Safe Staffing

User Manual

Nursing Hours per Patient Day Model
(NHPPD)

This resource has been developed for nurses employed within the Department of Health and Human Services.

Version 3

Department of Health and Human Services

Tasmania
Explore the possibilities

Acknowledgements

The *Safe Staffing – User Manual – Nursing Hours Per Patient Day (NHPPD) model* is a resource document developed for nurses within the Department of Health and Human Services, Tasmania.

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The Department of Health and Human Services acknowledges *Western Australia's, Nursing Workload Monitoring System - User Manual*, which was used to assist the development of this document.

Background

The Western Australian Nursing Hours Per Patient Day nursing workload model was adopted by Tasmania through the *Nurses (Tasmanian public sector) Enterprise Agreement 2001*. The Consent Order, outlining the model, was endorsed through the Tasmanian Industrial Relations Commission in May 2003 and has continued in subsequent Nurses Enterprise Agreements.

NHPPD is a systematic nursing workload monitoring and measuring system that provides a guide to the number of nurses required for service provision within a specific clinical area. The NHPPD model is not designed as a rigid, mandatory determinant of staffing <u>but relies on clinical judgement to assess adequate staffing to deliver care on a daily basis.</u> The model is used to calculate the number of direct nursing hours required to provide patient care and as a framework to establish a nursing roster.

The NHPPD model (Acute Care Areas only) consists of seven (7) categories that contain specified criteria for measuring diversity, complexity and nursing tasks required within a ward/unit. The categories are aligned with a nursing hour value over a 24-hour period ranging from 3.0 hours to 7.5 hours per patient. These are collectively termed the NHPPD Guiding Principles.

The Guiding Principles detail the hours of *direct care* only for patients in a range of clinical settings however, they do not fit all service areas where nurses are required to work. *Indirect care* hours (e.g. nurse unit manager, clinical nurse educator) and leave allowances are not included in the guiding principles – they are added to the nursing hours after the direct care hours have been calculated.

The model was reviewed during 2007 resulted in the **NHPPD Model, Order by Consent, No 1 of 2008**, which became operational in December 2008. This document can be found at:
http://www.tic.tas.gov.au/__data/assets/pdf_file/0019/115264/Nurses_Tas_Public_Sector_-_T13323.pdf
The NHPPD model is used by Western Australia, Tasmania and the Northern Territory.

This resource manual is one of a suite of educational documents to assist Nurse Managers to understand demand and supply of nursing resources. Additional resources include:
- *Unit Management: A Resource Manual for Nurse Managers*
- *Nurse Rostering: A Guide for Nurse Managers within the DHHS*
- *DHHS e-Staffing tool*

Aim

The aim of this user manual is to:
- Outline the application of the NHPPD model within the DHHS; and
- Guide staff on how to benchmark ward/unit areas where nurses work.

Mapping

All inpatient wards/units are mapped against the NHPPD Guiding Principles and based on accessible data, information and professional judgement. Nursing hours and subsequent full time equivalents (FTE) are calculated on the average daily occupancy over the previous two (2) years for each ward/unit.

NHPPD Application Guidelines

- Where applicable, nursing hours are sourced from the staff rostering system, ProAct.

- Patient hours are sourced from the Patient Administration System (PAS).

- Nursing hours and patient activity are reported on a monthly basis and are to capture the first to the last day (inclusive) of each month.

- Sites must be able to verify by audit that the data submitted is accurate and complies with the application guidelines.

- Monthly NHPPD reports will include but are not limited to:
  o NHPPD patient category;
  o Average Daily Occupancy;
  o Direct nursing hours total;
  o Actual NHPPD;
  o Benchmarked NHPPD;
  o Direct nursing hours variance;
  o Direct nursing hour variance as a percentage;
  o Patient turnover as percentage; and
  o Percentage of Emergency Patient Admissions.

- Data is to be provided for the month and for the year to date.

- Monthly nurse staffing reports will include a breakdown of the monthly and year to date basis of the productive (direct and indirect) and non-productive nursing hours including the following: casual, overtime, permanent part time, fixed term part time, permanent full time, fixed term full time.

- When calculating NHPPD, two (2) years of data are to be used, if available. One (1) year of data may be used when calculating NHPPD for Acute Emergency Departments.

- Nurses providing direct care only will be included (e.g. Nurse Unit Managers, Clinical Nurse Educators and other budgeted indirect hours are not counted).

- Total nursing hours providing direct patient care will comprise of any approved, paid hours worked including overtime and allocated time off in lieu (TOIL). When TOIL has been taken, the direct hours will be deducted from the unit nursing hours for that day.

- Total nursing hours declared will include direct patient care provided by permanent, temporary, casual, agency, or pool nurses.

- Nursing hours worked are calculated on the shift duration provided to a ward/unit by the nurse (excluding any unpaid meal break) starting from the shift start time, regardless if the shift overflows to the next day or next roster.

- Non-productive hours relating to nurses on any type of paid leave are excluded (including, but not limited to personal[1] leave, annual leave, workers compensation, study leave, maternity leave, compassionate leave, family leave, parental leave, accrued day off, professional development leave, etc).

- Standard orientation consists of up to five (5) days for new staff, and up to ten (10) days for new graduates. This includes standard agency induction and the facility/health service based orientation. These hours are calculated as indirect nursing hours.

- The additional allocation of indirect hours for supernumerary practice is at the discretion of the NUM in collaboration with their Manager.

- Patient activity data for calculation of NHPPD will include, but not be limited to, items listed in the NHPPD Guiding Principles (see NHPPD consent Order, No 1 of 2008).
  http://www.tic.tas.gov.au/__data/assets/pdf_file/0019/115264/Nurses_Tas_Public_Sector_-_T13323.pdf

- One (1) category from the NHPPD Guiding Principles is to be used when benchmarking a ward/unit. A maximum of two (2) categories can be used where patient care requirements clearly differ (e.g.: ward patients / high dependency patients).

- All patient hours are counted.

- Patients on leave are not counted in the activity data.

- Boarder hours will be excluded (see definition below).

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[1] Fairwork Act 2009 – Personal leave includes sick leave and carers leave

NHPPD Data Definitions

Productive nursing hours	Include paid nursing time for direct and indirect nursing hours.
Direct hours	Include nursing hours that deliver direct patient care.
Indirect hours	Include nursing hours that are not available for patient care.
Non-productive hours	Any type of paid leave for nurses. This includes but is not limited to: personal leave, annual leave, workers compensation, study leave, maternity leave, compassionate leave, family leave, parental leave, accrued day off, professional development leave, etc.
Boarder patient	A person who is receiving food and/or accommodation but for whom the hospital does not accept responsibility for treatment and/or care (e.g. a person assisting with care).
Patient Care Day	Refers to the actual time that patients are present on a ward/unit, presented in decimalised days.
Average Daily Occupancy	The number of patient care days divided by specified number of days within a given timeframe (i.e. calendar month, year).
Turnover %	Admissions, discharges, and transfers in and out divided by the Patient Care Days over a selected period, expressed as a percentage.

NHPPD Guiding Principles

(Incorporating Mental Health Inpatient Units - MH)

Ward Category	NHPPD (Over 24hrs)	Criteria for measuring diversity, complexity and nursing tasks required

A	**7.5**	High Complexity
		High Dependency Unit @ 6 beds within a ward
		Tertiary Step Down ICU
		High Intervention Level
		Specialist Unit/Ward Tertiary Level 1:2 staffing
		Tertiary Paediatrics
		MH- high risk of self harm and aggression
		    -intermittent 1:1/2 Nursing
		    -Patient frequently on 15 minutely observations

B	**6.0**	High Complexity
		No High Dependency Unit
		Tertiary Step Down CCU/ICU
		Moderate/High Intervention Level
		Special Unit/Ward including extended secure Mental Health Unit
		High Patient Turnover (1) > 50%
		FHHS Paediatrics (2)
		Secondary Paediatrics
		Tertiary Maternity
		MH – high risk of self harm and aggression
		    - Patients frequently on 30 minute observations
		    - Occasional 1:1 Nursing
		    - a mixture of open and closed beds

C	**5.75**	High Complexity Care Unit/Ward Moderate Patient Turnover > 35%, OR Emergency Patient Admissions > 50% **MH** – Moderate risk of self harm and aggression - Psychogeriatric Mental Health Unit
D	**5.0**	Moderate Complexity Acute Rehabilitation Secondary Level Acute Unit/Ward Emergency Patients Admissions > 40% OR Moderate Patient Turnover > 35% Secondary Maternity **MH** – Medium to low risk of self harm and aggression
E	**4.5**	Moderate Complexity Moderate Patient Turnover > 35% Sub Acute Unit/Ward Rural Paediatrics
F	**4.0**	Moderate/Low Complexity Low Patient Turnover < 35% Care Awaiting Placement/Age Care Sub Acute Unit/Ward **MH** - Slow stream rehabilitation
G	**3.0**	Ambulatory Care including: Day Surgery Unit and Renal Dialysis Unit

(1) Turnover = Admissions + Transfers (in and out) + Discharges divided Patient Care Days over the selected period.

(2) FHHS (Fremantle Hospital & Health Service) Paediatrics additional formulae: Birth; Neonates; ED; OR.

Benchmarking

According to the *Nurses (Tasmanian Public Sector) Enterprise Agreement 2007, Order by Consent (1) of 2008:*

> "The CEO / Director of Operational Unit and/or delegate in conjunction with the relevant Nurse Unit Manager will calculate, using the NHPPD for each category, the total number of nursing hours relevant to the ward or other clinical units where nursing services are provided and compare it to actual staffing levels assessed against occupancy levels and activity levels."

> "The Director of Nursing[2] and the Nurse Unit Manager will review and forward the calculations and outcomes to the CEO/Director of Operational Unit for review and then forward to the Workload Monitoring Committee."

The NHPPD for a ward or unit is determined by applying the criteria within the NHPPD Guiding Principles, retrospective data regarding patient activity and occupancy from the previous two (2) years (where available) and professional judgement. This process is called 'Benchmarking'. The patient activity data is sourced from the Patient Administration System (PAS).

The benchmarked nursing hours (supply) is reviewed annually or as required if clinical judgement indicates changes in patient activity or service delivery (demand). This can be done by entering data into the *DHHS e-Staffing Tool* or manually using the steps within this resource manual.

NB: Your business manager will provide support during this process

Workload models and calculations for the following clinical areas have been endorsed by the DHHS NHPPD Steering Committee:

- Medical / Surgical inpatient wards/units
- Intensive Care / Coronary Care / High Dependency Areas
- Emergency Departments
- Operating rooms

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[2] Director of Nursing refers to Executive Director of Nursing (EDON) unless the position of DON is relevant to the service area (eg: Mental Health Services).

Benchmarking
General Medical or Surgical Wards

Manual Steps to determining the NHPPD category of your ward/unit

The appropriate NHPPD ward category and associated nursing hours per patient day over a 24 hour period can be determined using the following steps:

Step 1:
Determine the average number of beds available daily on the Ward/Unit.

- Consider if the number of available beds has changed during the previous two (2) years, or whether there are planned service changes in the next two (2) years?
- Consider if bed numbers fluctuate seasonally?

Step 2:
Obtain the following Ward/Unit data from the Patient Administration System (PAS) via *For Your Information* (FYI) reports for the previous two (2) years (where applicable).

Determine the number of Patient Care Days (PCDs) for the previous two (2) years.

> Obtain access to the Patient Administration System (Review the *For Your Information* – (FYI) reports by selecting the hospital, ward, and previous two (2) year timeframe.
>
> Review Patient Care Days for previous 2 years. This can be done for each year separately, or over the 2 year period.
> **e.g.: June 2008 – June 2010: Patient Care Days =14,595.34**

Step 3:
Determine the Ward/Unit average daily occupancy:

> **A:** Divide the Patient Care Days by 2 (years) to establish an annual average Patient Care Days total.
>
> **B**: Divide the annual average Patient Care Days by the number of days in one year (eg: 365 days) to establish the Average Daily Occupancy
>
> Eg: 14,595.34 (Patient Care Days) ÷ 2 = 7297.67 (annual average)
>   7297.65 ÷ 365 =**19.99 Average Daily Occupancy (round up to 20)**

Step 4:
Determine the Ward/Unit turnover percentage:

> Turnover percentage is equal to two (2) years retrospective data of total admissions plus separations and transfers in and out.
> Eg: Admissions = 4024 + Separations = 3004 + Transfers in and out = 2897
> Total = 9925
>
> Divide this figure by the PCDs.
> 9925 ÷ 14, 595.34 = 0.68
> Convert to percentage by X 100 = **68% Turnover %**

Determine the percentage of emergency admissions:

> - Retrieve data for the number of emergency admissions from the Emergency Department (ED) via EDIS for the previous two (2) years;
> - Obtain data from Patient Flow Manager (if system available);
> - divide this figure by the total admission number for the previous two (2) years.
>
> Eg: 2078 emergency admissions ÷ 4024 total admissions = 0.516
> Convert to percentage by X 100 = **51.6% Emergency Admissions**

Step 6:

Determine the NHPPD Category of the Ward/Unit:

> The NHPPD Category is determined from the Guiding Principles using the above activity data and review of patient complexity with input from senior nursing staff to reach consensus regarding the Ward/Unit categorisation.
>
> Top 20 Diagnostic Related Groups (DRGs) may assist if the complexity factor is unclear (*See Unit Management: A Resource Manual for Nurse Managers, Module 3 for explanation of DRGs*).

NB: NHPPD is not to be used as a rigid mandatory determinant of staffing because actual staffing arrangements must reflect health service specific criterion and rely on clinical judgement to assess safe staffing to deliver a high quality of care to patients on a daily basis.

Calculations for NHPPD can be achieved by:
- Manually following the steps in this manual; or
- Entering data into the DHHS e-Staffing tool.

Split ward categories

Some clinical areas have been identified as having two distinctive groups of patients that fall in two different categories from the NHPPD guiding principles. An example of a split ward would comprise a hospital-recognised high dependency area within a general medical / surgical ward. In this case, two categories from the NHPPD Guiding Principles may be used, and thus calculations need to be undertaken for both

Business case for additional indirect nursing care costs

The NHPPD workload model allows for direct patient care only. The Nurse Unit Manager (NUM) and the Clinical Nurse Educator (CNE) providing indirect care are additional to the NHPPD total.

Any additional indirect care hours must be approved through the Chief Executive Officer (CEO) after consultation with the Executive Director of Nursing (EDON). Additional indirect hours that have not been approved require a business case proposal to be submitted to the CEO by 30 April 2011.

Manual Steps to determining the nursing staff required for your Ward or Unit

Please note: this is an example ward only

Step 1: Identify unit category (A to G) from the Guiding Principles to establish the nursing hours per patient day (NHPPD). NHPPD represents the amount of time nurses spend with each patient each day.

Apple Isle Hospital – General Surgical Unit	
Ward Category (High complexity patients, turnover > 50%)	Category B
Benchmarked NHPPD	6.0 hours per patient day
Number of days ward open per week	7
Number of beds on ward	21
Average daily occupancy	20
Occupancy Level	95%

Step 2: Calculate the average nursing hours required per day for the ward/unit

Average daily occupancy X NHPPD Category = **Nursing Hours**

20 (Ave daily occupancy) X 6 hours NHPPD (Cat B) = **120 nursing hours required/day**

Step 3: Calculate the total nursing hours required per week:

120 nursing hours X 7 days = **840 nursing hours per week**

Step 4: Calculate the total nursing hours required to provide patient care per year:

840 nursing hours per week X 52 weeks per year = **43,680 nursing hours per year**

Step 5: Calculate the nursing FTE to cover hours required:

Eg: **FTE = Nursing Hours per year ÷ 1976 (38 hrs/wk x 52 wks)**
$= 43,680 ÷ 1976$
$= 22.1$ FTE

Step 6: Calculate the total nursing FTE required to provide leave relief for all staff:

- 1.23 is the required FTE to replace 10 weeks leave for shift workers;
  (52 weeks per year ÷ 42 working weeks = 1.23)

  > Eg: FTE = 22.1 shift workers
  >   = 22.1 X 1.23
  >   = **27.4 FTE required including leave relief for direct care staff**

- 1.18 is the required FTE to replace 8 weeks leave for day workers.
  (52 weeks per year ÷ 44 working weeks = 1.18)

  > Eg: FTE = 2 Day workers (NUM & CNE)
  >   = 2 X 1.18
  >   = **2.36 FTE required including leave relief for indirect nursing staff**

Total budgeted FTE for ward/unit = 29.76

Step 7:

Convert total direct nursing hours required into the ward/unit profile

Example:

am shift   = 6 staff X 8 hours   =   48.0
pm shift   = 5 staff X 8 hours   =   40.0
night duty = 3 staff X 10 hours =   30.0

Total direct hours per day   = 118 per day
Total direct hours per week   = 826 per week

840 direct hours per week – 826 direct hours per week = 14 direct hours additional per week

The additional 14 hours per week can be used to cover busy periods, theatre days, days or when many discharges are expected.

OR used as a short shift/s for an additional staff member on a busy day.

(Refer to the Nurse Rostering:: a Guide for Nurse Managers)

Example of shift profile over one week

Shift	Mon	Tues	Wed	Thurs	Fri	Sat	Sun	Total
AM	6	6	**7**	6	6	**6 + 6**	6	Target 840.00
PM	5	5	5	5	5	5	5	
ND	3	3	3	3	3	3	3	
Direct Hours Cover	118	118	126	118	118	124	118	840.00

NB: additional shifts have been added to cover busy period/ theatre days/ high discharge days.

Benchmarking
Intensive Care, Coronary Care and
High Dependency Units

Intensive Care, Coronary Care, and High Dependency Unit NHPPD are calculated based on occupancy data for each patient care component. Intensive care units and critical care units NHPPD measures are based on the national review of the *Australian Critical Care Nursing Workforce in Australia 2001- 2011* which was released by the Australian Health Workforce Advisory Committee (2002). This document was also the source for the development of the Coronary Care and High Dependency Unit models. These models are used in Western Australia and the Northern Territory.

A model has been established for Intensive Care and High Dependency Units at:
- Royal Hobart Hospital
- Launceston General Hospital
- North West Regional Hospital
- Mersey Community Hospital

The Nurse Unit Manager and Clinical Nurse Educator/s are in addition to direct patient care nurses and are not calculated in the NHPPD.

Intensive Care Unit Model Business Rules

- The model assumes that all patients are ventilated and therefore require a one nurse to one patient ratio.
- The model is based on and will be applied to available beds (total beds).
- The applicable NHPPD are **31.60.**
- The model provides a shift coordinator and admission nurse to address issues relating to workload, skill mix and turnover.
  - o The shift coordinator is provided for 26 hours per day, 7 days per week
  - o Admission nurse is provided for 24 hours per day, 7 days per week.
- A minimum of 10 beds is required to be entitled to utilise the shift coordinator for 26 hours (beds ÷10 X 26) or the allocation will be on a pro rata basis (i.e. 2.6 hrs per bed over 24 hours) and
- A minimum of 8 beds is required to be entitled to utilise the admission nurse for 24 hours (beds ÷ 8 X 24) or the allocation will be on a pro rata basis (i.e. 3 hrs per bed over 24 hours).

Formula Basis

	Formula	Example A	Example B
No of Available Beds		10	5
Assumptions (hours)			
Ventilated Bed = **1:1** (26 hours)	Beds x 26	260.00	130.00
Admission Nurse 1:8 (24 hours) or 3 hrs per bed	Beds ÷ 8 x 24 or Beds X 3	10 X 3 = 30.0	5 X 3= 15.0
Shift co-ordinator 1:10 (26 hours) or 2.6 hrs per bed	Beds ÷ 10 x 26 or Beds X 2.6	10 X 2.6 = 26.0	5 X 2.6=13.0
Total Hours =		316.00	158.00
NHPPD =	total hours required ÷ No of beds	**31.60**	**31.60**

Coronary Care Unit Model (Stand Alone) Business Rules

- The model is based on and will apply to, available beds (total beds).
- The applicable NHPPD are **14.16**
- The model provides a shift coordinator to address issues relating to workload, staff mix and turnover for stand alone units (i.e. 6 beds or greater).
- The shift coordinator is provided for 26 hours per day, 7 days per week.
- A minimum of 10 beds is required to access the shift coordinator for 26 hours   (beds ÷10 X 26) or pro rata (i.e. 2.6 hrs per bed).
- A unit less than 6 beds is unlikely to have stand alone status and be incorporated into a ward environment using split NHPPD category calculations.

Formula Basis

	Formula	Example A	Example B
No of Available Beds		12	6
Assumptions – hours			
Staffing = **1: 2.25** (26 hours)	Beds x 26 ÷ 2.25	138.67	69.3
Shift co-ordinator 1:10 (26 hours) or 2.6 hrs per bed	Beds ÷ 10 x 26 or Beds X 2.6	31.20	15.6
Total Hours		169.87	84.9
NHPPD =	total hours required ÷ No of beds	**14.16**	**14.16**

High Dependency Unit Model (Stand Alone) Business Rules

- The model is based on and will apply to, occupied rather than available beds where the occupancy is less than 90%.
- The applicable NHPPD is **12.00**.
- The model provides a shift coordinator to address issues relating to workload, staff mix and turnover.
- The shift coordinator is provided for 16 hours per day, 7 days per week.
- A minimum of 6 beds is required to access the shift coordinator (beds ÷ 10 X 16) or pro rata (i.e. 1.6 hrs per bed).
- A unit less than 6 beds is unlikely to be a stand alone status and be incorporated into a ward environment using split NHPPD category calculations.

Formula Basis

	Formula	Example A	Example B
No of Available Beds		5	6
Assumptions – hours			
Staffing = **1:2.5** (26 hours)	Beds x 26 ÷ 2.5	52.0	62.4
Shift co-ordinator 1:10 (16 hours) or 1.6 hrs per bed	Beds ÷ 10 x 16 or Beds X 1.6	5 X 1.6 = 8.0	6 X 1.6=9.6
Total Hours		60.0	72.0
NHPPD =	total hours required ÷ No of beds	**12.00**	**12.00**

Benchmarking
Emergency Departments

Emergency Departments (ED) function as stand-alone units for the initial assessment and management of all self-presenting and acute referrals on a 24 hour basis.

The driver of nursing workload in the ED is:
- Volume of attendance
- Australasian Triage Score
- Length of Stay (LOS) in the department
- Size of the department
- Size of the Observation Ward (if any)

ED Application Rules

- The basis of the model is the Australasian (previously National) Triage Scores (ATS) where patients are prioritised according to their need for medical care. In smaller hospitals the Emergency Service functions within or together with the ward environment.

- The data sources are agreed for all sites.

- The ED Length of Stay is from admission to ED until discharge from ED.

- Patients that are admitted to an observation ward will be allocated 5.75 NHpPP (Nursing Hours per Patient Presentation).

- The Nurse Unit Manager (in-direct patient care) is in addition to direct patient care nurses.

- Shift Coordinator Allocation:

  o < 10,000 attendances/year– no shift coordinator
  o 10,000 – 30,000 attendances/year – assumes that there is one (1) shift coordinator already incorporated within the current roster format
  o 30,000 – 60,000 attendances/year – one shift coordinator

A triage category is allocated on presentation, which is dependant upon the assessed medical urgency in which treatment is required. Presentations that have a care plan are therefore outpatient occasions of service rather than ED occasions of service.

Table 1: The Australasian Triage Scale

Triage Category	Maximum waiting time
1 Resuscitation	Patient requires immediate treatment
2 Emergency	Patient should be treated within 10 minutes
3 Urgent	Patient should be treated within 30 minutes
4 Semi urgent	Patient should be treated within 60 minutes
5 Non urgent	Patient should be treated within 120 minutes

Definitions

- **Triage:** is defined as the sorting and allocating of aid on the basis of need for likely benefit from medical treatment.

- **Patient Assessment time**: the time taken for a nurse/s to fully assess the patient. This includes initial observations, wound review (where indicated), commencement of monitoring and other treatment modalities (e.g. intravenous cannula).

- **Ongoing care**: nursing time per hour or part thereof required for the ongoing nursing care of the patient whilst in the ED.

- **Triage ALOS**: Average Length of Stay (ALOS) from the time of triage until departing the ED to a ward, observation unit, inter-hospital transfer or mortuary.

- **Observation Ward:** only applies to sites with a designated observation ward. This is generally restricted to the larger hospitals that have a dedicated separately staffed emergency department rather than an emergency service that is staffed together with a ward based structure.

The ED model

Formula:
NHpPP = Main ED hours + OBS ward hours

> **NHpPP = (Assessment time) + (Ongoing Care component X ALOS) + (Ongoing Care) + Observation Ward (where applicable)**

NB: The additional Ongoing Care component is to allow for the time taken to prepare the patient for discharge destination from the ED.
* Each category has been nominated an initial assessment time and ongoing care.
* The average length of Emergency Department stay is used for each triage category **according to each hospital site data**.

Table 2: demonstrates how the model is applied (the average length of stay figures utilised are not reflective of Tasmanian Hospitals).

Triage	B	C	D	E	F=B+(CXD)+C	G	
	Pt Assessment	Ongoing Care (hrs)	ED ALOS	Time ALOS (CXD)	Total NH per patient (Assess+ time ALOS)	Care given during ALOS	# of Patients
Level 1	2	1	5.68	5.68	8.68	1.0 hr	
Level 2	1	0.5	3	1.5	3	30 mins	
Level 3	0.5	0.33	1.72	0.57	1.4	20 mins	
Level 4	0.5	0.25	1.33	0.33	1.08	15 mins	
Level 5	0.25	0.17	0.75	0.13	0.55	10 mins	
Observation ward					OBH X 5.75 ÷ 24		

* Columns B, C, and G are constant figures to be utilised in each calculation with column D which reflects **each hospital site triage category average length of stay**.
* Column F is the ongoing care in minutes (the hour or part thereof is column C which is used in the equation) and is added to allow for additional time needed for discharging the patient to their final destination such as ICU, Theatre or home.

* Data is collected for each triage category per hospital site and the average length of stay is calculated and placed in column D.

Observation Ward

Observation areas are designated as a category C, high complexity (5.75) ward area as per NHPPD Guiding Principles.

The hours for these areas are determined by the average occupied bed hours (OBH) X NHPPD Cat C, divided by 24 hours pro rata.

> **Average OBH X 5.75 ÷ 24 hours =**
> **Total NHpPP required for Observation Ward**
>
> E.g.: 1030 hrs (admitted to Observation area)
> 1430 hrs (Discharged from Observation area)
>
> 6 hrs (averaged hours) X 5.75 ÷ 24 = 1.4375 NHpPP hours

Benchmarking
Operating Theatre

In 2006, the DHHS, ANF and HACSU agreed to the implementation of the guiding principles developed by the Australian College of Operating Room Nurses (ACORN) Staffing Standard for Operating Suites at the RHH, LGH and NWRH (Burnie and Mersey campuses). In 2008 and 2010 the ACORN standards were reviewed.

The ACORN is the major professional national nursing organisation representing the interests of peri-operative nurses in Australia. National standards were developed by the college and are utilised by a number of national accreditation bodies for review of perioperative practice. The ACORN staffing requirements standard is used for staffing requirements within the operating suite.

The ACORN staffing formulae are presented as a guide rather than a rigid determinant for calculating staffing numbers. The national standards require interpretation and application at local level and adaptation to suit the clinical setting.

Staffing Requirements

The following principles have been developed for the calculation of nursing staff requirements:

- The number of operating rooms available for surgery and/or procedures each hour of each day is the basis for staffing requirements.

- The number of days available for surgery is to be scheduled will vary by health care facility, as will the number of public holidays and other leave.

- Allowance must be made for preparation (set up) and processing time per procedure or session. Complex surgery will require more preparation and processing time and must be included when calculating staffing requirements.

- Time for administrative functions associated with the conduct of surgery must also be included. For example the ordering, receiving, checking, processing and storage of relevant supplies and equipment, preparation (set up) and cleaning time (clean up) and processing of specialty equipment and documentation. For more complex surgery this time may need to be adjusted.

  (ACORN 2010, S19, p.11)

Direct nursing staff only is calculated within the model, however the ACORN standards do present recommendations for indirect staffing.

The 2010 ACORN calculation for direct staffing within the Operating Room is:

> **(Days per year) X (hours per day) X (number of nurses per room) X (number of operating rooms)**
> **÷ 1976 (Number of hours per year that one FTE works)**

- The number of days per year available for elective surgery in Tasmania is calculated by subtracting all weekends and public holidays.

- The number of hours per day required for elective surgery is calculated by the number of hours to be covered during normal working hours plus one hour for administrative functions.

- The number of nursing staff required is three (3). The ACORN model assumes each team will have an anaesthetic nurse circulating nurse plus instrument nurse for each procedure (see ACORN 2010, SS. 4.6). One of whom must be a Registered Nurse and one may be a suitably qualified Enrolled Nurse (ACORN 2010, S19, SS: 4.6, p.7-8)

   "This is dependent on the nature and complexity of procedures performed, and nursing staff being competent in intra-operative techniques, and who shall be available in, or out of, working hours as required by the facility" (SS 4.4 & 4.5, ACORN 2010, S19, p.7).

- As part of the calculation, **3.5** nurses are allocated to each operating room per elective session. This number 'allows for adequate education and supervision of all beginning practitioners' (ACORN 2010, S19, p.12).

- In some instances there may need to be four (4) nurses allocated to an operating room, for example where combined procedures are planned and there is the need for two (2) nurses in the instrument nurse role. Two (2) of these nurses must be Registered Nurses (ACORN 2010, S19, p.8).

The 2010 ACORN calculation for direct staffing within the Holding Bay

> **(Days operational per year) X (number of hours of operation)**
> **÷ 1976 (number of hours per year that one FTE works) = FTE**

- Due to the design of the operating suite the provision of a holding bay is essential to provide an area for patients to be assessed and supervised by nursing staff. It also assists in more efficient time management and operating room utilisation.

- NB: This facility is normally only available Monday to Friday during elective surgery hours (0800 – 1800 hours).

- Due to the changing nature of surgery the operating suite holding bay may be the point of entry for day surgery or day of surgery patients. If this is the case there will need to be additional appropriate numbers of suitably qualified nursing staff to manage this process. (ACORN 2010, S19, p 14)

The 2010 ACORN calculation for direct staffing within the Post Anaesthetic Recovery (PAR)

- There is a minimum of one (1) recovery nurse per operating room or feeder area in use plus one (1) other nurse.

- There must be a minimum of two (2) nurses present in an area whenever a patient is present in PAR. As least one nurse must be an experienced, competent recovery RN (ie: having a minimum of 3 years of experience).

- Whenever there are more than two (2) theatres or feeder areas in use the staffing levels shall provide for one (1) competent, experienced registered nurse per two (2) theatres or feeder areas plus one (1) other nurse.
(ACORN 2010, S19, p. 19)

The 2010 ACORN standard for staffing within the Endoscopy Unit

- Due to the requirement for endoscopy patients to have an anaesthetic (type will depend on patient), it is a requirement that there shall be a minimum team of three (3) nurses: anaesthetic nurse, circulating nurse and procedure nurse for each patient.

- It is also a requirement that one (1) extra person be supplied to clean the scopes. This person may be a non-regulated health care worker, who has undergone specialised training for this role.
(ACORN 2010, s19, p. 16)

The 2010 ACORN standard for staffing within a day surgery unit when included within a peri-operative service

The nurse-patient ratio and staff mix shall reflect the following considerations:
- The number of patients
- Average time required for preparation, post anaesthesia care, discharge, process and documentation requirements
- Patient acuity
- Staff with appropriate levels of competence.

Nursing staff levels in the admission and discharge areas shall be allocated at a minimum level of 1:4 nurse-patient ratio based on the following criteria:
- Patients undergoing nursing admission
- Patients awaiting transport home
- Patients with no family member, caregiver or significant other
- Patients who have undergone procedures requiring extended observation

(SS. 2, ACORN 2010, p. 5-6)

The 2010 ACORN calculation for replacement of non-productive hours (NPH) - clinical shift workers is:

> **(FTE x Number of non-productive weeks) ÷ (52 – Number of non-productive weeks) = FTE**

- However this must be based on the relevant Award for each State and Territory. (ACORN 2010, S19, p. 14)

- The appropriate formula to determine replacement of non-productive hours (also referred to as Leave Factor) for both direct and indirect staff was considered for use in the Tasmanian context during 2006.
- At this time the ACORN formula was compared to the DHHS Leave Factor calculation. The decision has previously been made for the Department Leave Factor to be used in all benchmarking activities (DHHS 2006 – Operating Suite Project).

> **To calculate the leave relief factor for shift-working FTEs:**
> Total number of FTE cover required to supply direct nursing hours X 1.23 = Direct FTE including leave relief
> (1.23 = 52 weeks per year ÷ 10 weeks leave)
>
> **To calculate the leave relief factor for day-working FTEs:**
> Total number of FTE cover required to supply indirect nursing hours X 1.18 = Indirect FTE including leave relief
> (1.18 = 52 weeks per year ÷ 8 weeks leave)