X		
	Cairns Base Hospital	X		
	Royal Brisbane Women's and Children's Hospital	X	X	
	The Prince Charles Hospital	X		

Consultations were held with clinicians and business unit managers from the participating hospitals via workshops and teleconferences. The purpose of the consultations were to:

-
- Identify the service model employed by the respective hospitals in the delivery of the home based services, thereby testing the similarities with some of the service models identified in the literature;
 - Discuss the data collection and study methodology; and
 - Identify where financial data could be sourced.

The consultations indicated that the volume of patients treated in the home for total parenteral nutrition and also for home ventilation support services are relatively modest (volumes in the ten's or single digit) compared to home enteral nutrition services that could total hundreds of patients.

Clinicians at the respective sites also indicated that home visits were very rarely undertaken, with patient monitoring taking place via a combination of phone calls, emails and regular outpatient check ups scheduled either on a three month or six monthly basis. The scheduling was dependent upon staffing numbers and outpatient clinic availability in each hospital.

Clinicians from some jurisdictions also indicated that patients in receipt of home-based nutrition services, (in particular home enteral nutrition services) were expected to either make a co-payment or fully pay for their enteral feeds. This reflects policy positions of some states that consider enteral nutrition to represent a food product, which the state does not consider it should be paying for. Different policies are in place across the respective states that impact upon the level of patient contribution (refer Chapter 3 Table 3.4).

Patient's in New South Wales and Queensland typically make a co-payment, or pay for their enteral feeds. In Western Australia, there is a mixed approach, with a few hospitals expecting patients to make a co-payment towards their feeds, and in South Australia and Victoria the hospital pays for the supply of enteral feeds.

Unlike the home based nutrition services, patients in receipt of home ventilation services are not expected to make any contribution to the costs associated with this service.

IHPA will need to be able to identify the relevant impact these differing policies have upon price setting for the home based nutrition services. Accordingly, it was determined that as part of the data collection, hospitals would report the level of co-payment (or full payment) made by the patient for each consumable, disposable or labour cost involved in providing these services.

1.1.3 Counting Rules

The current counting rules defined by IHPA within the Tier 2 non-admitted services definitions manual 2014-15 acquit services for all three home based services based upon the number of continuous days in a month for which home based services were provided, excluding those days where the service was not received.

The strict application of this definition would have implied that no staff time would need to be recorded. However based on the feedback from participating hospitals and discussions with IHPA it was determined that all activity during the study period would be collected wherever possible.

Thus, when a patient was admitted to hospital, the days for which the patient was in hospital was noted, but no further collection occurred.

Consistent with current Tier 2 non-admitted services definitions, for the days where the patient attended an outpatient clinic, the day was noted and the costs associated with the feeds, consumables, equipment, and home support carer labour costs were identified but not included in the home based service costs.

Assuming the principle of full absorption costing is applied by the respective jurisdictions, it is likely that the cost of the home incurred consumable costs, equipment costs and home support carer costs are potentially spread across both outpatient and inpatient activity indiscriminantly. There is also the potential that these costs are not necessarily attributed to patients in receipt of enteral feeds, parenteral feeds or ventilation services. The potential for inappropriate cost allocation is high and will result in a distortion of costs for this cohort of patient. The significance of these potential inappropriate cost allocations are discussed further in Chapter 4.

It was also noted that the underlying unit count of for these home based services; namely days, makes it inappropriate to aggregate this activity with other Tier 2 classes that predominantly count on patient volumes.

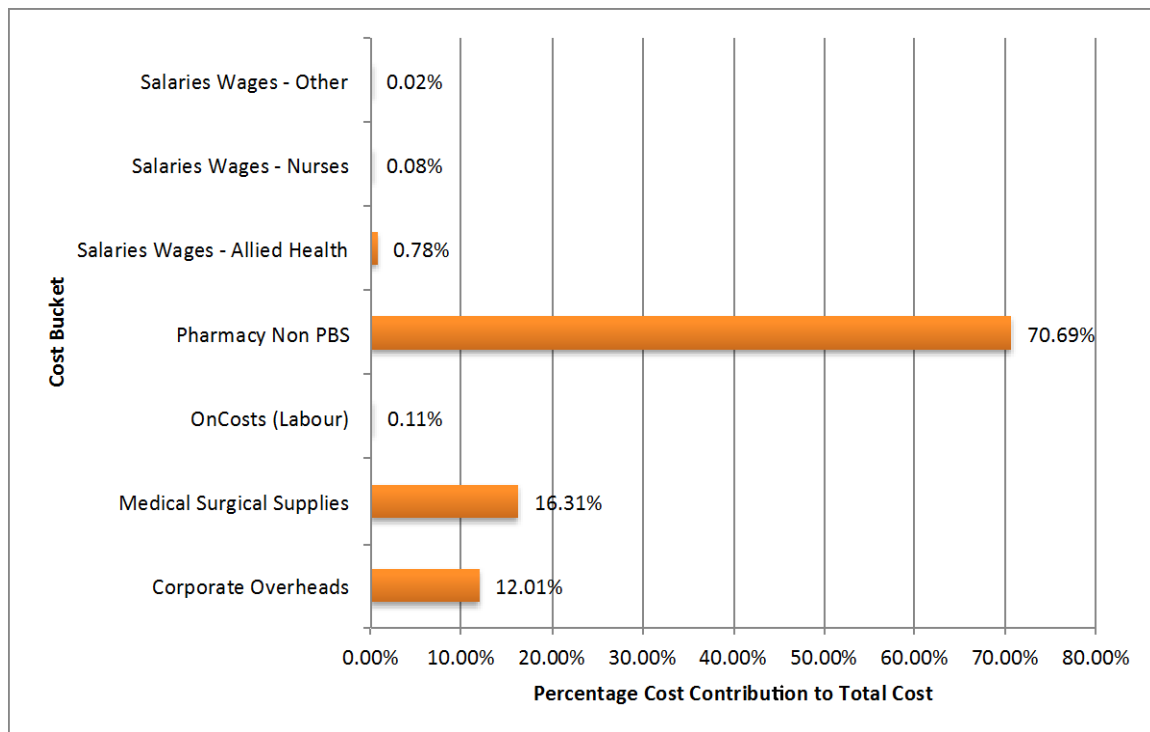
1.1.4 Information contained in the datasets

Home Enteral Nutrition

The HEN dataset contains information from 17 hospitals and covers 1,329 patients considered within scope of the study (namely activity occurred in the home and a cost was incurred as a result of this activity). The HEN dataset covers total expenditure of \$1.53 million. Of this \$1.09 million was paid for by the hospital and \$0.44 million (28.83%) was covered by patient co-payments or full contributions. The average cost per patient, based on the total costs expended by the hospital equates to \$817.

The single greatest contribution to the cost of home-based enteral services (namely 70.7%) is the enteral feeds, represented by the Pharmacy cost bucket in Figure 1.1. This is consistent with the findings in the literature review and feedback from the hospitals during the consultation phase of the study.

Figure 1.1: Proportion of HEN costs by cost bucket – total costs (hospital and patient payments)

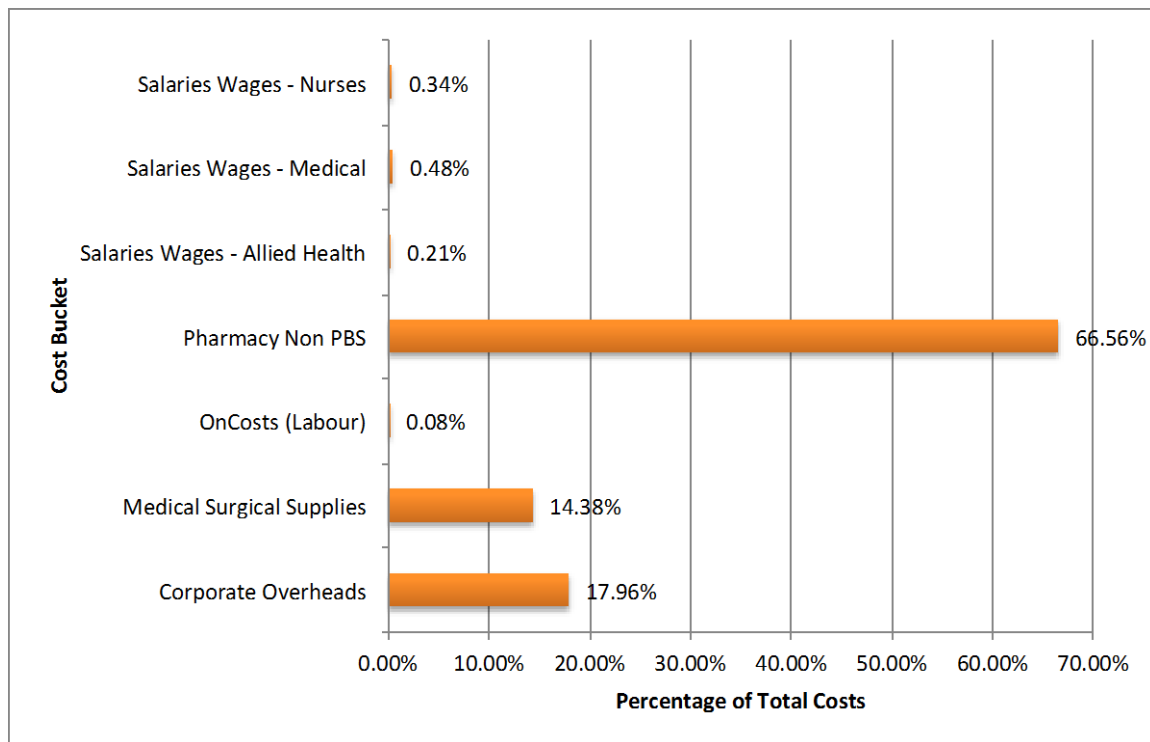


Home Total Parenteral Nutrition

The HTPN dataset contains information from six hospitals and covers 47 patients. The data set represents a total expenditure slightly in excess of \$415,000 for 47 patients in receipt of home based total parenteral nutrition services. On average this represents a cost of \$8,840 per patient. Unlike HEN services, jurisdictions do not necessarily view total parenteral nutrition solutions as a food supply, and as such are prepared to pay for the costs of these consumables. Any patient contribution towards HTPN services during the study period occurred when the patient went to the outpatient department and as such was deemed out of scope for the purposes of this study.

Pharmacy costs, largely related to the solutions and additives represent the major cost contribution (66.6%) to the overall expenditure for home total parenteral nutrition services (refer Figure 1.2).

Figure 1.2: Proportion of HTPN costs by cost bucket



Home Ventilation Support

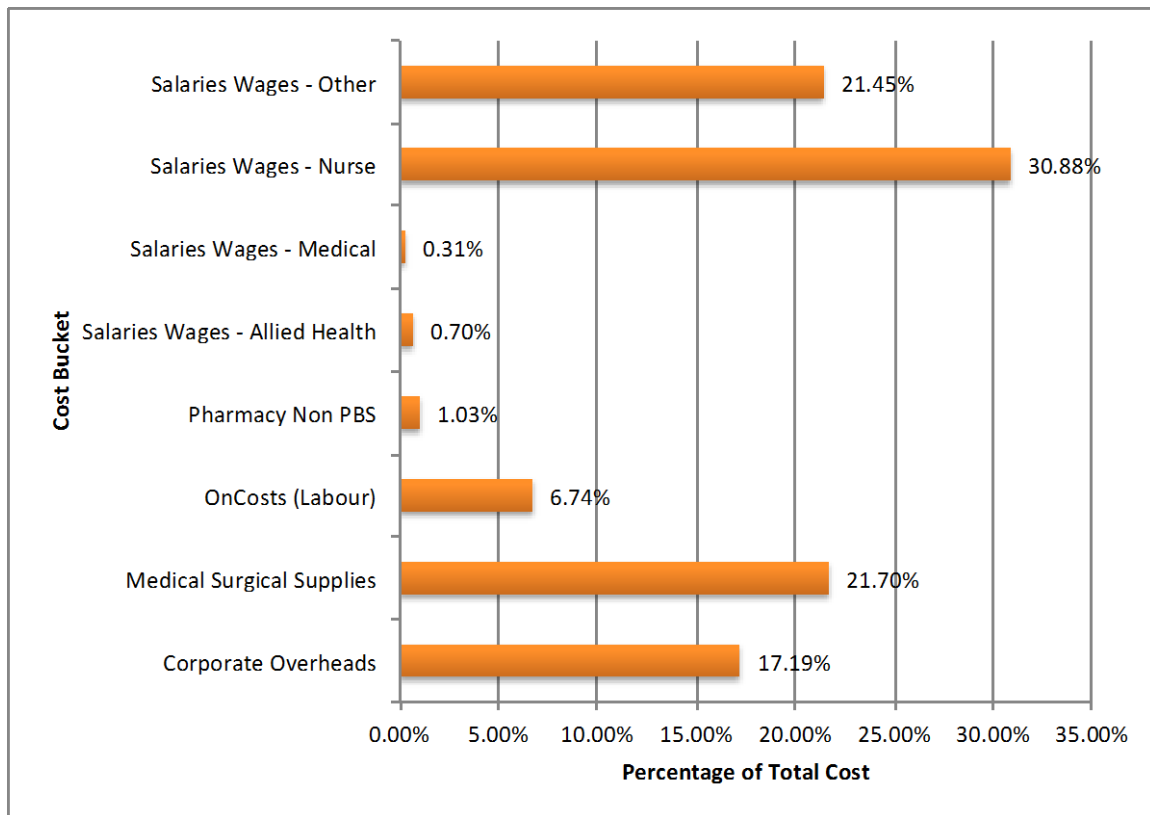
The home ventilation support dataset contains information from five hospitals and covers 121 patients. Thirty-nine (32.23%) of the patients were identified as being on invasive home ventilation support, with a further ten (8.26%) of the patients weaned from invasive to non-invasive ventilation support.

The total expenditure reported in the dataset is \$2.17 million for 121 patients, which averages to \$17,902 per patient. There are no co-payments involved in the provision of home ventilation support services.

Patients did attend outpatient clinics during the course of the data collection, and during this time still had in attendance a support care worker or nurse, in addition to the outpatient clinic staff that were consulted. The costs associated with any staff or consumables incurred on these days were not included in the cost profile for these patients, in recognition of the IHPA Tier 2 definitions. It is uncertain if these costs are allocated to relevant Tier 2 outpatient clinic(s) and potentially be spread across clinics that have nothing to do with ventilated patients. This may have a significant impact upon the costs of outpatient clinics associated with ventilated patients in terms of understating their costs and this needs to be investigated further.

The major cost contributor is from the nursing salaries and wages cost bucket (30.88%), as identified in Figure 1.3.

Figure 1.3: Proportion of HV costs by cost bucket



1.2 Future Considerations

Whilst it is not the remit of this study to make recommendations on how to fund or count these services, observations from the dataset have enabled the study team to make the following suggestions with regard to future reporting of activity for each of the three services deemed within scope of this study. They are documented below.

Minimum reporting requirements

A minimum set of data should be submitted by hospitals to states (and reported through to IHPA) for each of the home based services covered by this study:

- 1) the number of patients in receipt of:
 - Home based enteral nutrition services;
 - Home based total parenteral nutrition services;
 - Home based invasive ventilation support services; and
 - Home based non-invasive ventilation support services.
- 2) the number of days each patient was in receipt of home based services excluding days where the activity was counted in another outpatient clinic or was admitted overnight;

-
- 3) the days where the patient attended an outpatient clinic or was admitted as an inpatient; and
 - 4) the level of co-payment the patient paid on a monthly basis.

These four data items collectively will enable IHPA to determine the appropriate level of funding to be applied to the service.

Bundling of Services

It is suggested that, if the above four items are reported as a mandatory set of data for the home based services, then the count is focused on the number of patients in receipt of a bundle of services in a given month of reporting. This will align the counting rules of these three home based services with the majority of Tier 2 classes.

1.3 Data Quality and Assumptions

The data collection was fit for purpose involving collection of data by clinicians involved in the provision of home based enteral nutrition, home based total parenteral nutrition or home based ventilation services.

As previously noted, the volume of patients for home total parenteral nutrition services is low; however this is reflective of the level of activity jurisdictions anticipate for such services. Accordingly, it is anticipated that this study provides a reasonable representation of the services and sample of patients in receipt of HTPN.

Whilst the data collection spanned a full month, some sites were only able to provide data for a two or three week period, depending upon available resources. The data was included in the study dataset, on the basis that the counting and cost profiling is undertaken on a per patient, per day basis. The limited time allocated to the data collection may have resulted in an under-reporting of time spent by multi-disciplinary teams on case reviews of home enteral and home total parenteral nutrition patients; although some time was reported by medical, nursing and allied health staff for such activities.

Servicing of ventilation equipment may not necessarily be undertaken in a uniform manner across the participating sites. Nominated practices include servicing in the hospital via an outpatient visit, in which case the costs are considered outside of scope of the study; through to servicing at the home but on variable cycles ranging from 3 monthly through to annually. Given the data collection spanned only a single month, it is unlikely that all costs associated with equipment maintenance was captured.

In the majority of instances, the dietetics departments of the participating hospitals drove the data collection for home enteral and home total parenteral nutrition services. The involvement of pharmacy department staff in the completion of time spent filling scripts was variable, and may be understated, although it should be noted that an overhead cost was allocated to the Pharmacy cost bucket which would cover the costs associated with administrative staff filling monthly orders.

The overall time in which the study took place did not allow for the study team to conduct comprehensive education or training programs of staff involved in the data collection process. Rather this briefing was undertaken either via teleconference or workshop briefings and

followed up with a study user guide. Further the study data collection period did not allow for the study team to conduct on-site independent quality assurance audits. Thus, some variability in data collection may have occurred between the respective sites. However, the cost profiles contained in the final datasets have reconciled to hospital based financial datasets and cost centre reports as provided by the respective hospitals. Further, the feed consumption profiles are relatively uniform across the participating sites and the rate of home-based interventions (phone calls in particular) are also relatively consistent across the participating sites.

Some, but not all hospitals, undertook internal quality checks of the data prior to submitting it to IHPA and on to the study team.

Accordingly, notwithstanding the above caveats, the study team is confident that the data is representative of the suite of services delivered to patients on each of home enteral nutrition, home total parenteral nutrition or home ventilation and are highly confident in the quality of the reported datasets.

2. STUDY METHODOLOGY

The Independent Hospital Pricing Authority (IHPA) commissioned a study to undertake an in-depth review of the costs associated with the provision of services associated with:

- Home based enteral nutrition (HEN);
- Home based total parenteral nutrition (TPN); and
- Home ventilation (HV)

respectively.

2.1 Service Definitions

The definitions of the services, according to the IHPA *Tier 2 non-admitted services definitions manual 2013-14, version 3*¹, are listed below. The Tier 2 manual further includes patient eligibility, inclusions, exclusions and activity that enable the definitions to be applied to the respective services (refer Appendix B).

2.1.1 Home enteral nutrition

10.18 The administration of nutrition either orally or by feeding tube directly into the gastrointestinal tract self-administered by the patient.

2.1.2 Home total parenteral nutrition

10.17 The administration of nutrition by means of an infusion of an intravenous nutrition formula self-administered by the patient. Total parenteral nutrition (TPN) is generally only used when it is not possible to meet a patient's nutrition requirements through an oral or enteral route.

2.1.3 Home based ventilation

10.19 Ventilation self-administered by the patient or the patient's carer.

Ventilatory support: a process by which gases are moved into the lungs by a device that assists respiration by augmenting or replacing the patient's own respiratory effort.

¹ Independent Hospital Pricing Authority; Tier 2 non-admitted services definitions manual 2014-15, version 3, 2013; [http://www.ihipa.gov.au/internet/ihipa/publishing.nsf/Content/CA25794400122452CA257C9F00287557/\\$File/tier2-definition-manual-v3.o.pdf](http://www.ihipa.gov.au/internet/ihipa/publishing.nsf/Content/CA25794400122452CA257C9F00287557/$File/tier2-definition-manual-v3.o.pdf)

2.2 Objectives of the Study

The investigative study was designed to ascertain the costs associated with the delivery of home delivered ventilation (HV), home delivered TPN (HTPN) and HEN services to inform the determination of the price weights for these services in 2015-16.

Whilst three different services were being costed, each stream adopted a similar approach; namely the:

1. conduct of a literature review;
2. recruitment of participants and conduct of stakeholder consultations;
3. design and implementation of a prospective data collection; and
4. costing of the respective services.

Following the attribution of costs, the study team, in consultation with IHPA, reviewed the resultant dataset and explored alternative approaches to pricing and counting these services.

2.3 Literature review

A literature review was conducted in order to identify the major cost drivers for home based enteral nutrition, home based total parenteral nutrition and home ventilation services. The identification of relevant cost drivers was important in terms of identifying the key data items that needed to be included in any prospective data collection. The information also helped to provide context with respect to the potential service delivery models that were being costed. The review is presented as a separate document.

2.4 Participation

At the commencement of the study, IHPA approached jurisdictions inviting them to participate in the study. Five jurisdictions, namely Queensland, New South Wales, Victoria, South Australia and Western Australia, elected to participate, nominating hospitals to participate in any one or more of the HEN, HTPN or HV costing studies.

Hospitals from across all five jurisdictions participated in the HEN and HTPN studies respectively. Of the five jurisdictions, Queensland was the only state not to nominate a site to participate in the home ventilation study.

For those jurisdictions declining to participate:

- Resourcing availability was a primary reason for three of the jurisdictions declining to participate;
- Two also indicated that the volume of patients within the respective cohorts in their state or territory was so small that they were happy to defer to the findings of the costing study, provided the larger states were involved.

2.5 Stakeholder Consultation

Two types of consultation were conducted. First, in order to gain confidence that the costing studies for each of the service streams are based on a representative sample, jurisdictions were asked via a written survey to identify the number of patients in each of the home based programs considered within scope of this study. Then, a series of consultations were undertaken with service providers, in each of the participating jurisdictions to understand how services were being delivered to the respective patient cohorts. These consultations served a dual purpose. The first was to introduce clinicians from the participating hospitals to the overall study. The second was to identify the service delivery model under which the respective services were provided. The findings of the literature review were used to inform this process and to identify where differences occurred in clinical practice.

The information collected through this process was used to design an appropriate data collection tool for each of the respective service streams.

2.6 Data Collection

2.6.1 Tier 2 Classification and Counting Rules

The data definitions currently contained in the IHPA *Tier 2 non-admitted services definitions manual 2013-14, version 3*² for each of the services considered in scope (refer Appendix B), presented early challenges to the data collection process.

The counting rules listed in Appendix B for each of these Tier 2 classes indicate that the unit of count is “every day that the patient administers the said feed or ventilation”.

The definitions of the home feeding programs excluded contact with a health professional in order to make it clear that despite there being no direct contact with a health care provider the service can be counted as activity.

Accordingly, strict application of the respective definitions would result in a costing study that excluded any staff related costs associated with the delivery of these services. The argument being, that the staff related activities are attributed to different Tier 2 categories (20.25, 40.43 20.10 and 40.40) and therefore do not need to be counted or costed to any one of the three non-admitted classes considered in scope for this study.

Further, the preceding definitions developed by IHPA are based on a hypothesis that, in theory, there is a home feeding/ventilation team based at the hospital that visit and coordinate the service for enrolled patients. This hypothesis was tested with the respective jurisdictions and participating sites through the consultation process and is discussed further in the findings of the study (Chapter 4).

This costing study arose in part, as a result of representations made by various jurisdictions, that the costs associated with these patients are high, and potentially represent cost outliers.

² Independent Hospital Pricing Authority; Tier 2 non-admitted services definitions manual 2014-15, version 3, 2013; [http://www.ihipa.gov.au/internet/ihipa/publishing.nsf/Content/CA25794400122452CA257C9F00287557/\\$File/tier2-definition-manual-v3.o.pdf](http://www.ihipa.gov.au/internet/ihipa/publishing.nsf/Content/CA25794400122452CA257C9F00287557/$File/tier2-definition-manual-v3.o.pdf)

Submissions made by jurisdictions, and internal costing profiles prepared by individual jurisdictions have all included the cost of staff involved in the administration of the respective services, including home visits, follow-up and ordering activities performed by various clinicians. Inclusion of staff related costs in the prospective costing study would enable some comparisons to be drawn to these internal cost profiles if necessary.

The stringent application of the definitions in the design of the costing study were seen as potentially restrictive, particularly in terms of being able to address one of the objectives of the study; namely the ability to explore alternate approaches in terms of the counting of these respective services, and ultimately the pricing of said services.

After considered discussions with IHPA, the costing methodology was designed to capture all activity and associated costs with the home feeding and home ventilation programs. By identifying all the building blocks, the study was then in an informed position to consider alternate counting rules for each of the respective services. This in turn informed the construct of the overall cost profile for each service.

2.6.2 Data collection tool

The data collection tool reflected the agreed scope of the study, which made provision for the collection of time associated with home visits, follow up calls, ordering of pathology tests, ordering of consumables or feeds, equipment checks etc. all performed whilst the patient was at home. Based on feedback from the consultations, a simple tool was developed for each of the studies, using Microsoft Excel as the basis for the spreadsheet structure (Appendix A). An instruction manual was also developed and distributed to a number of sites to test. Further modifications were made to the instrument based upon the feedback from the clinical teams that pilot tested the tool and user guide.

2.6.3 Procedure

The data collection tool and instruction manual was distributed to all participating sites who had agreed to use the tool to report their data. Some sites did not use the tool provided, but rather provided the required data as an extract from their own databases. A data collection period, of up to 4 weeks, was agreed to by the participating sites. The starting dates were staggered from 15th July through to September 1st. As previously indicated, the sites were able to consult with the costing team with regard to customizing the data collection tool to better meet the working environment in which it was to be deployed. Participating sites were able to contact the study team directly to address any issues that arose in the implementation of the data collection instrument.

Table 2.1 identifies the commencement date for collection for each of the sites participating in the home based services costing studies as well as the particular focus of data collection undertaken by each.

Table 2.1: Participating sites by study focus

	Number of Sites	Site	HEN		HTPN		HV	
			Number of In-Scope Patients	Data Coverage 2014	Number of In-Scope Patients	Data Coverage 2014	Number of In-Scope Patients	Data Coverage 2014
SA	1	Adelaide Women's & Children's Hospital			2	1/08 to 31/08	13	15/07 to 12/08
	2	Flinders Medical Centre	120	25/8 to 24/09	15	25/8 to 22/09		
	3	Noarlunga Health Services	3	25/08 to 24/09				
	4	Repatriation General Hospital	59	25/08/14 to 24/09/14				
WA	1	Albany Health Campus	12	1/9/14 to 14/9/14				
	2	Armadale Health Service	82	27/08 to 9/09				
	3	Fremantle Hospital	65	8/09 to 21/09				
	4	Joondalup Health Campus	112	1/09 to 30/09				
	5	Princess Margaret Hospital					36	8/09 to 21/09
	6	Royal Perth Hospital	99	1/09 to 26/09				
	7	Sir Charles Gairdner Hospital	169	3/09 to 26/09	3	5/09 to 2/10		
	8	State-wide service - VDQ					9	1/08 to 28/08
VIC	1	Austin Hospital					61	1/09 to 17/09
	2	Peter MacCallum Cancer Centre	62	1/09 to 28/09				
NSW	1	Bankstown Hospital	22	3/09 to 30/09				
	2	Royal North Shore Hospital	9	1/09 to 28/09	9	1/09 to 2/10		
	3	Royal Prince Alfred Hospital	27	1/09 to 28/09	8	1/09 to 24/09		
	4	Westmead Hospital					2	8/09 to 4/10

	Number of Sites	Site	HEN		HTPN		HV	
			Number of In-Scope Patients	Data Coverage 2014	Number of In-Scope Patients	Data Coverage 2014	Number of In-Scope Patients	Data Coverage 2014
QLD	1	Caboolture/Redcliffe Hospital	86	1/08 to 31/08				
	2	Cairns Base Hospital	160	1/09 to 28/09				
	3	Royal Brisbane Women's and Children's Hospital	153	1/08 to 31/08	10	1/08 to 31/08		
	4	The Prince Charles Hospital	89	1/08 to 31/08				
Total	22		1,329		47		121	

Participating sites provided data on each registered patient determined to be in receipt of the respective home based services; and specifically identified resources provided to patients over the study period. Some sites provided high-level demographic data on all registered patients, but did not include any costs for the patients if they were not recorded as having consumed any services in the study period, or if no costs were incurred by the hospital over the study period. All activity and cost data contained in this report is exclusive of these patients.

Data was de-identified by the participating sites prior to its submission to the costing team in order to meet relevant privacy and confidentiality requirements. Furthermore, the data from the participating sites was transferred to the costing team (in accordance with individual jurisdiction preferences) using secure data channels and relevant encryption or password protection protocols.

2.6.4 Data items collected in the course of the study

The literature identified the major cost drivers for the home-based nutrition and ventilation services to fall largely into the broad categories of consumables (such as enteral feeds), disposable (such as gravity bags) and equipment (ventilators). Labour costs in the form of salaries and wages was identified as a variable cost driver, highly dependent upon the service model deployed in the provision of these services (refer Chapter 3). In addition, overheads associated with travel costs incurred when undertaking home visits was listed as a potential cost driver.

Based upon this information and further consultations with clinicians from the participating hospitals, a core set of data items specific to individual patient service utilisation were identified as critical to the overall data collection and costing process. This set formed the basis for the design of the data collection tool and were defined in the user manual distributed to the sites.

Tables 2.2 and 2.3 list the data items collected in the course of the study. Hospitals were able to reference the user manual for more detailed definitions. Table 2.3 identifies the core hospital level data that were collected. This information was collected via the activation screen

contained in the study tool (refer Table 2.2). Data had to be entered into this screen in order to be able to input service utilisation data in subsequent worksheets contained within the tool.

This information was linked to the data reported through the service utilisation spreadsheet to identify a unique record per hospital per patient.

Table 2.2: Data items collected through the activation screen

Data Item: Activation Screen
State/Territory Identifier
Site Identifier
Supervising Clinic
Hospital Postcode
Services for which Data is collected
Duration of data Collection
Data Collection Commencement Date
Data Collection Completion Date

Data specific to the services provided to each individual patient was reported on a distinct worksheet contained within the study tool. The data collection was centered upon the data items contained in Table 2.3. A high degree of commonality existed across the three data collections as reflected in Table 2.3.

Table 2.3: Data items collected through the service utilisation spreadsheet

Data Items	Relevant Collections	Further Comment
Patient Study Reference Number	All studies (each of HEN, TPN, HV)	Unique to the study and distinct from Hospital Specified Medical Record Number
Gender	All studies	
Age (in years)	All studies	
Date of Birth	All studies	Optional acknowledging local data privacy restrictions. Needed to provide age as a minimum
Postcode of patient's usual residence	All studies	Default to metropolitan or rural if local privacy restrictions prohibited reporting individual patient postcode details
Date of Service	All studies	

Data Items	Relevant Collections	Further Comment
Tier 2	All studies	Tier 2 category to which activity/service is reported
Adult/Child	All studies	
Type of Service	All studies	
Mode of Service	All studies	Used to distinguish how services provided to patient (i.e. orally, tube, both, invasive. Non-invasive)
Details of Service type	All studies	
Health Professional	All studies	Aligns with relevant health professional salary and wage cost bucket and cost driver
Time Taken	All studies	Drives cost allocation for respective health professionals involved in service delivery
Solution Description	HEN, HTPN	Aligns with Pharmacy cost bucket and cost driver
Solution/Additives Description	HEN, HTPN	Aligns with Pharmacy cost bucket and cost driver
Quantity	HEN, HTPN	In units per item Aligns with Pharmacy cost bucket and cost driver
Unit Cost	HEN, HTPN	Aligns with Pharmacy cost bucket and cost driver
Funding type	HEN, HTPN	Patient fully funded, hospital fully funded, combination of patient and hospital funded, externally funded, etc.)
Consumables	HV	Aligns with Medical and Surgical Supply cost bucket and cost driver
Quantity	HV	In units per item Aligns with Medical and Surgical Supply cost bucket and cost driver
Unit Cost	HV	Aligns with Medical and Surgical Supply cost bucket and cost driver
Funding type	HV	Patient fully funded, hospital fully funded, combination of patient and hospital funded, externally funded, etc.)
Disposable Description	All studies	Aligns with Medical and Surgical Supply cost bucket and cost driver
Quantity	All studies	In units per item Aligns with Medical and Surgical Supply cost bucket and cost driver
Unit Cost	All studies	Aligns with Medical and Surgical Supply cost bucket and cost driver
Funding type	All studies	Patient fully funded, hospital fully funded, combination of patient and hospital funded, externally funded, etc.)
Blood/Pathology Description	HEN, HTPN	Aligns with Pathology cost bucket and cost driver
Quantity	HEN, HTPN	Aligns with Pathology cost bucket and cost driver

Data Items	Relevant Collections	Further Comment
Unit Cost	HEN, HTPN	Aligns with Pathology cost bucket and cost driver
Drugs Description	HEN, HTPN	Aligns with Pharmacy cost bucket and cost driver
Quantity	HEN, HTPN	In units per item Aligns with Pharmacy cost bucket and cost driver
Unit Cost	HEN, HTPN	Aligns with Pharmacy cost bucket and cost driver
Equipment Description	All studies	Aligns with Medical and Surgical Supply cost bucket and cost driver
Purchase/Loan/Hire	All studies	Aligns with Medical and Surgical Supply cost bucket and cost driver
Quantity	All studies	In units per item Aligns with Medical and Surgical Supply cost bucket and cost driver
Unit Cost	All studies	Aligns with Medical and Surgical Supply cost bucket and cost driver
Technical support	HV	Aligns with Medical and Surgical Supply cost bucket and cost driver
Quantity	HV	In units per item Aligns with Medical and Surgical Supply cost bucket and cost driver
Unit Cost	HV	Aligns with Medical and Surgical Supply cost bucket and cost driver
Other costs	All studies	Aligns with overhead cost bucket and cost driver
Comments	All studies	Provided further clarity from the collection team if needed (e.g. identified if outpatient visit)

Financial data was also sourced from the hospitals department directly or through Area Health Service or Local Hospital Network costing analysts. This data related to the following items:

- Salaries and wages by professional group involved in delivering home based services for the respective service types;
- Oncosts associated with salaries and wages by professional group; and
- Overhead costs incurred through the hospital and corporate services.

2.6.5 Data review and collation

Data was provided either via the data collection tool, or in a format that was consistent with the information required by the tool, via an extract from existing in-house database, or in one instance, crude data in the form of order sheets and time diaries. In the case where data was submitted using the data collection tool, the data was checked for inconsistencies, and prepared for costing. In the case where the data was submitted in another format, it was converted to a format that used the same categorisation and nomenclature conventions contained in the data collection tool so that its eventual form was the same as the data from the tool.

2.7 Costing

Costs were able to be attributed to each patient for each day they consumed services in their home for each of enteral nutrition, total parenteral nutrition and ventilation services. Unit costs were extracted and deduced from various sources: salaries and wages information, tender price lists, costing extracts and general financial extracts from cost centre reports or general ledgers.

Days where patients attended outpatient services or were admitted to a hospital were identified and excluded from the costing process. This is consistent with the counting rules defined by IHPA. Of note, for the day on which a patient attends an outpatient clinic, the costs of the home based feeds or home ventilation have not been costed, and are potentially not included in the costs attributed to the relevant Tier 2 clinic either. This needs to be investigated further and is discussed in Chapters 4 and 5.

Caution also needs to be extended in the interpretation of the data, particularly the costing data, as variation occurs in the:

- costs borne by the hospitals and respective jurisdictions (both from an intra and inter state comparison), and
- service delivery models adopted by the jurisdictions for the same cohort of patient.

Both of these variations, and their potential impact upon the counting of, and cost profile, of the services are discussed further in the findings of the study.

3. STUDY OUTCOMES

3.1 Data Coverage

Jurisdictions struggled to identify the number of patients on home ventilation services. This was attributed to the fact that, prior to the construct of the new Tier 2 category represented by 10.19 Ventilation – Home Delivered, activity was not reported by hospitals to the respective State or Territory Health Department.

Further, with respect to the identification of HEN and HTPN service recipients, jurisdictions reported highly variable numbers, some of which were based on occasions of service. With the variations in funding, models of care and approaches to data collection, the study team were unable to accurately determine if the overall sample size reported within this study was representative of the national population of patients in receipt of home based enteral nutrition services, home based total parenteral nutrition services and home ventilation services. However, feedback from participating jurisdictions indicates that this dataset represents a best effort collection based on what was possible at the time of conducting the study.

Further, many of the participating jurisdictions sought to nominate the principle hospitals or hospital networks known to provide the bulk of these services, including in some instances the sites providing a statewide service.

Table 3.1 identifies the total number of patients for which information was provided through the prospective data collection and were considered to be within scope of the study (namely the services were provided whilst the patient was at home and costs were incurred by the hospital for the service provision).

Table 3.1: Number of patients deemed to be within scope of the study by service type

State	Service Type		
	HEN	HTPN	HV
Western Australia	539	3	45
South Australia	182	17	13
Victoria	62	0	61
New South Wales	58	17	2
Queensland	488	10	0
Total	1,329	47	121

3.2 Findings of the Literature Review

The literature review identified the following as being the primary cost drivers for each of the three home based services deemed within scope of this study:

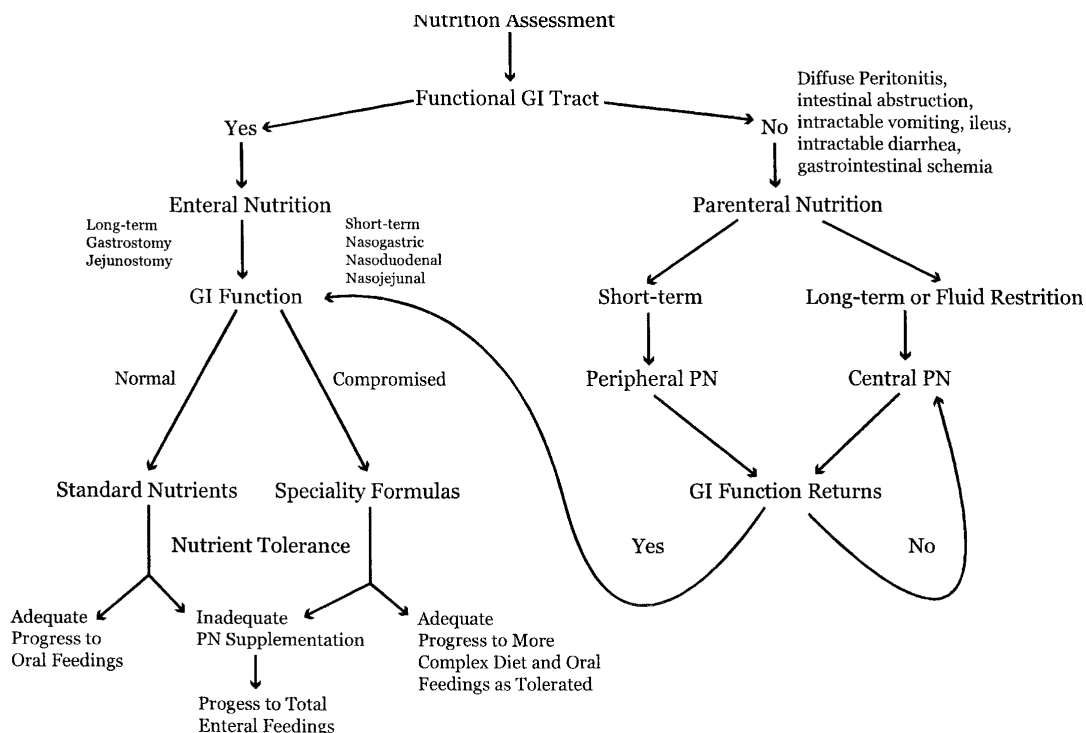
- Consumables;
- Disposables; and
- Labour input.

Other peripheral costs associated largely with staff travel to the patient's home were noted, however this varied depending upon the service delivery model adopted by the respective countries or states covered by the review. Differences in the service delivery models were noted and these are outlined below.

3.2.1 Home Enteral and Home Total Parenteral Nutrition Services

The decision as to whether a patient requires enteral or total parenteral nutrition is clinically based, and not surprisingly is similar across all jurisdictions and overseas countries covered by the literature review (refer Figure 3.1).

Figure 3.1: Decision pathway to determine if patient requires enteral or parenteral nutrition ^{3 4}



³ Source: Brown D., Edwards H.; Lewis's Medical-surgical Nursing: Assessment and Management of Clinical Problems; Types of Specialised Nutrition Support: Oral Feeding; Nutrition support algorithms gastrointestinal; Chapter 39, pp.1027

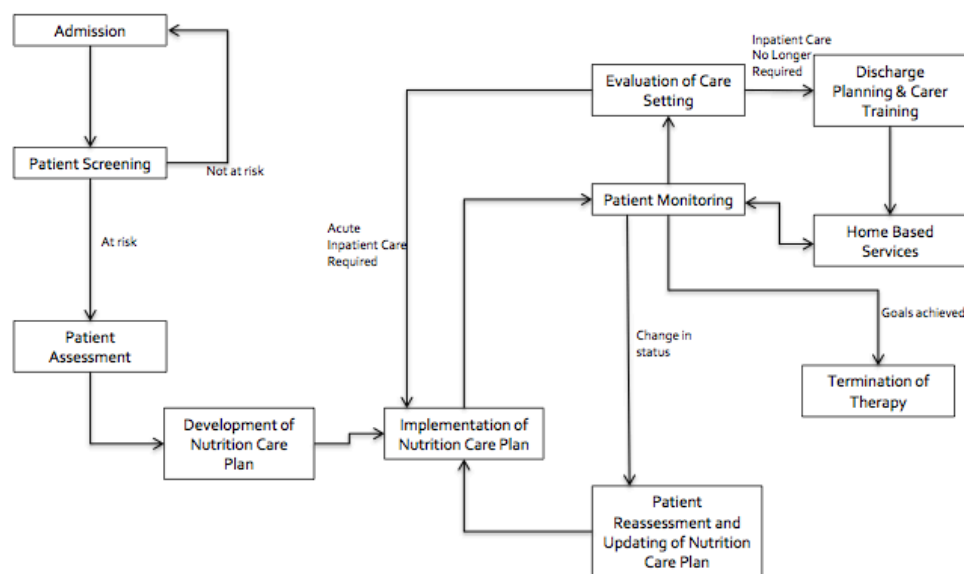
⁴ Guidelines for the Use of Parenteral and Enteral Nutrition in Adult and Pediatric Patients, American Society for Parenteral and Enteral Nutrition *JPEN J Parenteral Enteral Nutrition* 2002 26: 1SA DOI: 10.1177/0148607102026001011; http://pen.sagepub.com/content/26/1_suppl/1SA

Once the decision is made as to what type of nutrition is required, the patient is monitored whilst in hospital and adjustments are made according to clinical need and the patient's progress.

If nutrition services are required within the home, an assessment of the home environment typically takes place, involving any one or combination of a nurse, occupational therapist, or dietitian.

The attribution of the home assessment and work involved in getting a patient ready to commence home based nutritional services is typically considered to be part of the inpatient episode as depicted in Figure 3.2.

Figure 3.2: HEN and TPN Patient Pathway 5



Information obtained from the United Kingdom⁶ (refer Table 3.2) shows that the service delivery model in that country allows for approximately 4 home visits from a nurse in the course of a year to check up on each HEN and HTPN patients and their environment.

⁵ Guidelines for the Use of Parenteral and Enteral Nutrition in Adult and Pediatric Patients, American Society for Parenteral and Enteral Nutrition *JPEN J Parenteral Enteral Nutrition* 2002 26: 1SA DOI: 10.1177/0148607102026001011; http://pen.sagepub.com/content/26/1_suppl/1SA

⁶ Elia M, Stratton RJ. A cost-utility analysis in patients receiving enteral tube feeding at home and in nursing homes. *Clinical Nutrition* 27:416-423, 2008

Table 3.2: The episodes of care that a patient will undertake during HEN and HTPN care

Process or Intervention	Frequency per Year
In Patient Training (Carer)	4
<i>Continuing Care Costs Home Visits</i>	
Medical Officer	6
Dietician	4
Nursing Care	4
Speech Therapist	2
Physiotherapist	2
Chiropodist	2
Occupational Therapist	2
Cost of Feed + ancillaries + delivery	1
Progressive investigation	2
Hospital re-admission (carer training)	1

3.2.2 Home Ventilation Services

Home Ventilation Programs have been designed to assist patients who require assistance with breathing via either non-invasive (NIV) or invasive (IV) ventilation therapy. Non-invasive ventilation refers to the use of a mechanical ventilator where air is delivered via a face and or nasal mask, while invasive ventilation requires an invasive tube for air delivery (e.g. tracheostomy).

Home ventilated patients typically have one of the following conditions:

- Chronic obstructive pulmonary disease (COPD);
- Thoracic restrictive disease (TRD); or
- Neuro-muscular disease (NMD),

and use ventilator support either 24 hours a day, at night only, or at night with intermittent day time use.

Equipment costs and the maintenance of the equipment were identified in the literature as key cost components in home ventilation support services. Depending upon the condition of the patient, home care support was also identified as a key cost component (e.g. quadriplegia patients requiring home care support).

Prior to a patient being discharged, the home is assessed for optimal set-up of the home ventilation equipment. This is typically completed by an occupational therapist. Due to the high maintenance needs of the equipment, carer training is a key component of the overall service delivery model, with considerable time invested in this activity. The education is typically provided to the carer by a nurse, and takes place prior to the patient being discharged to the home.

The carer training is considered to be part of the initiation protocol for non- invasive home mechanical ventilation and can be carried out whilst the patient is an inpatient or in an

outpatient clinic, as trialed in the United States⁷. Studies show that this form of initiation protocol has a cost benefit to the hospital, saving on occupied beddays. Of note, no adverse effects were reported for the patients. This practice has not been considered in Australia.

Apart from the equipment costs, the maintenance of equipment was identified as a significant cost component in the overall delivery of home based ventilation support services. Studies⁸ however have shown that there are various agencies and health care professionals involved in the maintenance of ventilation equipment thereby affecting the overall cost of service delivery. Maintenance functions can be undertaken by:

- external company;
- hospital technician;
- doctor;
- or any combination of the above three.

The servicing is typically carried out on a six monthly cycle, although this also varies depending upon the country or jurisdiction (refer Table 3.3).

Table 3.3: Frequency of maintenance of home mechanical ventilators – European countries ⁹

Routine Servicing Periodicity – in months	Countries
3 months	France, Portugal, Spain
4 months	Greece, Poland
6 months	Belgium, Denmark, Germany, Ireland, Italy, Netherlands, Norway
12 months	Austria, Finland, Sweden, United Kingdom

The payment for these services varies, with all of the costs being borne by the hospital through to none of the costs being borne by the hospital.

From the perspective of this study, the servicing of ventilation equipment may not necessarily be captured during the data collection cycle and provision will need to be made to incorporate these costs, if borne by the hospital. If, in Australia, the frequency of maintenance of the equipment is similar to that reported in the literature, then this too will pose a challenge in terms of how to incorporate an appropriate amount into the price set by IHPA. This is discussed further in Chapter 5.

⁷ Luj M., Moreno A., Veigas C.; Non-invasive home mechanical ventilation: Effectiveness and efficiency of an outpatient initiation protocol compared with the standard on-hospital model; *Respiratory Medicine*, Vol 101, pp 1177-1182; 2007.

⁸ Farre R., Lloyd-Owen S.J., Ambrosino N., Donaldson G., Escarabill J., Fauroux B., Robert D., Schoenhofer B., Simonds A., Wedzida J.A.; Quality control of equipment in home mechanical ventilation: A European Study; *European Respiratory Journal*, Vol 26 (1), pp 86-94; 2005

⁹ Farre R., Lloyd-Owen S.J., Ambrosino N., Donaldson G., Escarabill J., Fauroux B., Robert D., Schoenhofer B., Simonds A., Wedzida J.A.; Quality control of equipment in home mechanical ventilation: A European Study; *European Respiratory Journal*, Vol 26 (1), pp 86-94; 2005

3.3 Stakeholder consultations

This section summarises the outcomes of the discussions with the service providers from the respective jurisdictions. It identifies that not only do the service delivery models implemented by participating hospitals differ from overseas countries (as identified in the literature); there are also significant variations in the way in which services are delivered across the jurisdictions.

Consultations were held with service providers via workshops or teleconferences. The generic service model and patient pathway as identified through the literature was used as the basis for discussions with individual clinicians from the participating sites. The purpose of using the generic patient pathway and service delivery model was to identify deviations from the core componentry of the model and to obtain a better understanding of the environment in which each service operates.

3.3.1 Core Cost Drivers

Fundamentally the core cost drivers for the delivery of the respective home based services fall into the same categories as those identified through the literature review. Thus, the data collection tools developed for the respective studies made provision for the capture of information relating to:

- Solutions used for enteral and total parenteral nutrition;
- Additives used for enteral and total parenteral nutrition;
- Disposables used for enteral, total parenteral and home ventilation services respectively;
- Consumables used for enteral, total parenteral and home ventilation services respectively;
- Equipment used for enteral, total parenteral and home ventilation services respectively;
- Technical support required for equipment maintenance and servicing for home ventilation services;
- Time spent by health care professionals in the delivery of services; and
- Time spent by home support workers in the delivery of services to home ventilated patients.

3.3.2 Service Delivery

Home Enteral and Home Total Parenteral Nutrition

Hospitals identified home total parenteral nutrition services to be provided to a much smaller cohort of patients. Most hospitals providing this service indicated that they had fewer than 20 patients on their home parenteral nutrition lists. The bulk of home nutrition services is provided to patients on enteral feeds, with hospitals indicating that they had up to 350 patients on their lists, not all of which were active (i.e. not seen or heard from in the last 4-6 months).

Few of the hospitals participating in the study have dedicated teams that manage patients on home based enteral or total parenteral nutrition services. Management occurs via multi-disciplinary teams involving:

- medical staff, typically from the gastroenterology department;
- nursing staff, also from the gastroenterology department;

-
- dietitians; and
 - pharmacy department staff.

This team meets on a regular basis to review the patient's progress, and most patients are expected to attend an outpatient clinic every three to six months, depending upon local hospital protocols.

The main health professional that monitors the patient whilst at home is typically the dietitian, although some variation has been noted with clinical nurse consultants also fulfilling this role, for TPN patients only and principally in New South Wales.

Discussions with Australian clinicians involved in the provision of HEN and HTPN services suggest that the UK service delivery model may represent an ideal service delivery model, however it is not tenable in Australia. Home visits in Australia by nursing and allied health staff to HEN or HTPN patients is rare. Most monitoring of patients in receipt of HEN or HTPN is undertaken via telephone consultations.

In Australia the delivery of nutrients or feeds to the patient occurs in various guises. The patient (or carer/family member) may pick the feeds up on a regular basis from the hospital pharmacy, the local pharmacy, or it may be delivered by contracted suppliers. The contracted suppliers are state/territory specific approved suppliers of enteral and/or total parenteral feeds that have responded to locally issued tenders. The cost of delivery is embedded in the unit cost per feed or consumable contained on individually approved tender lists maintained by the respective jurisdictions.

Home Ventilation

Hospitals indicated that the number of patients in receipt of home ventilation services was relatively modest, but represented a high cost service. Typically, the number of patients identified by hospitals as being in receipt of invasive mechanical ventilation home based services was less than ten in total. Slightly higher numbers, but still well below 50 were identified as being in receipt of non-invasive home based ventilation support services.

Patients on home based ventilation services are managed by multi-disciplinary teams involving a combination of:

- medical staff, typically from the respiratory or sleep apnea department;
- nursing staff, also from the respiratory or sleep apnea department;
- physiotherapists;
- speech therapists;
- occupational therapists; and
- biomedical engineering department staff.

The biomedical engineering department staff (or equivalent) are involved in equipment maintenance and repairs that may need to be undertaken within the patients home.

From the feedback provided by participating hospitals (and supported by the data collected through the study), the principal health professional co-ordinating the management of the patient in their home is typically a nurse.

For a specific cohort of patient, typically quadriplegic patients or those suffering from major trauma, home support care is required. Home-based support workers are typically contracted

and paid for by the patient directly, although varies if the home ventilation service is run as a statewide service. Home-based support care is provided by an external provider for some of the statewide services. The provider is selected through a tendering process managed by the statewide service. For some jurisdictions the costs associated with the service are still paid for the statewide service but not necessarily provided by its staff. For such services, the costs appear in the accounts of the hospital charged with the responsibility for running the statewide service.

3.4 Funding of Home Based Services

3.4.1 Home Enteral and Home Total Parenteral Nutrition Services

The funding for Home Enteral and Home Total Parenteral Nutrition services varies from jurisdiction to jurisdiction. For some, the state bears the total costs associated with the provision of feeds as well as costs associated with monitoring the patient whilst at home. In other states the costs are shared between the patient and the state, with a patient co-payment due each month. The patient co-payment can vary as well within a state and is dependent upon the financial position of the patient. Lower rates of co-payments can be applied if the patient is successful in their application to be classed as financially at risk. Table 3.4 summarises the differences across the respective jurisdictions in terms of how the services are paid for.

Table 3.4: Various funding structures for HEN and HTPN services by jurisdiction

State	Policy	Funding Implications	Service Conducted By
WA	No statewide policy Area Health Services (AHS) have own policies	Total monthly expenditure captured in HEN cost centre. Patient contributes the service, Health Care Card Holder (HCC) Adult \$85 Paediatric \$25 per month. Non HCC Adult \$100 and Paediatric \$50 per month.	Dietarian Nutrition Services
ACT	No formal policy	Hospital Funded	
NSW	HEN No formal policy. ENABLE NSW provides some consumables (f= giving sets, syringes, feeding tubes etc.) to eligible patients (permanent or long term disability > 12 months). For example 270 giving sets are provided to patients on tube feeding (via gravity	Hospital funded for staff and oncost to Outpatient department. All consumables costs are the patients responsibility. Exception for patients in need, hospital reimbursed via external source (ENABLE). HEN All other patients must purchase enteral feeds and consumables. Eligible patients can purchase enteral feeds and consumables via the NSW Enteral nutrition support and services contract – patient must need HEN for more than 1 month and be under the	Nutrition and Dietetics Services, with clinical nurse consultant (CNC) consultation

State	Policy	Funding Implications	Service Conducted By
	<p>or pump) – the recommendation is 1 per day (365).</p> <p>PN</p> <p>Formal policy PD2005_395: Drugs – Funding Arrangements for Outpatient Use of High Cost Drugs Not Funded by the Commonwealth. This does not specifically mention TPN, but TPN solutions are covered by this policy.</p>	<p>care of a clinician working for NSW Health or other public body.</p> <p>PN</p> <p>Products are funded by hospitals. HTPN must be commenced in a tertiary centre. If the patient lives in a different LHD, the initiating LHD covers the cost for the first 12 months then the cost is transferred to the LHD where the patient lives.</p>	
NT	<p>HEN products under the Home Enteral Parenteral Nutrition (HEPN) Scheme.</p> <p>Equipment and consumables under the Territory Independent & Mobility Equipment Scheme (TIMES)</p>	<p>Products are funded via HEPN Scheme.</p> <p>Equipment is funded via TIMES Scheme.</p>	
QLD	<p>Supply of Enteral Products to Outpatients through QHS – covers eligible criteria & co-payments</p> <p>Queensland Health Service Districts (HSD) have developed own policies & procedures for HEN supply</p>	<p>Products are funded via OPD, with co-payments from patients set at:</p> <ul style="list-style-type: none"> Up to \$62.25 per week per person for general patients Up to \$34.05 per week per person for disadvantaged patients. <p>If approved the rate discounted rates can apply:</p> <ul style="list-style-type: none"> Up to \$36.10 per month per person for general patients Up to \$5.90 per month per person for disadvantaged patients 	Dietetics and Nutrition Services, with CNC consultation
VIC	No statewide policy for HEN	Hospital funded	Dietetics and Nutrition Services, with CNC consultation

State	Policy	Funding Implications	Service Conducted By
SA	No statewide policy All public hospitals have their own policies and procedures	Hospital funded costs recorded at OPD cost centre.	Dietetics and Nutrition Services, with CNC consultation
TAS	Home Nutrition Policy covers tube feeding and oral supplements	Hospital Funded	Dietetics and Nutrition Services

The respective funding sources for the consumables and equipment were identified on a patient by patient basis for the respective studies and is reflected appropriately within the study datasets.

The cost of hospital staff involved in monitoring the patient, or in the administration of the dispensing of relevant consumables and equipment are fully borne by the public health system and have been costed accordingly within the respective study datasets.

3.4.2 Home Ventilation Services

Unlike the home nutrition services, the costs associated with home ventilation services are typically borne, in its entirety, by the state government as identified in Table 3.5.

Table 3.5: Various funding structures in place for home based ventilation services by jurisdiction

State	Policy	Funding Implications	Service Conducted By
NSW	LHD policy under the direction of the Staff Specialist Department of Respiratory and Sleep Medicine	Fully funded through the department.	CNC and Staff Specialist
VIC	Statewide adult Service	Adult State wide service funded hospitably the department	CNC and Staff Specialist
SA	No statewide policy All public hospitals have their own policies and procedures	Hospital funded costs recorded at OPD cost centre.	CNC and Staff Specialist

4. AN OVERVIEW OF THE STUDY DATASETS

As previously identified, the majority of the participating sites collected data on a prospective basis, using the study specific data collection tools (refer Appendix A). A few hospitals were able to extract data, de-identified from their existing information systems, as all the study defined data items (as listed in Chapter 2, Table 2.3) were routinely captured in their in-house information management systems. This approach was adopted to minimise the impost upon sites and to facilitate their participation in the overall study.

The following presents high-level data describing key attributes of the various datasets.

4.1 The Home Enteral Nutrition Dataset

This dataset contains information from 17 hospitals and covers 1,329 patients (refer Table 4.1). A total of 28,649 individual days are listed in the dataset containing costs from one or more cost buckets.

Table 4.1: Total number of days for which a cost was allocated by hospital

State	Name	Study Period	End date	Number of In-Scope Patients	Total days covered by hospital survey	Total number of days with cost attributed
SA	Flinders Medical Centre	25/08/14	24/09/14	120	31	3,720
	Noarlunga Health Services	25/08/14	24/09/14	3	31	93
	Repatriation General Hospital	25/08/14	24/09/14	59	31	1,829
WA	Albany Hospital	1/09/14	14/09/14	12	14	168
	Armadale Health Service	27/08/14	9/09/14	82	14	814
	Fremantle Hospital	8/09/14	21/09/14	65	14	756
	Joondalup Health Service	1/09/14	30/09/14	112	30	2,867*
	Royal Perth Hospital	1/09/14	26/09/14	99	26	197
	Sir Charles Gairdner Hospital	3/09/14	26/09/14	169	24	429
VIC	Peter MacCallum Cancer Centre	1/09/14	28/09/14	62	28	1,736

State	Name	Study Period	End date	Number of In-Scope Patients	Total days covered by hospital survey	Total number of days with cost attributed
NSW	Bankstown Hospital	3/09/14	30/09/14	22	28	616
	Royal North Shore Hospital	1/09/14	28/09/14	9	28	229
	Royal Prince Alfred Hospital	1/09/14	28/09/14	27	28	759
QLD	Caboolture/Redcliffe Hospital	1/08/14	31/08/14	86	31	2,666
	Cairns Base Hospital	1/09/14	28/09/14	160	28	4,291
	Royal Brisbane Hospital	1/08/14	31/08/14	153	31	4,743
	The Prince Charles Hospital	1/08/14	31/08/14	89	31	2,736
Total				1,329		28,649

* Service utilisation recording did not commence at the same time for all patients.

In line with current Tier 2 definitions and counting rules, for the days on which a patient attends an outpatient clinic, the activity is deemed to be attributed to the outpatient clinic and not counted towards the HEN Tier 2 category 10.18. Accordingly, the costs are not attributed to this Tier 2 category, but rather should be attributed to the outpatient clinic visited by the patient. There is a risk that on these days the costs associated with the solutions (enteral feeds consumed at home on the day of the outpatient visit) and medical surgical supplies consumed by the patient have not been attributed to the appropriate outpatient clinic treating patients with enteral nutrition needs. Rather, assuming full absorption costing is in place, there is a real risk that the costs are allocated across a range of other outpatient clinics involving dietetics, pharmacy and nursing services. This may result in the costs associated with outpatient clinics treating patients with enteral nutrition needs being understated and other outpatient clinic costs being overstated. To determine the materiality of this overlap in service delivery, the dataset was analysed to identify the number of patients that, during the data collection period, received treatment in the outpatient setting. Table 4.2 shows that a total of 52 patients (3.91%) received treatment in an outpatient setting during the period in question. Of these, there was a mix in terms of patients that pay for their feeds and those that do not. The material value of the hospital borne costs for these patients is relatively minor. The effort to cost the consumables and medical surgical supplies for hospital paid patients to the outpatient clinic visited by the patient would in all likelihood outweigh the benefits gained in improving the costing dataset. Accordingly, it may be more appropriate to account for the total cost of consumables and medical surgical supplies within the HEN Tier 2 class of 10.18 and base the payment upon this figure.

Table 4.2: Profile of HEN patients that visited OPD during study period

Payment Source	Total Number of Patients	Average Payment by Patient	Average Hospital Cost Per Patient
Patient Contribution	29	\$110.65	
Hospital Cost	21		\$33.77
Both of the above	2	\$25.76	\$47.51
Total	52	\$105.17	\$36.98

Similarly, a total of 58 patients (4.4%) were admitted to hospital during the study period. The days attributed to an inpatient episode were not included in the costing process. Once the patient is admitted into hospital for acute care, the cost of the enteral feed is included within the hospital inpatient cost as it is usually supplied direct from the hospital pharmacy. The consumables and medical surgical supplies provided to, or purchased by, the patient through the home-based nutrition service remains in stock and is used by the patient when they are discharged from the hospital. Thus there would appear to be no hidden or lost costs occurring when this overlap in service delivery occurs.

Monitoring of the patient occurs via multiple modalities, namely telephone based contacts, home visits, email and clinical review of the case. A total of 657 telephone calls were made monitoring 390 patients over the course of the data collection period (refer Table 4.3).

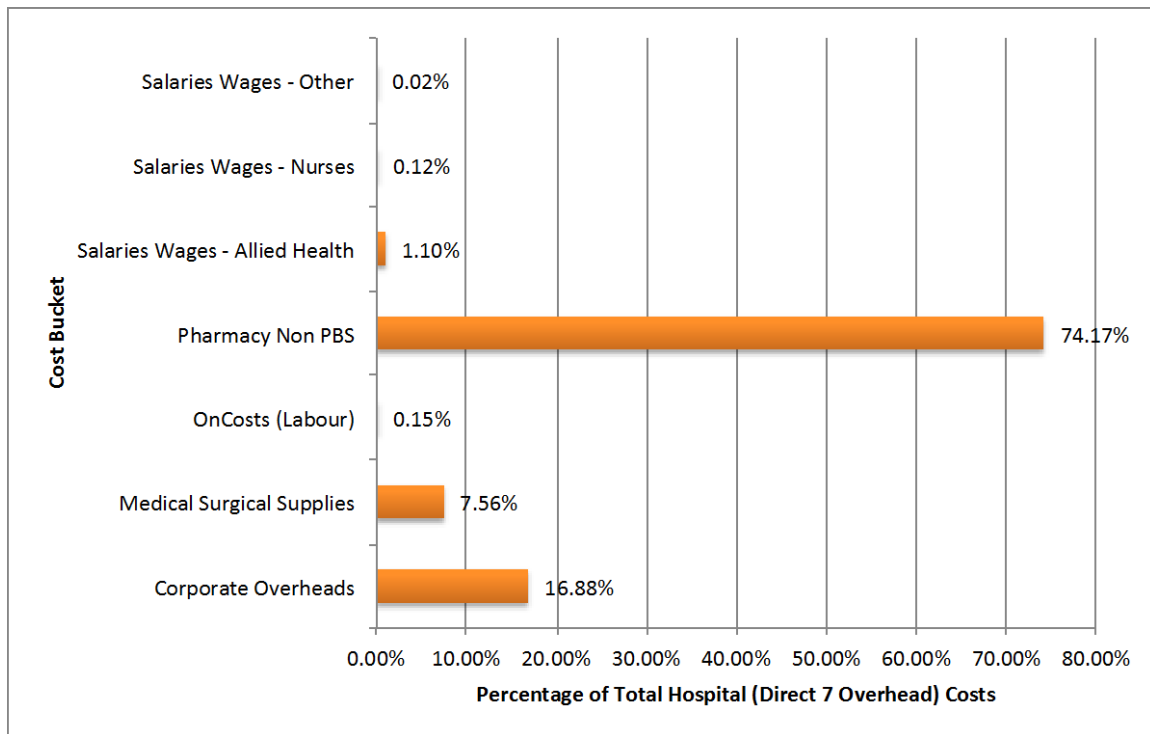
Table 4.3: Methods of monitoring HEN patients

Monitoring Modality	Number of Patients	Frequency
Phone Call	390	657
Email	220	221
Home Visit	38	311
Clinical review of case	40	43

This data demonstrates that the service delivery model adopted in Australia varies to that identified in the literature, in that home-based visits to patients are rarely undertaken. Monitoring of the patient is largely undertaken on a virtual or slightly removed basis (email or phone), with an expected review in an outpatient clinic scheduled either on a three monthly or six monthly basis. The latter form of monitoring falls outside of the scope of this study.

The single greatest contribution to the cost of home-based enteral services is the enteral feeds, represented by the Pharmacy cost bucket (74.17%) in Figure 4.1. This is consistent with the findings in the literature review and feedback from the hospitals during the consultation phase of the study.

Figure 4.1: Proportion of HEN costs by cost bucket – hospital borne costs only



The HEN dataset covers total expenditure of \$1,525,418 across 1,329 patients. Of the total expenditure, \$1,085,630 was borne by the hospital the remainder (\$439,787) was paid for by the patient via co-payments or full contributions. Based on the total costs paid by the hospital, the average cost of HEN services is \$816.88 per patient. As noted above, the majority of the costs are borne by the public sector, with 28.83% of the costs covered by patient contributions in the form of co-payments. The co-payments are made for the purchase of enteral feeds and medical and surgical supplies.

Table 4.4 indicates that all hospitals participating from New South Wales and Queensland reported high volumes of patients making some form of co-payment for home based nutrition services. Variable practices occur across hospitals in Western Australia in terms of whether patients are expected to pay for the consumables and medical surgical supplies, and no patients in South Australia were expected to make a co-payment for their home enteral nutrition service. This is reflective of the state policies outlined earlier in Table 3.4.

Table 4.4: Number of patients by state and hospital making a co-payment for HEN services

State	Hospital	Number of In-Scope Patients Making Some form of Co-payment for HEN services	Total Number of In-Scope HEN patients for study period	% of HEN patients making some form of co-payment
WA	Joondalup Health Campus	95	112	84.82%
	Sir Charles Gairdner Hospital	108	169	63.91%
NSW	Bankstown Hospital	22	22	100%
	Royal North Shore Hospital	7	9	77.78%
	Royal Prince Alfred Hospital	27	27	100%
QLD	Caboolture/Redcliffe Hospital	81	86	94.19%
	Cairns Base Hospital	151	160	94.38%
	Royal Brisbane Women's and Children's Hospital	152	153	99.34%
	The Prince Charles Hospital	89	89	100%
Study Totals		732	1,329	55.08%

Based upon the data presented above, it is important to obtain information on a monthly basis from hospitals that identifies the number of patients making a co-payment and the value of this co-payment. This is discussed further in Chapter 5.

The majority of patients were orally fed as depicted in Table 4.5. The method of feed determines the need for consumables such as syringes, tubes, decompression tubes, pumps, etc. This in turn influences the cost profiles for the respective patients in receipt of HEN services.

Table 4.5: Profile of costs and activity by feeding method

Feed Method	Number of Patients	Proportion of Total Dataset	Average Cost Per Patient
Oral	677	50.94%	\$257.57
Tube	371	28.67%	\$1,614.35
Oral & Tube	71	5.42%	\$3,727.98
Unknown	199	14.97%	\$139.56
Total	1,329	100.00%	\$816.88

The variation in cost profiles for the different feed methods may warrant a further partitioning of the Tier 2 class for the HEN service. This would, in part, be dependent upon the total volume of activity reported across the country.

4.2 The Home Total-Parenteral Nutrition Dataset

This dataset contains information from six hospitals and covers 55 patients, 47 of which are deemed to be within scope of the study (refer Table 4.6). For the patients deemed within scope of the study a total of 1,015 individual days are listed in the dataset containing costs from one or more cost buckets.

Table 4.6: Total number of days for which a cost was allocated by hospital

State	Name	Study Period	End date	Number of In-Scope Patients	Total days covered by hospital survey	Total number of days with cost attributed
SA	Flinders Medical Centre	25/08/14	22/09/14	15	29	347
	Adelaide Women's and Children's	1/08/14	31/08/14	2	31	62
WA	Sir Charles Gairdner Hospital	5/09/14	2/10/14	3	28	64
NSW	Royal North Shore Hospital	1/09/14	2/10/14	9	32	225
	Royal Prince Alfred Hospital	1/09/14	24/09/14	8	24	15
QLD	Royal Brisbane Hospital	1/08/14	31/08/14	10	31	302
Total				47		1,015*

* Days where the patient was treated either as an outpatient or an inpatient have not been included in the count

Similar forms of monitoring take place for this cohort of patient as evidenced for the HEN patients, namely via phone or email (refer Table 4.7).

Table 4.7: Methods of monitoring HTPN patients

Monitoring Modality	Number of Patients	Frequency
Phone Call	18	57
Email	5	20
Home Visit	1	1
Clinical review of case	9	24

A total of 15 patients (31.91%) received treatment in an outpatient setting during the data collection period. The majority of these patients saw a clinical nurse specialist and/or a medical officer. The days that these patients attended the outpatient clinic have been deemed out of scope and not costed.

The average cost incurred by the hospital for HTPN patients attending an outpatient clinic is significantly higher per patient than that incurred for the HEN patients. This is reflective of the cost of the total parenteral nutrition and the consumables used in the treatment of these patients. Table 4.8 depicts the average cost profile per patient identified within the dataset for HTPN patients attending the outpatient clinic. It does not reflect a full costing of the outpatient clinic, rather it reflects those costs that may overlap with the home total parenteral nutrition tier category and the respective outpatient clinic attended by the patient on the day. The potential overlap in costs are significant and suggest a change in the current counting rules may be warranted. The suggested change could allow for the following to occur:

- the daily cost incurred by the hospital in the supply of nutrition and medical surgical supplies to be attributed to the home-based Tier 2 category; and
- the costs incurred in attending an outpatient clinic to be attributed to the relevant outpatient clinic.

This would allow for the patient to be counted in both Tier categories for the given day. A counting rule such as this would not constitute a “double count” of activity, as the activity and associated resources consumed relate to two very discrete and potentially different encounters with the hospital system.

Table 4.8: Profile of HTPN patients that visited OPD during study period

Profile HTPN Patients & Costs – OPD Visit	Paid by Patient	Cost Incurred by Hospital	Total
Number of Patients	2	13	15
Average Cost	\$833.30	\$444.69	\$496.50

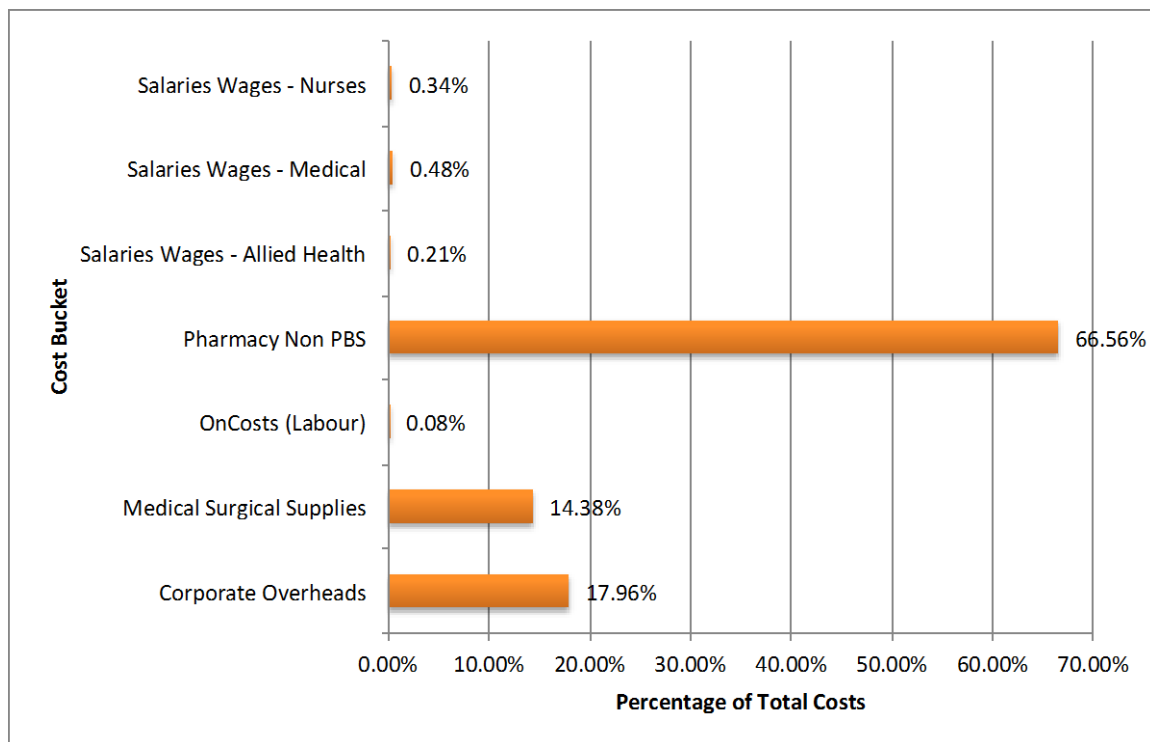
A total of 4 patients (8.51%) were admitted to hospital during the study period. The days attributed to an inpatient episode were not included in the costing process. During the inpatient stay, the cost of total parenteral feeds are included in the inpatient costs and supplied by the hospital. Stocks maintained by the patient at home are used (within expiration periods) once the patient is discharged. As such, this transition in service delivery from home-based services to inpatient services does not result in any unaccounted costs being incurred by the hospital that are not addressed through existing funding frameworks.

The data set represents a total expenditure of \$415,477 for those patients deemed to be within scope of the study. The patient contribution towards HTPN overall is considerably less than that identified for HEN services reflecting the respective jurisdictional policies outlined in Table 3.4. There were no patient contributions recorded for those patients within scope of the study.

Accordingly, the hospital incurred costs of \$415,477 reported in the dataset for the 47 patients translates to an average cost of \$8,839.94 per patient.

Pharmacy costs, largely related to the solutions and additives, represent the major cost contribution (66.6%) to the overall expenditure for home total parenteral nutrition services (refer Figure 4.2).

Figure 4.2: Proportion of HTPN costs by cost bucket



4.3 The Home Mechanical Ventilation-Dataset

This dataset contains information from five hospitals and covers 127 patients of which 121 were deemed to be within scope of the study (refer Table 4.9). A total of 1,036 individual days are listed in the dataset containing costs from one or more cost buckets for the 121 patients deemed to be within scope of the study.

Table 4.9: Total number of days for which a cost was allocated by hospital

State	Name	Study Period	End date	Number of In-Scope Patients	Total days covered by hospital survey	Total number of days with cost attributed
SA	Adelaide Women's & Children's Hospital	15/07/14	12/08/14	13	29	377
WA	Princess Margaret Hospital	8/09/14	21/09/14	36	14	128
	State wide service - VDO	1/08/14	28/08/14	9	28	252
VIC	Austin Hospital	1/09/14	17/09/14	61	17	242
NSW	Westmead Hospital	8/09/14	4/10/14	2	28	37
Total				121		1,036

The total expenditure reported in the dataset is \$2,166,126 for 121 patients, which translates to an average of \$17,901.87 per patient. There are no co-payments involved in the provision of home ventilation support services.

The majority of patients were on non-invasive ventilation support, with 10 patients having been identified as weaned from invasive to non-invasive ventilation during the course of the data collection period (refer Table 4.10).

Table 4.10 Total number of patients by mode of ventilation support

State	Hospital	Number of patients on Invasive Ventilation Support	Number of patients on Non-Invasive Ventilation Support	Number of patients weaned from Invasive to Non-Invasive Ventilation Support
SA	Adelaide Women's & Children's Hospital	10	3	
WA	Princess Margaret Hospital	4	22	10
	State wide service - VDQ	9	0	
VIC	Austin Hospital	15	46	
NSW	Westmead Hospital	1	1	
Total		39	72	10

Typically patients on invasive ventilation require some form of monitoring and are expected to incur higher costs due to this. The cost of the equipment is also identified in the literature as being higher for this cohort of patient than for those on non-invasive ventilation systems.

The data summarised in Table 4.11 shows that there is considerable variation in the cost profiles between the two methods of ventilation. This may warrant consideration in terms of splitting the Tier 2 HV class of 10.19 into two distinct classes typifying the mode of ventilation provided to the patient.

Table 4.11: Total number of patients an average cost per patient by mode of ventilation support

Ventilation Method	Number of Patients	Average Cost per Patient
Invasive	39	\$26,112.00
Non-Invasive	72	\$11,009.29
Both	10	\$488.21
Total	121	\$17,901.87

A total of 41 patients (33.88%) attended outpatient clinics 94 times during the course of the data collection. During this time the patient was still using the ventilation equipment and/or had in attendance a support care worker or nurse. The clinical support worker is in addition to the outpatient clinic staff consulted on the day. In recognition of the IHPA Tier 2 definitions, the costs associated with any home support staff or HV consumable incurred on these days were

not included in the cost profile for these patients. These costs are unlikely to be reported against the Tier 2 outpatient clinic specific to ventilation services attended by the patient. Whilst the costs are likely to be spread across other outpatient clinics based on full absorption costing, the result is to potentially understate the costs of the ventilation services outpatient clinic. Table 4.12 identifies the average cost of home-based resources consumed by the 41 patients on the days on which they visited the outpatient clinic.

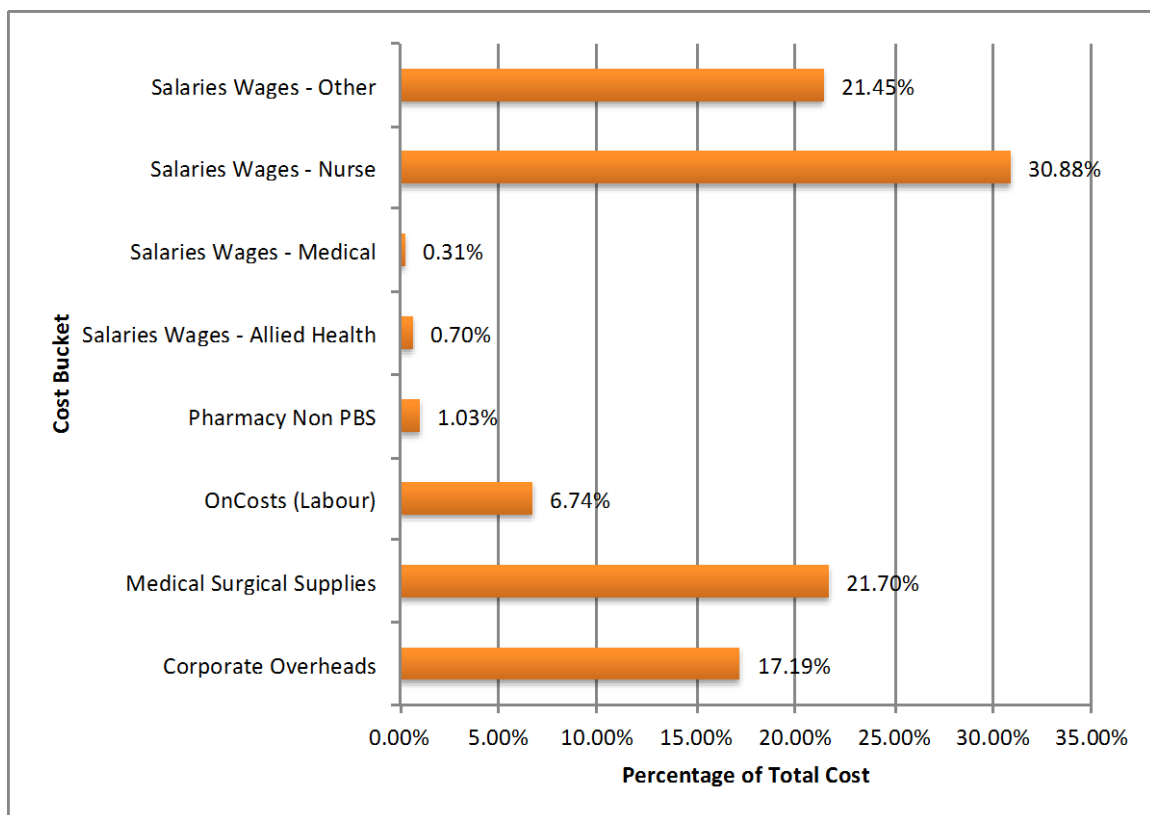
Table 4.12: Profile of HV patients that visits OPD during study period

Total number of HV Patients Attending OPD	Number of OPD Visits	Average Number of Visits	Average HV Cost Incurred Per OPD Visit
41	94	2.29	\$3,678.12

This is a significant cost and changes to the counting rules as well as improved cost allocation methods should overcome any shortfall in the computed cost of service delivery for ventilated patients.

The major cost contributor is from the nursing salaries and wages cost bucket (30.88% of all costs incurred by the hospital), as identified in Figure 4.3.

Figure 4.3: Proportion of HV costs by cost bucket



5. COUNTING AND FUNDING IMPACTS

The data collected through the respective collections enables unit costs of service delivery to be derived at the patient or per diem level. Respectively, these can then be rolled into an overall episode cost. Careful consideration however, needs to be given to defining the duration of an episode and the cost components that make up the episode of care.

Whilst it is not the remit of this study to recommend how these services should ultimately be counted or funded, the study has provided evidence that should be considered in the decision making processes to be followed by IHPA.

5.1 Counting Impacts

Currently the counting rules governing the acquittal of home enteral, home total parenteral and home ventilation support services are each based on a count of the continuous number of **days** in which a patient is in receipt of these respective services.

Placing the unit of count on days and not patient volume differs from the practice adopted for most other Tier 2 non-admitted classes. Thus, when aggregating the data to consider non-admitted activity profiles, home based enteral nutrition, home based total parenteral nutrition and home based ventilation support services need to be considered discretely and cannot be included in patient volume numbers or aggregate outpatient department activity quantifiers that are volume driven.

5.2 Costing Impacts

Application of the current Tier 2 definitions for the three services within scope of this study has also highlighted that for those days when the patient attends a outpatient department, costs associated with feed solutions, or support carer salaries and wages are still being incurred. Because the patient has attended an outpatient clinic, the day cannot be counted towards the home based service activity. Accordingly, these costs are not acknowledged or attributed to the home-based support service for these days either. It is highly unlikely that the costs of the feeds, or additional support staff are costed to the specific outpatient clinic visited by the patient on the day. It is anticipated, based on a fully absorbed costing methodology that these costs are potentially being spread across more than one outpatient clinic and as such understating the true costs of those outpatient clinics specifically related to nutrition services or ventilation services.

The study has also shown that for the home enteral nutrition service, there are varying policies in place across the jurisdictions regarding payment for the feeds. Specifically, some

jurisdictions, such as New South Wales, consider feeds within HEN to be a food. As such, the nutrition is not paid for by the Ministry of Health, rather patients are expected to cover the costs associated with the feeds. In other states, such as Queensland, patients are expected to provide a co-payment towards the cost of the feeds. For patients experiencing hardship, provisions exist in each of these states to assist with the payment of these consumables. In other states the Health Department fully funds all feeds and consumables, although some variable practice was also noted between the Western Australian hospitals.

Additionally, in the course of conducting the study, some jurisdictions indicated that they consider the outpatient attendances and the home delivered services occurring on the same day to be separate and discrete events. As such these jurisdictions consider it appropriate to count the activity twice; others do not.

The different payment and counting practices clearly impact upon the overall costing and acquittal methodologies adopted by the respective states. Together with the data collected through this study there is a growing level of evidence supporting the need for further work regarding the refinement of the overall Tier 2 definitions for these services.

5.3 Minimum Reporting Requirements

It is clear from the data collected through the study, that variable funding rates will have to apply depending upon the circumstances under which the home based services are being delivered. This is preferable than having multiple Tier 2 categories for these home based services, particularly when the volume of patients overall is relatively small.

Accordingly the following has been identified as the minimum set of data that should be submitted by hospitals to states and reported through to IHPA for each of the home based services covered by this study:

- 1) the number of patients in receipt of:
 - Home based enteral nutrition services;
 - Home based total parenteral nutrition services;
 - Home based invasive ventilation support services;
 - Home based non-invasive ventilation support services;
- 2) the number of days each patient was in receipt of home based services excluding days where the patient attended an outpatient clinic or was admitted as an inpatient;
- 3) the days where the patient attended an outpatient clinic or was admitted as an inpatient; and
- 4) the level of co-payment the patient as paid on a monthly basis.

These four data items collectively will enable IHPA to determine the appropriate level of funding to be applied to the service.

5.4 Bundling of Services

It is suggested that, if the above four items are reported as a mandatory set of data for the home based services, then the count is focused on the number of patients in receipt of a bundle

of services in a given month of reporting. This will align the counting rules of these three home based services with the majority of Tier 2 classes.


APPENDIX A: DATA COLLECTION TOOLS

The following provides a picture of the respective worksheets that made up the different data capture tools developed for each of the costing studies.

Each commenced with an Activation Sheet as depicted below.

Participating Hospital Questions

This file is	HEN	This file is called: Tier2_HEN.xlsx. Please save a copy of this in a safe place before you start filling in
Survey Period	First Day of Survey	
	Number of weeks	
	Last Day of Survey	



Guidance

Data is entered where cells are colour coded as:

choose from drop down list

"free text" entry.

All other areas are protected. Use filter and find as described in the User Guide. Save your file often and with alternative names.

Example

State or Territory	=	NSW
Local Health Service		Austin Health
Participating Hospital		Austin Hospital
Supervising Clinic name		Dietetics
Supervising Clinic Postcode (usually Hospital postcode)		3084

Person Completing this Survey

Name:		Mitchell Dabelstein
work email address:		mitchell.dabelstein@me.co
phone contact number:		0418890448

The data input columns/screens for each of the studies are replicated in the subsequent pages.

Home Enteral Nutrition																				
Patient Ref#	Patient Postcode	Gender	Date of birth (as D/M/Y)	Age	Date of service (as D/M/Y)	Tier 2	Adult or Paeds (must be entered)	Mode of Service	Service Type	Health Professional	Time taken (as hh:mm)	Solution Group	Solution Item	Product Brand	Issue Type	Quantity	Number Issued	Number per day/week/Month	Funding Type	Cost

Home Enteral Nutrition																				
Quantity	Number Issued	Number per day/week/ Month	Funding Type	Cost	Disposables	Number Issued	Number per day/week/ Month	Funding Type	Cost	Blood, Pathology, Drugs	Quantity	Cost	Equipment Group	Equipment Item	Purchase/ Loan/ Hire	Quantity	Number per day/week/ Month	Cost	Oncosts	Comment

	Home Ventilation (Invasive and Non-Invasive) Programs																				
Patient Ref#	Invasive/Non-invasive ventilation	Patient Postcode	Gender	Age	Date of service (as D/M/Y)	Tier 2	Adult or Child	Type of Service	Health Professional	Time taken (as hh:mm)	Consumables - Invasive	Consumables - Non-Invasive	Funding Type	Quantity	Equipment	Purchase/ Loan/ Hire	Quantity	Technical Support	Quantity	Oncosts	Comment

Home based Total Parenteral Nutrition																			
Patient Ref#	Patient Postcode	Gender	Date of birth (as D/M/Y)	Age	Date of service (as D/M/Y)	Tier 2	Adult or Child	Mode of Service	Type of Service	Details for type of service	Health Professional	Time taken (as hh:mm)	Solutions	Solution Additions/ Additives	Details for Additions /Additives	Quantity	Funding Type	Cost	Disposables
		Female	3/03/91	23		10.17 HTPN	Adult	Tube fed	Home visit	Medication review		0:10	Cornevit 10 mL	Additions_Additives_to_PN_Solution_by_Pt	Prefilled Syringes - Octreotide 500 mcg	1	Fully Paid By External Agency		10 mL Syringes

Home based Total Parenteral Nutrition																				
Solution Additions/ Additives	Details for Additions /Additives	Quantity	Funding Type	Cost	Disposables	Quantity	Funding Type	Cost	Blood, Pathology, Drugs	Quantity	Cost	Drugs	Quantity	Cost	Equipment	Purchase/ Loan/ Hire	Quantity	Cost	Oncosts	Comment (from list or free text)
Additions_Additives_to_PN_Solution_by_Pt	Prefilled Syringes - Octreotide 500 mcg	1	Fully Paid By External Agency		10 mL Syringes		Fully Paid By Consumer		B12			IAI-Caspofungin			Cough assist c not applicable				Administration	Correspond with other ...

APPENDIX B: DATA DEFINITIONS

The following definitions have been extracted from the IHPA Tier 2 non-admitted services compendium 2014-2015. They were used to guide the overall construct of the costing study and the data items collected throughout the study period.

B.1 Home Enteral Nutrition Services

The definition and unit of count is outlined in B1. It is based on the definitions contained in the Tier 2 non-admitted definitions manual and the exemplar provided by IHPA in the Tier 2 Non-admitted services compendium 2014-15¹⁰.

Table B1: Definition and unit of count for Enteral Nutrition – Home Delivered

Tier 2 Category	Definition	Resultant Unit of Count	Cost Coverage
10.18	Home Enteral Nutrition (HEN) performed by the patient in their own home without the presence of a healthcare provider may be counted as a non-admitted patient service event, provided there is documentation of the procedures in the patient's medical record	Number of continuous days the patient was in receipt of HEN services within their own home	Enteral feeds and other consumables associated with enteral feeding

Guidelines of the inclusion and exclusion of activity is summarised in the table overleaf (Refer B2).

¹⁰ Independent Hospital Pricing Authority; Tier 2 Non-admitted services compendium 2014-15

Table B.2: Inclusion and exclusion criteria for Enteral Nutrition – Home Delivered

Guide for use	
Activity	<p>Inclusions:</p> <ul style="list-style-type: none"> Enteral nutrition performed by the patient in their home without a health care provider present <p>Exclusions:</p> <ul style="list-style-type: none"> Total parenteral nutrition performed by the patient in their home without a health care provider present (10.17) Consultation or enteral nutrition education with a gastroenterologist where no enteral nutrition is undertaken (20.25) Consultation or enteral nutrition education with a dietitian where no enteral nutrition is performed (40.23)

Based on the definition provided by IHPA, the unit of count is the number of continuous days the patient is in receipt of home enteral nutrition. The strict application of the definition and associated inclusion and exclusion criteria results in the following being in-scope for the costing study for this service:

- Cost of enteral feeds
- Cost of consumables associated with enteral feeding in the home.

B.2 Home Total Parenteral Nutrition Services

The definition and unit of count is outlined in Table B.3. It is based on the definitions contained in the Tier 2 non-admitted definitions manual and the exemplar provided by IHPA in the Tier 2 Non-admitted services compendium 2014-15.

Table B.3: Definition and unit of count for Total Parenteral Nutrition – Home Delivered

Tier 2 Category	Definition	Resultant Unit of Count	Cost Coverage
10.17	Total Parenteral Nutrition (TPN) performed by the patient in their own home without the presence of a healthcare provider may be counted as a non-admitted patient service event, provided there is documentation of the procedures in the patient's medical record	Number of continuous days the patient was in receipt of TPN services within their own home	Total parenteral feeds and other consumables associated with total parenteral feeding

Guidelines of the inclusion and exclusion of activity is summarised in the following table (Refer Table B.4).

Table B.4: Inclusion and exclusion criteria for Total Parenteral Nutrition – Home Delivered

Guide for use	
Activity	<p>Inclusions:</p> <ul style="list-style-type: none"> TPN performed by the patient in their home without a health care provider present <p>Exclusions:</p> <ul style="list-style-type: none"> Enteral nutrition performed by the patient in their home without a health care provider present (10.18) Consultation or TPN education with a gastroenterologist where no TPN is undertaken (20.25) Consultation or TPN education with a dietitian where no TPN is performed (40.23)
Conditions	<p>Inclusions:</p> <ul style="list-style-type: none"> Intestinal failure
Constraints	

Based on the definition provided by IHPA, the unit of count is the number of continuous days the patient is in receipt of home total parenteral nutrition. The strict application of the definition and associated inclusion and exclusion criteria results in the following being in-scope for the costing study for this service:

- Cost of total parenteral feeds
- Cost of consumables associated with parenteral feeding.

B.3 Home Ventilation Services

The definition for home ventilation was developed after the home feeding definitions and is more developed.

The definition an unit of count is outlined in Table B.5. It is based on the definitions contained in the Tier 2 non-admitted definitions manual and the exemplar provided by IHPA in the Tier 2 Non-admitted services compendium 2014-15.

Table B.5: Definition and unit of count for Ventilation – Home Delivered

Tier 2 Category	Definition	Resultant Unit of Count	Cost Coverage
10.19	<p>Home ventilation* performed by the patient in their own home without the presence of a healthcare provider may be counted as a non-admitted patient service event, provided there is documentation of the procedures in the patient's medical record.</p> <p>In-scope services include:</p> <ul style="list-style-type: none">• bi-level positive airway pressure (BiPAP)• continuous positive airway pressure (CPAP)• diaphragm pacing• negative pressure ventilation (iron lung)• ventilation via tracheostomy	Number of consecutive days a patient is in receipt of invasive or non-invasive ventilation in their own home	Cost of supplies

Guidelines of the inclusion and exclusion of activity is summarised in the following table (Refer Table B.6).

Table B.6: Inclusion and exclusion criteria for Ventilation – Home Delivered

Guide for use	
Activity	
Conditions	<p>Note: Only service events for ventilator dependent patients are classified as in scope public hospital services eligible for Commonwealth funding under the National Health Reform Agreement. Ventilator depend patients include:</p> <ul style="list-style-type: none"> • Patients who cannot maintain spontaneous ventilation for four or more consecutive hours • Patients who require non-invasive ventilation for a minimum of 18 hours per day • Patients who are geographically isolated where more than 16 hours ventilator support is required and where a replacement ventilator cannot be provided within four hours • Patients who require ventilation during mobility as prescribed in their care plan • Patients ventilated via tracheostomy for a minimum of eight hours per day <p>patients with central hypoventilation syndrome</p> <p>Inclusions:</p> <ul style="list-style-type: none"> • Bi-level positive airway pressure (Bi-PAP) • Continuous positive airway pressure (CPAP) • Diaphragm pacing • Negative pressure ventilation (iron lung) • Ventilation via tracheostomy <p>Exclusions:</p> <ul style="list-style-type: none"> • Consultation or education in medical respiratory clinic where no ventilation was undertaken (20.10) • Consultation or education in allied health/clinical nurse specialist respiratory clinic where no ventilation was undertaken (40.40)

Based on the definition provided by IHPA, the unit of count is the number of continuous days the patient is in receipt of home ventilation services. The strict application of the definition and associated inclusion and exclusion criteria results in the following being in-scope for the costing study for this service:

- Cost of supplies associated with ventilation (invasive or non-invasive) services