**Queensland** Government
Queensland **Health**

# Technical Supplement

*For the Measured Quality Hospital Report*

**July 2005**

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# Introduction

## Chapter 1

### 1.1 Overview

This report has been developed for the purpose of supplementing the 2005 Measured Quality Hospital Report. The purpose of the 2005 Measured Quality Hospital Report is to flag variation across a set of hospital performance indicators. With a focus on continuous quality improvement and to prompt further investigation at the hospital level, clinicians, management and investigating staff can refer to this Technical Supplement for specific details on the set of indicators used in the hospital report.

#### *1.1.1    Peer Grouping*

The hospitals covered in this report all provide acute hospital services yet they vary considerably in their size and the complexity of services provided. To make more meaningful comparisons, the hospitals were clustered into four more homogeneous peer groups.

The criteria used for the peer groupings used in this report were adopted from the key Australian Institute of Health and Welfare (AIHW) criteria:

>Size (measured in overnight separations per annum and actual expenditure);
>Geographic location (metropolitan verses provincial).

Additional criteria were adopted:

- Each peer group should have at least 10 members to allow quartiles to be calculated;
- Hospitals on the one campus should be in the same peer group;
- Include Moranbah & North Burnett HSD's so that every Queensland Health Service District is covered by the Measured Quality process.

# Clinical Utilisation and Outcomes

## Chapter 2

### 2.1 Overview

This documentation relates to the Measured Quality Project set up to investigate how individual hospitals and groups of similar hospitals performed in relation to measures such as in-hospital mortality, length of stay, complications of surgery and re-admissions. These measures were applied across a variety of patient cohorts formed from high burden, high cost medical conditions, surgical procedures, obstetrics and gynaecology, paediatrics and mental health.

The inclusion of three consecutive years of data allows a review over a wider period of time for those individual hospitals that were found to be statistical outliers within any of the years under consideration. If this longitudinal analysis indicates that there is a consistent problem, a more detailed study of processes of care related to the outcome is definitely warranted.

This supplement is to be read in conjunction with previous Technical Supplements and Measured Quality Hospital Reports.

### 2.2 Data

Data were obtained from the Queensland Hospitals Admitted Patients Data Collection (QHAPDC) and the Perinatal Data Collection (PDC). Both of these collections contain data for all public and private hospitals in Queensland. They are similar in content to administrative databases in the other States and Territories of Australia and are routinely maintained by Queensland Health.

The format of the QHAPDC has remained relatively constant since the early 1990's. It contains information under the general topics of demographic characteristics of patients, admission details, patient activity and morbidity details (including conditions treated and procedures performed). It is based on separations (an inclusive term meaning discharged, died, transferred or changed episode-type). That is, persons admitted and discharged more than once are included more than once in the collection.

The PDC began in November 1986, and was established to provide a source of information for research into obstetric and neonatal care. It contains key data on the mother's details, previous pregnancies, present pregnancy, labour and delivery, birth and postnatal details for the baby and discharge details for both mother and baby. Congenital anomalies and information regarding neonatal morbidity are also recorded. The collection is supplemented by information from Medical Certificates of Cause of Perinatal Death from the Registrar-General's Office.

Each record in both collections contains a unit record (or UR) number. It is important to note that the UR number is only unique for a given person within a given health facility i.e., a patient will most likely have different UR numbers if they are admitted to different facilities. Furthermore, the same UR number may be used for different people by different facilities. As a result, it is difficult to trace a patient from one hospital to another for the purposes of establishing outcome indicators across hospitals, such as readmissions.

The majority of conditions and procedures (ie CI01 – CI53) were selected based on criteria developed by the Victorian Department of Health (1999). In brief, the condition or procedure should have the following characteristics: clinical significance (in terms of burden, validity and relevance), data value (clearly defined, accessible, reliable and meaningful) and responsiveness (adverse outcomes are amenable to change through systematic improvements).

Reference groups of clinical experts from the various service areas were convened to provide specialist assistance in the selection of the final conditions/procedures and corresponding outcomes. These indicators were chosen from a set consisting of existing or potentially available Queensland Health indicators and indicators that were currently in use in other States and Territories or internationally.

### 2.3 Additional Criteria

To reduce variation in diagnostic and coding accuracy between hospitals, a variety of inclusion and exclusion criteria were applied for each condition or procedure of interest. These criteria were based on evidence from the literature and local clinical experience. For most of the      conditions/procedures, inclusions and exclusions

were based on the following data items: age group, length of stay, episode type, admission source, separation mode and State of usual residence. Criteria based on co-existing conditions, external causes and procedures performed were also used for some of the conditions/procedures.

All conditions and procedures were limited according to the date on which the separation occurred, acute episodes of care (or hospital stays that began with an acute episode of care and then went on to non-acute care) and patients who were Queensland residents. With the exception of paediatrics indicators, laparoscopic cholecystectomy and deaths due to AMI and stroke, conditions and procedures were also limited to overnight stay patients.


## 2.4 Outcome Indicators

Outcome indicators were selected on the basis of providing a meaningful measurement of quality of care for the associated condition/procedure and also being readily available from the routine data sources. Each outcome indicator is defined and discussed in more detail below.

### 2.4.1    In-Hospital Mortality Rate:

Defined as the number of records where separation mode = "05" (death) and length of stay was less than or equal to 30 days (pat_day <= "30"), divided by the total number of records.

In order to calculate the overall mortality rate (ie. including deaths after discharge from hospital), it would have been necessary to perform a labour-intensive matching process between the QHAPDC and death data obtained from the Australian Bureau of Statistics (ABS). Therefore it was decided to use in-hospital mortality as the outcome.

In most instances, same day deaths have been excluded by definition, as the scope of the project was overnight stay patients only. However, note that same day deaths have been included for AMI and stroke because they accounted for a significant number of the total deaths.

Table 2-1 shows the 30-day in-hospital mortality rate for the study cohorts for each of the relevant conditions/procedures of interest.

**Table 2-1 Selected Conditions/Procedures by 30-Day In-Hospital Mortality Rate, All Queensland Public Hospitals (FY2002– FY2004).**

| Condition/Procedure | 30-Day In-Hospital Mortality Rate (%) | | |
| --- | --- | --- | --- |
| | FY2002 | FY2003 | FY2004 |
| Acute Myocardial Infarction | 13.4 | 13.1 | 12.1 |
| Heart Failure | 6.6 | 7.0 | 6.8 |
| Stroke | 20.6 | 23.2 | 22.0 |
| Pneumonia | 6.7 | 6.4 | 6.4 |
| Diabetic Foot * | 1.7 | 3.2 | 1.3 |
| Fractured Neck of Femur | 6.8 | 4.9 | 6.8 |
| Knee Replacement – Primary * | 0.2 | 0.2 | 0.3 |
| Hip Replacement - Primary * | 0.3 | 0.2 | 0.2 |
| Hysterectomy * | 0.1 | 0.1 | 0.1 |
| Asthma * | 0.3 | 0.2 | 0.3 |
| Colorectal Cancer Surgery * | 3.2 | 3.0 | 2.1 |

Note:    *30-day in-hospital mortality was not used as an outcome measure for diabetic foot, knee replacement, hip replacement, hysterectomy, asthma or colorectal cancer surgery. In-hospital mortality was not available for the obstetric and paediatric cohorts (eg. standard primiparae).

### 2.4.2    Long Stay Rate:

Defined as the number of records where the number of patient days *equalled or exceeded* the long stay point, divided by the total number of records. Cases of in-hospital mortality prior to the long stay point were excluded from the calculation of the long stay rate, but patients who died on or after the long stay point were included for this indicator.

Acute Long Stay is defined as the number of records where the number of **acute** patient days equalled or exceeded the long stay point, divided by the total number of records. Like long stay rate, the cases of in-hospital mortality prior to the long stay point of total length of stay (acute and non-acute) were excluded from the calculation of the acute long stay rate. Patients who died on or after the long stay point were included for this indicator.

For the purposes of this project, the long stay point was chosen as the day closest to the 90th percentile of all eligible length of stays. Long stays were used as the outcome rather than average length of stay because long stays were thought to be a more sensitive indicator of quality of care. Additionally, long stays are expressed as a rate making this indicator consistent with all of the other indicators used. The long stay points for each of the selected conditions/procedures are shown in the specific indicator definitions.

### 2.4.3 Complications of Surgery Rate:

Defined as the number of records where **any** of the external cause codes was between "Y60"-"Y6999" or "Y83"-"Y8499", divided by the total number of records.

Table 2-2 shows the complications of surgery rate for all public hospitals for the procedures of interest.

**Table 2-2  Selected Conditions/Procedures by Complications of Surgery Rate for All Public Hospitals, Queensland, FY2002 to FY2004**

| Procedure | Complications of Surgery Rate (%) | | |
|---|---|---|---|
| | FY2002 | FY2003 | FY2004 |
| Fractured Neck of Femur | 11.2 | 10.5 | 13.4 |
| Knee Replacement – Primary | 10.2 | 12.7 | 10.9 |
| Hip Replacement – Primary | 13.6 | 15.0 | 12.4 |
| Abdominal Hysterectomy | 10.9 | 9.7 | 10.5 |
| Vaginal Hysterectomy | 8.7 | 8.6 | 8.4 |
| Prostatectomy | 11.1 | 12.6 | 11.5 |
| Colorectal Cancer Surgery | 22.1 | 26.2 | 24.5 |
| Laparoscopic Cholecystectomy | 3.0 | 4.0 | 3.8 |

Because the external cause codes used to define complications of surgery (ie "Y60"-"Y6999" or "Y83"-"Y8499") are not very descriptive, a breakdown of the diagnosis codes that "triggered" the complication code was included in the output.  This was done to provide clinicians with more detail about the type and seriousness of the complications.  The diagnosis codes that were used for this further analysis are shown in Table 2-3.

Both counts and percentages of the types of complications were provided.  Note that each patient with a complication could have more than one type of complication, and therefore it was quite possible for the total number of complications shown to exceed the number of patients reported as having complications.  Similarly, the percentages of complication type were based on the total number of patients with complications, rather than the total number of complications, and therefore the percentages for each hospital could add to more than 100%.

**Table 2-3  ICD-10.3-AM Definitions of Type of Complication**

| Type of Complication | Definition (ICD-10.3-AM Diagnosis Codes) | Note: nec = not elsewhere classified. Description |
|---|---|---|
| E89 | E89.0 – E89.9 | Postprocedural endocrine and metabolic disorders, nec |
| G97 | G97.0 – G97.9 | Postprocedural disorders of nervous system, nec |
| I97 | I97.0 – I97.9 | Postprocedural disorders of circulatory system, nec |
| J95 | J95.0 – J95.9 | Postprocedural respiratory disorders, nec |
| K91 | K91.0 – K.91.9 | Postprocedural disorders of digestive system, nec |
| M96 | M96.0 – M96.9 | Postprocedural musculoskeletal disorders, nec |
| N99 | N99.0 – N99.9 | Postprocedural disorders of genitourinary system, nec |
| T80 | T80.0 – T80.9 | Complications following infusion, transfusion and therapeutic injection |
| T81 | T81.1 – T81.3 T81.5 – T81.9 | Complications of procedures not elsewhere classified, excl T81.0, T81.4 |
| T81.0 | T81.0 | Haemorrhage and haematoma complicating a procedure, nec |
| T81.4 | T81.41, T81.42 | Infection following a procedure, nec |
| T82 | T82.0 – T82.9 | Complications of cardiac and vascular prosthetic devices, implants and grafts |

| T83 | T83.0 – T83.9 | Complications of genitourinary prosthetic devices, implants and grafts |
| T84 | T84.1 – T84.4 T84.6 - T84.9 | Complications of internal orthopaedic prosthetic devises, implants and grafts, excl T84.0, T84.5 |
| T84.0 | T84.0 | Mechanical complication of internal joint prosthesis |
| T84.5 | T84.5 | Infection and inflammatory reaction due to internal joint prosthesis |
| T85 | T85.0 – T85.9 | Complications of other internal prosthetic devices, implants and grafts |
| T88 | T88/Not specified | Other or unspecified complications of surgical and medical care, nec |

### 2.4.4 Amputation Rate:

The following table (Table 2-4) shows the ICD-10-AM procedure codes that were used to define amputations for persons admitted due to diabetic foot, foot ulcers or gangrene. The procedure block codes are shown in bold following the ICD code. Whether the procedure was considered to be a major or minor amputation is also specified.

**Table 2-4  ICD-10-AM Procedure Codes for Amputations to be used for the Diabetic Foot Cohort**

| Procedure | ICD-10.3-AM Code | Major/Minor |
|---|---|---|
| Amputation of toe | 44338-00 [1533] | Minor |
| Amputation of toe including metatarsal bone | 44358-00 [1533] | Minor |
| Disarticulation through ankle | 44361-00 [1533] | Major |
| Amputation of ankle through malleoli of tibia and fibula | 44361-01 [1533] | Major |
| Midtarsal amputation | 44364-00 [1533] | Minor |
| Transmetatarsal amputation | 44364-01 [1533] | Minor |
| Amputation above knee | 44367-00 [1484] | Major |
| Disarticulation at knee | 44367-01 [1505] | Major |
| Amputation below knee | 44367-02 [1505] | Major |
| Disarticulation through toe | 90557-00 [1533] | Major |

The amputation rate was defined as the number of records where at least one of these procedures was performed, with the denominator being the total number of records in the cohort. In other words, the amputation rate was based on the number of hospital stays during which an amputation occurred, rather than the number of *persons* in the cohort who had an amputation.

Table 2-5 displays the amputation rate for the Diabetic Foot cohort. Major and minor amputations were not analysed separately because there were insufficient numbers.

**Table 2-5  Selected Conditions/Procedures by Amputation Rate for All Public Hospitals, Queensland, FY2002 to FY2004**

| Condition | Amputation Rate (%) | | |
|---|---|---|---|
| | FY2002 | FY2003 | FY2004 |
| Diabetic Foot | 25.0 | 28.8 | 25.2 |

### 2.4.5 Under 35 Years of Age – Rate:

Defined as the number of records where age group was between "05" and "07" (i.e. 20-34 years), divided by the total number of records. The table below (Table2-16) shows the rate of patients aged less than 35 years for the hysterectomy cohort.

**Table 2-6  Selected Conditions/Procedures by Rate of Patients Aged Less Than 35 Years nd All Public Hospitals, Queensland, FY2002 to FY2004**

| Procedure | Rate of Patients Aged Less Than 35 Years (%) | | |
|---|---|---|---|
| | FY2002 | FY2003 | FY2004 |
| Hysterectomy | 9.9 | 10.6 | 9.8 |

### 2.4.6 Blood Transfusion Rate:

The following table (Table 2-7) shows the ICD-10-AM procedure codes that were used to define the outcome of

blood transfusion in the context of a surgical procedure. The procedure block codes are shown in bold following the ICD-10 code.

**Table 2-7 ICD-10-AM Procedure Codes for Blood Transfusion (Related to a Surgical Procedure)**

| Procedure | ICD-10.3-AM Code |
|---|---|
| Transfusion of whole blood | 13706-01 [1893] |
| Transfusion of packed cells | 13706-02 [1893] |
| Transfusion of platelets | 13706-03 [1893] |
| Transfusion of leukocytes | 13706-04 [1893] |
| Transfusion of gamma globulin | 13706-05 [1893] |
| Transfusion of autologous blood | 92060-00 [1893] |
| Transfusion of coagulation factors | 92061-00 [1893] |
| Transfusion of other serum | 92062-00 [1893] |
| Transfusion of blood expander | 92063-00 [1893] |
| Transfusion of other substance | 92064-00 [1893] |
| Exchange transfusion | 92206-00 [1893] |

The blood transfusion rate was defined as the number of records where at least one of these procedures was performed, with the denominator being the total number of records in the cohort. Table 2-8 displays the blood transfusion rate for the hysterectomy cohort.

**Table 2-8 Selected Conditions/Procedures by Rate of Blood Transfusions for all Public Hospitals, Queensland, FY2002 to FY2004**

| Condition/Procedure | Blood Transfusion Rate (%) | | |
|---|---|---|---|
| | FY2002 | FY2003 | FY2004 |
| Hysterectomy | 3.9 | 4.1 | 4.7 |

### 2.4.7 Caesarean Section Rate:

Defined as the number of records where the method of delivery was a lower section Caesarean section or classical Caesarean section (deliv_code = "4" or "5"), divided by the total number of records. This outcome was only used for the standard primiparae cohort, and so all records relate to singleton births. Social Caesarean sections are a subset of all Caesarean sections, and were included in the numerator. The rate of Caesarean sections within the standard primiparae cohort is shown in Table 2-9.

**Table 2-9 Selected Cohorts by Rate of Caesarean Sections for all Public Hospitals, Queensland, CY2000 to CY2001**

| Cohort | Caesarean Section Rate (%) | | |
|---|---|---|---|
| | CY2001 | CY2002 | CY2003 |
| Standard Primiparae – national definition | 21.3 | 23.4 | 24.4 |

### 2.4.8 Induction Rate:

Defined as the number of records where the onset of labour was induced (labour_onset = "2"), divided by the total number of records. This outcome was only used for the standard primiparae cohort, and so all records relate to singleton births. Social inductions are a subset of all inductions, and were included in the numerator. The rate of inductions within the standard primiparae cohort is shown in Table 2-10

**Table 2-10 Selected Cohorts by Rate of Induced Births for all Public Hospitals, Queensland, CY2001 to CY2003**

| Cohort | Induction Rate (%) | | |
|---|---|---|---|
| | CY2001 | CY2002 | CY2003 |
| Standard Primiparae – national definition | 31.5 | 31.6 | 30.1 |

### 2.4.9   Severe Perineal Tear Rate:

Defined as the number of records where there was a 3$^{rd}$ or 4$^{th}$ degree laceration of the perineum (perinm = "4" or "5"), divided by the total number of records for vaginal births. Births by Caesarean section were excluded. This outcome was only used for the standard primiparae cohort, and so all records relate to singleton births. The rate of third or fourth degree perineal tears within the standard primiparae cohort is shown in Table 2-11.

**Table 2-11   Selected Cohorts by Rate of Severe Perineal Tears for all Public Hospitals, Queensland, CY2001 to CY2003**

| Cohort | Severe Perineal Tear Rate (%) | | |
|---|---|---|---|
| | CY2001 | CY2002 | CY2003 |
| Standard Primiparae – national definition | 4.4 | 4.6 | 4.4 |

### 2.4.10   Readmission Rate:

Defined as the number of records where a readmission was identified divided by the total number of records. Readmissions were identified using probabilistic matching of identified data to allow inclusion of readmissions to a different facility as well as readmissions to the same facility. Episodes were matched using patient name (first name, surname and phonetic version of surname), date of birth, address (street, suburb and postcode), age and sex. To be considered a match, patients were required to be of the same sex and to have at least four of the other eight variables matching. A manual check was also conducted of potential matches to eliminate any false matches. Records were matched for acute episodes only to avoid counting hospitalisation for rehabilitation as a readmission. Transfers in and out were also excluded from the set to avoid counting transfers as a readmission.

Readmissions were considered for five indicators – depression, schizophrenia, AMI, heart failure and paediatric tonsillectomy/adenoidectomy. For depression and schizophrenia, an episode was considered to be a readmission if it occurred within twenty-eight days of an admission that was discharged home (separation mode='01') and if the patient had a principal diagnosis within the same range as for the original admission. An episode was considered to be a readmission for AMI and heart failure if it occurred within 30 days of the original admission from which the patient was discharged home (separation mode='01') and if the patient had the same principal diagnosis as for the original admission. An episode was considered to be a readmission for tonsillectomy/adenoidectomy if it occurred within 15 days of an admission for tonsillectomy/adenoidectomy that was discharged home (separation mode='01') and had a principal diagnosis code that could be considered a consequence of the procedure (haemorrhage, infection etc).

Table 2-12 shows readmission rates for the paediatric tonsillectomy/adenoidectomy cohort. Readmission rates for asthma were too low (<1%/yr) to allow analyses to be conducted at the level of facility. Results for this indicator are not reported.

**Table 2-12   Selected Cohorts by Rate of Readmission, All Public Hospitals, Queensland, FY2002 to FY2004**

| Condition/Procedure | Readmission Rates (%) | | |
|---|---|---|---|
| | FY2002 | FY2003 | FY2004 |
| Depression | 11.3 | 11.9 | 12.1 |
| Schizophrenia | 15.9 | 16.5 | 16.2 |
| AMI | 8.2 | 8.3 | 8.1 |
| Heart Failure | 10.7 | 9.9 | 10.8 |
| Tonsillectomy /Adenoidectomy (Age less than 15 years) | 3.3 | 3.5 | 3.7 |

## 2.5   Comorbidities

In an attempt to risk-adjust for illness severity and co-existing conditions, a range of comorbidities were considered for each of the main conditions/procedures of interest. These comorbidities were chosen based on a number of criteria, including their frequency of occurrence within the various cohorts (based on diagnosis codes other than the principal diagnosis), specialist medical advice, and evidence from the literature (where it existed).

Table 2-13 shows the ICD-10-AM definitions for the comorbidities (including selected complications of pregnancy), while Table 19 indicates which of these comorbidities were used in the risk-adjustment process for the various selected conditions/procedures.

Further explanation of the risk-adjustment process is contained in the "Methods" section.

**Table 2-13 ICD-10.3-AM Codes for the Comorbidities Used for Risk-Adjustment**

| Comorbidity | ICD-10.3-AM Code |
|---|---|
| Septicaemia | A40-A41 |
| Herpes | A60 |
| Malignancy | C00-C97 |
| Anaemia | D50-D64 |
| Disorders of Thyroid Gland | E00-E07 |
| Diabetes without complications | E10.9, E11.9, E13.9, E14.9 |
| Diabetes with complications | Other E10-E14 |
| Hyponatremia | E87.1 |
| Dementia (inc. Alzheimer's Disease) | F00-F03, G30-G31.1 |
| Parkinson's Disease | G20 |
| Epilepsy | G40 |
| Polyneuropathy (unspecified) | G62.9 |
| Hemiplegia | G81 |
| Other Retinal Disorders | H35 |
| Valvular Disorders | I05-I08, I33-I39 |
| Hypertension | I10-I15 |
| Ischaemic Heart Disease | I20-I25 |
| Cardiomyopathy | I42, I43 |
| Conduction Disorders | I44, I45 |
| Dysrhythmias | I46-I49 |
| Heart Failure | I50 |
| Cerebrovascular Disease | I60-I69 |
| Peripheral Vascular Disease | I70-I74 |
| Hypotension and Shock | I95, R57 |
| Acute LRTI and Influenza | J10-J22 |
| Asthma | J45, J46 |
| Other Chronic Obstructive Pulmonary Disease | J40-J44, J47 |
| Peritoneal Adhesions | K66.0 |
| Liver Disease | K70-K77 |
| Ulcer of lower limb or decubitus ulcer | L89, L97 |
| Renal Failure | N17-N19, R34 |
| Urinary Tract Infection (site not specified) | N39.0, T83.5 |
| Pre-existing Hypertension complicating Pregnancy | O10 |
| Gestational Hypertension without significant Proteinuria | O13 |
| Gestational Hypertension with significant Proteinuria | O14 |
| Haemorrhage in Early Pregnancy | O20 |
| Placenta Praevia with Haemorrhage | O44.1 |
| Premature Separation of Placenta | O45 |
| Antepartum Haemorrhage, nec | O46 |
| Gangrene (nec) | R02 |
| Acute upper RTI | J00-J0699 |
| Upper Respiratory Disease | J399-J3999 |
| Viral Infection – unspecified | B349-B3499 |
| Respiratory syndrome | B974-B9749 |
| Sexually transmitted diseases | A50- A6499 |
| Pre-existing hypertension complicating pregnancy with superimposed proteinuria | O11-O1199 |
| Epilepsy | G40-G4199 |
| Diseases of the circulatory system | I00-I9999 |
| Renal disease | N00-N3999 |

| Comorbidity | ICD-10.3-AM Code |
|---|---|
| Gestational diabetes | O2441, O2442 |
| Gestational hypertension/pre-eclampsia | O13-O1699 |
| Prolonged rupture of membranes | O4211, O4212 or O429 |
| Migraine | G43 |
| Intestinal disorders | K21, K52-K59 |
| Dorsalgia | M54 |
| Oedema | R60 |
| Open wound of wrist or hand | S61 |
| Burns | T20-T31 |
| Poisoning | T36-T50 |
| Social issues | Z55-Z78 |
| Cellulitis | L03 |
| Other urinary symptoms | R30-R39 |

Paediatric gastroenteritis and bronchiolitis have not been included in this table as they have not been risk adjusted for selected comorbidities.

## 2.6 Data Verification and Validation

To ensure that the data extracted from the QHAPDC and PDC agreed with the source information available at the hospital sites, a data verification process was undertaken. The purpose of this exercise was to guarantee the credibility and veracity of the data prior to it being published in the Hospital Reports.

In previous Phases, all hospitals in the peer groups Principal Referral and Specialised hospitals or Large Hospitals were provided with verification reports containing the total number of separations and the observed number of outcomes of interest for each indicator. Appropriate staff from each hospital were asked to review these reports, and advise and comment on any potential errors in the data. To assist with the verification process, standard programs were developed within Corporate Office, Queensland Health, to interrogate the data systems used within the hospitals. This process has been refined for Phase 4 and verification has been undertaken in conjunction with the Pricing Strategy Unit by replicating reports using transition data.

As a result of the verification process, most of the data in the Hospital Reports was confirmed to either match exactly or very closely with the raw data from the hospitals. In instances where the data did not match satisfactorily, data was examined at the level of individual records to determine why these differences existed. Data was then either corrected if possible or the reasons for the differences were documented.

Data from the Perinatal Data Collection could not be verified using the same approach, because at this point the source data is not stored electronically at individual hospitals. For the obstetrics indicators, verification was performed by staff from the Perinatal Data Collection and Client Services Units within Corporate Office, who independently confirmed the data derived for the Measured Quality Hospital Reports.

## 2.7 Methods

The statistical methods used in this study are an adaptation of those developed at the Health Services Research Group, University of Newcastle (*Determining the Potential to Improve the Quality of Care in Australian Health Care Organisations: Results from the ACHS Clinical Indicators Data 1998 and 1999, The Australian Council of Healthcare Standards, 2000*) and those employed in the Ontario Hospital Report (*Baker et. Al., 1999*). In brief, these methods involve adjusting the data for potential risk factors and then correcting for random variation in the outcome indicator. The degree of systematic variation over and above that due to chance can then be determined.

For each indicator, the first stage of the analysis involved calculating the risk-adjusted expected value for every hospital. The risk-adjustment was primarily based on age, sex and the selected comorbidities described earlier (refer to the "Comorbidities" section of this report). Some other factors were also included for particular cohorts. For example, Indigenous status was incorporated in the model for the diabetic foot cohort.

The expected values were obtained by fitting a logistic regression model to all of the relevant records in the cohort. The estimate of expected outcome for each record was then summed to the hospital level. Main effects only were defined in the models. Age, sex and all of the comorbities, were found to be non-significant for a particular outcome.

The predictive capability of these models was assessed using the c-statistic, which is equivalent to the area under the receiver operating characteristics (roc) curve, while the goodness-of-fit was determined using the Hosmer-Lemeshow test (*Hosmer DW Jr, Lemeshow S. Applied Logistic Regression. New York: John Wiley & Sons Inc;*

*1989*). The c-statistic ranges between 0 and 1, with a value of 0.5 indicating a predictive capability equivalent to chance. Models giving values of around 0.65 or higher are considered to have acceptable predictive power. Results of the Hosmer-Lemeshow test are reported in terms of a p-value. A p-value greater than 0.05 indicates that the model provides a good fit for the data. Results of these diagnostic statistics are shown below in Table 2- 14.

**Table 2-14 Diagnostic Statistics from the Logistic Regression Models Used to Calculate Risk-Adjusted Expected Values by Condition/Procedure-Outcome Pairings and All Public Hospitals, Queensland, FY2002 to FY2004**

| Condition/Procedure | Outcome Indicator | FY2002 | FY2003 | FY2004 |
|---|---|---|---|---|
| Acute Myocardial Infarction | In-Hospital Mortality | c = 0.810 p = 0.065 | c = 0.791 p = 0.008 | c = 0.803 p = 0.379 |
| | Long Stays | c = 0.813 p = 0.263 | c = 0.840 p = 0.750 | c = 0.864 p = 0.134 |
| | Readmissions | c=0.665 p=0.357 | c=0.637 p=0.581 | c=0.649 p=0.126 |
| Heart Failure | In-Hospital Mortality | c = 0.758 p = 0.255 | c = 0.754 p = 0.422 | c = 0.783 p = 0.496 |
| | Long Stays | c = 0.712 p = 0.980 | c = 0.753 p = 0.653 | c = 0.772 p = 0.547 |
| | Readmissions | c=0.620 p=0.428 | c=0.624 p=0.161 | c = 0.598 p = 0.996 |
| Stroke | In-Hospital Mortality | c = 0.682 p = 0.018 | c = 0.699 p = 0.367 | c = 0.698 p = 0.862 |
| | Long Stays | c = 0.682 p = 0.804 | c = 0.698 p = 0.420 | c = 0.719 p = 0.203 |
| | Acute Long Stays | c = 0.737 p = 0.607 | c = 0.743 p = 0.214 | c = 0.759 p = 0.782 |
| Pneumonia | In-Hospital Mortality | c = 0.867 p = 0.192 | c = 0.870 p = 0.001 | c = 0.853 p = 0.015 |
| | Long Stays | c = 0.792 p = 0.408 | c = 0.810 p = 0.696 | c = 0.787 p = 0.250 |
| Diabetic Foot | Long Stays | c = 0.740 p = 0.740 | c = 0.811 p = 0.107 | c = 0.758 p = 0.773 |
| | Amputations | c = 0.707 p = 0.456 | c = 0.726 p = 0.043 | c = 0.724 p = 0.173 |
| Fractured Neck of Femur | In-Hospital Mortality | c = 0.880 p = 0.448 | c = 0.833 p = 0.152 | c = 0.863 p = 0.720 |
| | Long Stays | c = 0.726 p = 0.491 | c = 0.689 p = 0.008 | c = 0.745 p = 0.187 |
| | Acute Long Stays | c = 0.744 p = 0.887 | c = 0.773 p = 0.561 | c = 0.774 p = 0.249 |
| | Comp. of Surgery | c = 0.783 p = 0.612 | c = 0.760 p = 0.161 | c = 0.756 p = 0.552 |
| Knee Replacement - Primary | Long Stays | c = 0.697 p = 0.946 | c = 0.744 p = 0.648 | c = 0.738 p = 0.586 |
| | Comp. of Surgery | c = 0.714 p = 0.882 | c = 0.692 p = 0.211 | c = 0.676 p = 0.890 |
| Hip Replacement - Primary | Long Stays | c = 0.781 p = 0.944 | c = 0.764 p = 0.2722 | c = 0.827 p = 0.662 |
| | Comp. of Surgery | c = 0.762 p = 0.768 | c = 0.700 p = 0.297 | c = 0.714 p = 0.938 |
| Hysterectomy | Under 35 Years of Age | c = 0.556 p = 0.755 | c = 0.553 p = 0.931 | c = 0.560 p = 0.759 |
| | Blood Transfusion | c = 0.693 p = 0.697 | c = 0.863 p = 0.498 | c = 0.908 p = 0.622 |
| Abdominal Hysterectomy | Long Stays | c = 0.614 p = 0.848 | c = 0.722 p = 0.991 | c = 0.716 p = 0.465 |
| | Comp. of Surgery | c = 0.617 p = 0.969 | c = 0.654 p = 0.837 | c = 0.706 p = 0.859 |
| Vaginal Hysterectomy | Long Stays | c = 0. 680 p = 0.988 | c = 0.756 p = 0.983 | c = 0.763 p = 0.904 |

| Condition/Procedure | Outcome Indicator | FY2002 | FY2003 | FY2004 |
|---|---|---|---|---|
| | Comp. of Surgery | c = 0.601<br>p = 0.983 | c = 0.670<br>p = 0.905 | c = 0.681<br>p = 0.971 |
| Standard Primiparae (national definition) | Caesarean Sections | c = 0.652<br>p = 0.571 | c = 0.623<br>p = 0.869 | c = 0.633<br>p = 0.926 |
| | Induced Births | c = 0.705<br>p = 0.008 | c = 0.678<br>p = 0.520 | c = 0.677<br>p = 0.099 |
| | Third or Fourth Degree Perineal Tears | c = 0.635<br>p = 0.969 | c = 0.607<br>p = 0.589 | c = 0.641<br>p = 0.564 |
| Maternal Postnatal Stay – Vaginal Births | Long Stays | c = 0.685<br>p = 0.747 | c = 0.693<br>p = 0.575 | c = 0.682<br>p = 0.085 |
| Maternal Postnatal Stay – Caesarean Section Births | Long Stays | c = 0.738<br>p = 0.926 | c = 0.761<br>p = 0.896 | c = 0.775<br>p = 0.782 |
| Asthma | Long Stays | c = 0.766<br>p = 0.302 | c = 0.775<br>p = 0.481 | c = 0.787<br>p = 0.612 |
| Colorectal Cancer Surgery | Long Stays | c = 0.799<br>p = 0.953 | c = 0.837<br>p = 0.727 | c = 0.774<br>p = 0.750 |
| | Comp. of Surgery | c = 0.694<br>p = 0.715 | c = 0.719<br>p = 0.118 | c = 0.666<br>p = 0.735 |
| Mastectomy | Long Stays | | c = 0.592<br>p = 1.000 | c = 0.650<br>p = 0.999 |
| Lumpectomy | Long Stays | | c = 0.778<br>p = 0.499 | c = 0.803<br>p = 0.162 |
| Prostatectomy | Long Stays | c = 0.710<br>p = 0.947 | c = 0.740<br>p = 0.721 | c = 0.770<br>p = 0.549 |
| | Comp. of Surgery | c = 0.792<br>p = 0.717 | c = 0.763<br>p = 0.823 | c = 0.804<br>p = 0.623 |
| Laparoscopic Cholecystectomy | Long Stays | c = 0.685<br>p = 0.556 | c = 0.673<br>p = 0.988 | c = 0.710<br>p = 0.576 |
| | Comp. of Surgery | c = 0.646<br>p = 0.888 | c = 0.727<br>p = 0.893 | c = 0.704<br>p = 0.950 |
| Paediatric Bronchiolitis | Long Stays | c = 0.607<br>p = 0.873 | c = 0.678<br>p = 0.896 | c = 0.628<br>p = 0.817 |
| Paediatric Gastroenteritis | Long Stays | c = 0.580<br>p = 0.509 | c = 0.550<br>p = 0.208 | c = 0.569<br>p = 0.895 |
| Paediatric Asthma | Long Stays | c = 0.703<br>p = 0.162 | c = 0.643<br>p = 0.621 | c = 0.659<br>p = 0.972 |
| Paediatric Tonsillectomy/ Adenoidectomy | Long Stays | c = 0.599<br>p = 0.802 | c = 0.588<br>p = 0.738 | c = 0.583<br>p = 0.943 |
| | Readmissions | c = 0.568<br>p = 0.843 | c = 0.579<br>p = 0.911 | c = 0.548<br>p = 0.784 |
| Schizophrenia | Long Stays | c = 0.603<br>p = 0.434 | c = 0.611<br>p = 0.712 | c = 0.612<br>p = 0.750 |
| | Readmissions | c = 0.538<br>p = 0.444 | c = 0.551<br>p = 0.041 | c = 0.564<br>p = 0.830 |
| Depression | Long Stays | c = 0.609<br>p = 0.489 | c = 0.695<br>p = 0.902 | c = 0.674<br>p = 0.947 |
| | Readmissions | c = 0.558<br>p = 0.542 | c = 0.584<br>p = 0.650 | c = 0.543<br>p = 0.433 |

Just under three-quarters of these models (108 out of 148) returned results showing an acceptable level of predictive capability, based on c-statistics ranging between 0.65 to 0.90. The remaining c-statistics were between 0.54 and 0.649, reflecting only moderate powers of prediction. In most instances, the c-statistics are quite stable for a particular cohort-outcome pairing across the three years of data analysis. This indicates that the factors included in the logistic regression models are not having wildly varying effects on the risk-adjustment across time.

Nearly all of the c-statistics lower than 0.65 were reported for the outcomes associated with the hysterectomy, standard primiparae, and paediatric indicators. This suggests that for these models there may be other factors responsible for the variation, which are not captured in the routine data set. In particular, no comorbidities were included in the models for the paediatric indicators (except paediatric asthma) - the risk-adjustment was limited to factors such as the age and sex.

The lack of predictive capability of the models with lower c-statistics is not of great concern because the risk-

adjustment is simply an attempt to allow for differences in casemix between the hospitals, and from that viewpoint it is only a secondary component of the data analysis. For example, the comorbidities that have been used are only a proxy in the absence of information about the severity of the condition being investigated. In any instance, risk-adjustment could never be expected to completely compensate for casemix differences between hospitals.

The Hosmer-Lemeshow test statistics indicated that most of the models provided a good fit for the data; in all but seven of the models the p-value exceeded 0.05. For each of the models where $p < 0.05$, the observed and expected values within most partitions still showed reasonable agreement. Therefore, it would seem that the low p-values for these models could be attributed more to the relatively large number of observations rather than that the models provided a particularly poor fit to the data.

Conversely, a large p-value from the Hosmer-Lemeshow test may indicate over-fitting of the model, hence removing real variation that exists between hospitals. Despite many of the models returning p-values greater than 0.4, over-fitting is unlikely to be a concern in this situation because the risk-adjustment was carried out at the level of individual patients rather than for aggregated hospital data. Thus, compared to the overall sample size, the number of predictors used for any particular model was small. Over-fitting is also typically characterised by unrealistically large standard errors for the regression variables (*Hosmer DW Jr, Lemeshow S; 1989*). Where a predictor was found to have large standard errors, it was either removed from the model or the levels of the predictor were collapsed if appropriate.

Once the data had been adjusted for potential risk factors, the next stage of the analysis was to assess systematic variation across hospitals occurring for each indicator-outcome pairing. Systematic variation is defined as the variation in outcome occurring across facilities over and above that due to chance (assessed as within-hospital variation). Within-hospital variation is the fluctuation of the observed versus expected outcome rates within each hospital. Excess within hospital variation is mainly caused by hospitals with relatively low volumes, where the ratio tends to be more volatile. The method used to assess systematic variation was developed by Martuzzi and Hills (*Am J Epidemiol 1995;141:369-374*).

The Martuzzi-Hills approach involves partitioning the within-hospital component of the variation from the between-hospital component, allowing the variation over and above that due to chance (i.e., the so-called systematic variation) to be determined. This is achieved by assuming that the true rate ratio (observed/expected) is drawn from a gamma distribution. When random Poisson variability is assumed for the observed values, this produces a negative binomial log-likelihood for the dispersion parameter of the gamma distribution. This dispersion parameter is equivalent to the systematic variation. Numerical methods can then be used to derive the associated maximum likelihood distribution, from which the point estimate and confidence interval for the systematic variation are obtained.

**Table 2-15  Systematic Variation by Condition-Outcome Pairing and All Public Hospitals, Queensland, FY2002 to FY2004**

| Condition/Procedure | Outcome Indicator | FY2002 | FY2003 | FY2004 |
|---|---|---|---|---|
| Acute Myocardial Infarction | In-Hospital Mortality | 0.070 (0.012 – 0.203) | 0.120 (0.045 – 0.284) | 0.064 (0.005 – 0.206) |
| | Long Stays | 0.155 (0.039 – 0.406) | 0.000 (0.000 – 0.099) | 0.098 (0.011 – 0.305) |
| | Readmissions | 0.206 (0.075-0.500) | 0.002 (0.000-0.090) | 0.088 (0.008-0.274) |
| Heart Failure | In-Hospital Mortality | 0.113 (0.028 – 0.317) | 0.030 (0.000 – 0.128) | 0.063 (0.005 – 0.211) |
| | Long Stays | 0.095 (0.019 – 0.281) | 0.028 (0.000 – 0.141) | 0.035 (0.000 – 0.145) |
| | Readmissions | 0.018 (0.000-0.135) | 0.056 (0.014-0.159) | 0.023 (0.000 – 0.094) |
| Stroke | In-Hospital Mortality | 0.000 (0.000 – 0.044) | 0.009 (0.000 – 0.066) | 0.000 (0.000 – 0.035) |
| | Long Stays | 0.215 (0.049 – 0.647) | 0.197 (0.009 – 0.713) | 0.352 (0.086 – 1.062) |
| | Acute Long Stays | 0.429 (0.171 – 0.976) | 0.370 (0.129 – 0.890) | 0.150 (0.030 – 0.424) |
| Pneumonia | In-Hospital Mortality | 0.000 (0.000 – 0.058) | 0.004 (0.000 – 0.084) | 0.075 (0.007 – 0.224) |
| | Long Stays | 0.034 (0.000 – 0.124 | 0.013 (0.000 – 0.076) | 0.012 (0.000 – 0.071) |

| Condition/Procedure | Outcome Indicator | FY2002 | FY2003 | FY2004 |
|---|---|---|---|---|
| Diabetic Foot | Long Stays | 0.080 (0.000 – 0.444) | 0.015 (0.000 – 0.306) | 0.494 (0.000 – 0.220) |
| | Amputations | 0.281 (0.076 – 0.829) | 0.025 (0.000 – 0.216) | 0.146 (0.034 – 0.481) |
| Fractured Neck of Femur | In-Hospital Mortality | 0.000 (0.000 – 0.124) | 0.362 (0.027 – 1.339) | 0.000 (0.000 – 0.118) |
| | Long Stays | 0.155 (0.000 – 0.607) | 0.391 (0.135 – 1.022) | 0.202 (0.041 – 0.658) |
| | Acute Long Stays | 0.449 (0.122 – 1.268) | 0.249 (0.031 – 0.830) | 0.257 (0.052 – 0.776) |
| | Complications of Surgery | 0.000 (0.000 – 0.091) | 0.000 (0.000 – 0.172) | 0.007 (0.000 – 0.181) |
| Knee Replacement – Primary | Long Stays | 0.000 (0.000 – 0.171) | 0.038 (0.000 – 0.300) | 0.104 0.000 – 0.534) |
| | Complications of Surgery | 0.181 (0.029 – 0.579) | 0.071 (0.001 – 0.304) | 0.047 (0.000 – 0.213) |
| Hip Replacement - Primary | Long Stays | 0.111 (0.000 – 0.512) | 0.000 (0.000 – 0.127) | 0.000 (0.000 – 0.272) |
| | Complications of Surgery | 0.071 (0.000 – 0.378) | 0.025 (0.000 – 0.200) | 0.000 (0.000 – 0.121) |
| Hysterectomy | Under 35 Years of Age | 0.062 (0.003 – 0.201) | 0.000 (0.000 – 0.069) | 0.007 (0.000 – 0.083) |
| | Blood Transfusion | 0.210 (0.029 – 0.664) | 0.0740 (0.000 – 0.482) | 0.793 (0.401 – 1.560) |
| Abdominal Hysterectomy | Long Stays | 0.265 (0.108 – 0.613) | 0.164 (0.048 – 0.428) | 0.376 (0.167 – 0.819) |
| | Complications of Surgery | 0.341 (0.111 – 0.850) | 0.000 (0.000 – 0.140) | 0.008 (0.000 – 0.174) |
| Vaginal Hysterectomy | Long Stays | 0.070 (0.000 – 0.271) | 0.198 (0.029 – 0.616) | 0.115 (0.001 – 0.446) |
| | Complications of Surgery | 0.738 (0.240 – 2.024) | 0.017 (0.000 – 0.281) | 0.012 (0.000 – 0.245) |
| Standard Primiparae (national definition) | Caesarean Sections | 0.017 (0.000-0.078) | 0.044 (0.011 – 0.121) | 0.019 (0.000-0.069) |
| | Induced Births | 0.008 (0.000-0.038) | 0.004 (0.000 – 0.035) | 0.002 (0.000-0.026) |
| | Third or Fourth Degree Perineal Tears | 0.006 (0.000-0.348) | 0.092 (0.000 – 0.409) | 0.097 (0.000-0.455) |
| Maternal Postnatal Stay – Vaginal Births | Long Stays | 0.315 (0.177-0.607) | 0.334 (0.184 – 0.655) | 0.332 (0.184-0.653) |
| Maternal Postnatal Stay – Caesarean Section Births | Long Stays | 0.434 (0.213-0.904) | 0.260 (0.118 – 0.571) | 0.306 (0.135-0.678) |
| Asthma | Long Stays | 0.080 (0.006 – 0.283) | 0.002 (0.000 – 0.133) | 0.040 (0.000 – 0.201) |
| Colorectal Cancer Surgery | Long Stays | 0.036 (0.000 – 0.327) | 0.043 (0.000 – 0.306) | 0.019 (0.000 – 0.258) |
| | Complications of Surgery | 0.159 (0.027 – 0.527) | 0.000 (0.000 – 0.077) | 0.086 (0.000 – 0.369) |
| Mastectomy | Long Stays | | 1.152 (0.331 – 3.829) | 0.801 (0.232 – 2.561) |
| Lumpectomy | Long Stays | | 0.682 (0.314 – 1.519) | 0.636 (0.265 – 1.517) |
| Prostatectomy | Long Stays | 0.104 (0.000 – 0.458) | 0.115 (0.000 – 0.586) | 0.038 (0.000 – 0.289) |
| | Complications of Surgery | 0.208 (0.005 – 0.922) | 0.150 (0.002 – 0.677) | 0.000 (0.000 – 0.155) |
| Laparoscopic Cholecystectomy | Long Stays | 0.355 (0.155 – 0.794) | 0.270 (0.130 – 0.565) | 0.376 (0.177 – 0.800) |

| Condition/Procedure | Outcome Indicator | FY2002 | FY2003 | FY2004 |
|---|---|---|---|---|
| | Complications of Surgery | 0.047 (0.000 – 0.413) | 0.107 (0.000 – 0.398) | 0.051 (0.000 – 0.254) |
| Paediatric Bronchiolitis | Long Stays | 0.260 (0.070 – 0.751) | 0.247 (0.061 – 0.767) | 0.176 (0.043-0.504) |
| Paediatric Gastroenteritis | Long Stays | 0.185 (0.085 – 0.410) | 0.158 (0.062 – 0.382) | 0.148 (0.057-0.355) |
| Paediatric Asthma | Long Stays | 0.228 (0.057-0.649) | 0.232 (0.068-0.652) | 0.480 (0.182-0.490) |
| Paediatric Tonsillectomy/ Adenoidectomy | Long Stays | 0.249 (0.043-0.849) | 0.285 (0.030-1.166) | 0.003 (0.000-0.442) |
| | Readmissions | 0.078 (0.000-0.757) | 0.306 (0.019-1.381) | 0.000 (0.000-0.285) |
| Schizophrenia | Long Stays | 0.128 (0.041-0.351) | 0.211 (0.087-0.516) | 0.402 (0.175-0.969) |
| | Readmissions | 0.033 (0.000-0.125) | 0.082 (0.028-0.228) | 0.081 (0.028-0.219) |
| Depression | Long Stays | 0.310 (0.117-0.776) | 0.354 (0.126-0.945) | 0.265 (0.097-0.716) |
| | Readmissions | 0.173 (0.054-0.468) | 0.147 (0.041-0.416) | 0.171 (0.051-0.490) |

For those condition-outcome pairings where the systematic variation was statistically significant, a potential "saving" for the outcome indicator at the whole of State level was calculated. This saving was based on all hospitals achieving an observed rate the same as that attained by the hospitals at the 20th percentile of the underlying gamma distribution. The 20th percentile was arbitrarily chosen as the "best practice" internal benchmark because it was considered to be a potentially achievable target. In fact, other research has suggested that targets should not be set any higher than the 10th percentile, otherwise the standards achieved by hospitals with the lowest adverse event rates are not adequately reflected in the results (*Gibberd and Coory, Statist. Med. 1998;17:2625-34*).

Therefore, by using the 20th percentage point of a gamma distribution with a mean of 1 and variation equal to the systematic variation calculated earlier, the potential "savings" for the indicators which showed statistical significance above that due to chance could be estimated. The "best practice" benchmarks are displayed in Table 2-16, while the potential savings are shown in Table 2-17.

**Table 2-16 Best Practice Benchmarks (20th Percentile) by Condition-Outcome Pairing and All Public Hospitals, Queensland, FY2002 to FY2004**

| Condition /Procedure | Outcome Indicator | FY2002 | FY2003 | FY2004 |
|---|---|---|---|---|
| Acute Myocardial Infarction | In-Hospital Mortality | 10.4 | 9.3 | 9.5 |
| | Long Stays | 6.3 | --- | 6.8 |
| | Readmissions | 5.0 | --- | 6.0 |
| Heart Failure | In-Hospital Mortality | 4.7 | --- | 5.3 |
| | Long Stays | 7.4 | --- | --- |
| | Readmissions | --- | 7.9 | --- |
| Stroke | In-Hospital Mortality | --- | --- | --- |
| | Long Stays | 6.5 | 4.1 | 4.4 |
| | Acute Long Stays | 5.1 | 5.3 | 7.7 |
| Pneumonia | In-Hospital Mortality | --- | --- | 4.9 |
| | Long Stays | --- | --- | --- |
| Diabetic Foot | Long Stays | --- | --- | --- |
| | Amputations | 13.7 | --- | 16.9 |
| Fractured Neck of Femur | In-Hospital Mortality | --- | 2.4 | --- |
| | Long Stays | --- | 5.5 | 8.1 |
| | Acute Long Stays | 4.3 | 6.3 | 7.6 |
| | Complications of Surgery | --- | --- | --- |
| Knee Replacement – Primary | Long Stays | --- | --- | --- |
| | Complications of Surgery | 5.7 | 9.8 | --- |

| Condition /Procedure | Outcome Indicator | FY2002 | FY2003 | FY2004 |
|---|---|---|---|---|
| Hip Replacement - Primary | Long Stays | --- | --- | --- |
| | Complications of Surgery | --- | --- | --- |
| Hysterectomy | Under 35 Years of Age | 7.8 | --- | --- |
| | Blood Transfusion | 2.3 | --- | 1.36 |
| Abdominal Hysterectomy | Long Stays | 10.5 | 10.8 | 7.0 |
| | Complications of Surgery | 5.5 | --- | --- |
| Vaginal Hysterectomy | Long Stays | --- | 8.7 | 7.7 |
| | Complications of Surgery | 2.7 | --- | --- |
| Standard Primiparae (national definition) | Caesarean Sections | --- | 19.2 | --- |
| | Induced Births | --- | --- | --- |
| | Third or Fourth Degree Perineal Tears | --- | --- | --- |
| Maternal Postnatal Stay – Vaginal Births | Long Stays | 3.5 | 3.2 | 2.9 |
| Maternal Postnatal Stay – Caesarean Section Births | Long Stays | 2.2 | 2.7 | 2.3 |
| Asthma | Long Stays | 8.4 | --- | --- |
| Colorectal Cancer Surgery | Long Stays | --- | --- | --- |
| | Complications of Surgery | 14.6 | --- | --- |
| Mastectomy | Long Stays | ▓▓▓▓ | 2.9 | 2.8 |
| Lumpectomy | Long Stays | ▓▓▓▓ | 3.5 | 2.6 |
| Prostatectomy | Long Stays | --- | --- | --- |
| | Complications of Surgery | 6.8 | 8.4 | --- |
| Laparoscopic Cholecystectomy | Long Stays | 4.9 | 6.6 | 4.5 |
| | Complications of Surgery | --- | --- | --- |
| Paediatric Bronchiolitis | Long Stays | 4.5 | 3.9 | 4.6 |
| Paediatric Gastroenteritis | Long Stays | 8.9 | 9.1 | 9.0 |
| Paediatric Asthma | Long Stays | 3.3 | 3.6 | 2.1 |
| Paediatric Tonsillectomy/ Adenoidectomy | Long Stays | 2.7 | 1.9 | --- |
| | Readmissions | --- | 1.9 | --- |
| Schizophrenia | Long Stays | 6.3 | 6.0 | 5.1 |
| | Readmissions | --- | 12.5 | 12.2 |
| Depression | Long Stays | 5.9 | 5.2 | 6.4 |
| | Readmissions | 7.3 | 8.0 | 7.8 |

**Table 2-17  Potential Savings in Adverse Outcomes by Condition-Outcome Pairing For all Public Hospital, Queensland, FY2002 to FY2004**

| Condition /Procedure | Outcome Indicator | FY2002 | FY2003 | FY2004 |
|---|---|---|---|---|
| *Acute Myocardial Infarction* | In-Hospital Mortality | 22.7%<br>77 deaths<br>(31 – 130) | 29.6%<br>98 deaths<br>(60 – 149) | 21.7%<br>67 deaths<br>(19 – 120) |
| | Long Stays | 33.7%<br>60 long stays<br>(30 – 95) | --- | 26.8%<br>46 long stays<br>(15 – 70) |
| | Readmissions | 38.8%<br>80 readmissions<br>(48-121) | --- | 25.4%<br>53 readmissions<br>(16-92) |
| *Heart Failure* | In-Hospital Mortality | 28.8%<br>70 deaths<br>(35 – 115) | --- | 21.5%<br>52 deaths<br>(14 – 95) |
| | Long Stays | 26.4%<br>91 long stays<br>(41 – 156) | --- | --- |
| | Readmissions | --- | 20.3%<br>75 readmissions<br>(38-127) | --- |
| *Stroke* | In-Hospital Mortality | ---- | --- | --- |
| | Long Stays | 39.6%<br>66 long stays<br>(32 – 110) | 38.0%<br>36 long stays<br>(7 – 64) | 50.1%<br>68 long stays<br>(34 – 107) |
| | Acute Long Stays | 54.9%<br>99 acute long stays<br>(64 – 139) | 51.2%<br>81 acute long stays<br>(49 – 118) | 33.2%<br>60 acute long stays<br>(27 – 98) |
| *Pneumonia* | In-Hospital Mortality | ---- | --- | 23.5%<br>71 deaths<br>(21 – 122) |
| | Long Stays | ---- | --- | --- |
| *Diabetic Foot* | Long Stays | ---- | --- | --- |
| | Amputations | 45.0%<br>73 amputations<br>(39 – 118) | --- | 32.7%<br>76 amputations<br>(37 – 134) |
| *Fractured Neck of Femur* | In-Hospital Mortality | ---- | 50.8%<br>30 deaths<br>(8 – 50) | --- |
| | Long Stays | ---- | 52.6%<br>70 long stays<br>(42 – 104) | 38.4%<br>60 long stays<br>(27 – 103) |
| | Acute Long Stays | 56.0%<br>59 acute long stays<br>(31– 88) | 42.5%<br>54 acute long stays<br>(19 – 91) | 43.1%<br>69 acute long stays<br>(31 – 114) |
| | Complications of Surgery | ---- | --- | --- |
| *Knee Replacement (Primary)* | Long Stays | ---- | ---- | --- |
| | Complications of Surgery | 36.4%<br>38 complications<br>(15 – 66) | 22.8%<br>34 complications<br>(4 – 69) | --- |
| *Hip Replacement (Primary)* | Long Stays | ---- | --- | --- |
| | Complications of Surgery | ---- | --- | --- |
| *Hysterectomy* | Under 35 Years of Age | 21.3%<br>50 under 35 years<br>(10 – 89) | --- | --- |
| | Blood Transfusion | 39.2%<br>36 transfusions<br>(13 – 60) | --- | 71.3%<br>80 transfusions<br>(60 – 100) |

| Condition /Procedure | Outcome Indicator | FY2002 | FY2003 | FY2004 |
|---|---|---|---|---|
| *Abdominal Hysterectomy* | Long Stays | 43.8%<br>111 long stays<br>(71 – 163) | 34.7%<br>67 long stays<br>(36 – 106) | 51.7%<br>100<br>(68 – 140) |
| | Complications of Surgery | 49.3%<br>73 complications<br>(42 – 109) | ---- | ---- |
| *Vaginal Hysterectomy* | Long Stays | ---- | 34.7%<br>43 long stays<br>(23 – 69) | 29.1%<br>32 long stays<br>(3 – 63) |
| | Complications of Surgery | 69.3%<br>60 complications<br>(36 – 81) | ---- | ---- |
| Standard Primiparae (national definition) | Caesarean Sections | ---- | 17.9%<br>127 C-sections<br>(63 – 210) | --- |
| | Induced Births | ---- | --- | --- |
| | Third or Fourth Degree Perineal Tears | ---- | --- | --- |
| *Maternal Postnatal Stay – Vaginal Births* | Long Stays | 47.5%<br>790 long stays<br>(599-1063) | 48.9%<br>661 long stays<br>(496 – 892) | 48.7%<br>654 long stays<br>(493-885) |
| *Maternal Postnatal Stay – Caesarean Section Births* | Long Stays | 55.2%<br>181 long stays<br>(129-246) | 43.4%<br>147 long stays<br>(100 – 211) | 46.9%<br>160 long stays<br>(107-228) |
| *Asthma* | Long Stays | 24.2%<br>53 long stays<br>(14 – 99) | --- | --- |
| *Colorectal Cancer Surgery* | Long Stays | ---- | --- | --- |
| | Complications of Surgery | 34.1%<br>59 complications<br>(24 – 105) | --- | --- |
| Mastectomy | Long Stays | | 81.5%<br>68 long stays<br>(40 – 83) | 71.6%<br>33 long stays<br>(19 – 45) |
| Lumpectomy | Long Stays | | 67.1%<br>110 long stays<br>(78 – 145) | 65.2%<br>60 long stays<br>(40 – 82) |
| Prostatectomy | Long Stays | --- | --- | --- |
| | Complications of Surgery | 38.9%<br>38 complications<br>(6 – 74) | 33.2%<br>38 complications<br>(4 – 76) | --- |
| Laparoscopic Cholecystectomy | Long Stays | 50.3%<br>143 long stays<br>(96 – 203) | 44.2%<br>157 long stays<br>(110 – 221) | 51.7%<br>152 long stays<br>(106 – 210) |
| | Complications of Surgery | --- | --- | --- |
| Paediatric Bronchiolitis | Long Stays | 43.4%<br>67 long stays<br>(35 – 108) | 42.3%<br>47 long stays<br>(23 – 78) | 35.9%<br>54 long stays<br>(27-90) |
| Paediatric Gastroenteritis | Long Stays | 36.8%<br>200 long stays<br>(136 – 293) | 34.0%<br>167 long stays<br>(105 – 255) | 32.9%<br>153 long stays<br>(95-234) |
| Paediatric Asthma | Long Stays | 40.1%<br>57 long stays<br>(29-93) | 41.1%<br>65 long stays<br>(35-104) | 57.7%<br>83 long stays<br>(53-84) |
| *Paediatric Tonsillectomy/* | Long Stays | 42.5%<br>57 long stays<br>(24-97) | 45.3%<br>43 long stays<br>(14-77) | --- |

| Condition /Procedure | Outcome Indicator | FY2002 | FY2003 | FY2004 |
|---|---|---|---|---|
| | Readmissions | --- | 46.9% 45 readmissions (11-82) | --- |
| Schizophrenia | Long Stays | 30.6% 92 long stays (52-150) | 39.2% 135 long stays (87-205) | 53.2% 200 long stays (134-288) |
| | Readmissions | --- | 24.5% 141 readmissions (83-234) | 24.5% 136 readmissions (80-222) |
| Depression | Long Stays | 47.2% 83 long stays (52-125) | 50.3% 95 long stays (58-145) | 43.8% 88 long stays (53-138) |
| | Readmissions | 35.6% 64 readmissions (36-103) | 32.9% 71 readmissions (37-117) | 35.4% 75 readmissions (41-124) |

The next step in the analysis involved calculating risk-adjusted rates of the outcome indicator per 100 separations for each hospital where there was sufficient data to produce reliable results. Data was analysed separately for each year and also cumulatively for all three years.

The analysis of data for individual hospitals for each year was restricted to Principal Referral and Specialised or Large hospitals using the modified AIHW peer group definition. However if the total number of separations were less than 20 for these hospital types, they were grouped with other large hospitals that had less than 20 total separations. The results for the Medium and Small AIHW hospitals were not analysed individually, but were included in the analysis at an aggregated level. This grouping was necessary due to the generally lower number of separations within a single year from a lot of these smaller hospitals for the conditions/procedures of interest. If the results were presented for each of these hospitals individually it would pose problems in calculating meaningful estimates and could also compromise the confidentiality of patients. However, it was possible to produce individual results for most of the in-scope medium/small hospitals when considering data across all three years. If the total number of separations for the three years was less than 5, a three-year average was not presented.

The risk-adjusted rate for each indicator within each hospital was calculated by dividing the observed number of outcomes (i.e., in-hospital mortality, long stays etc.) by the risk-adjusted expected number of outcomes (obtained from the logistic regression process described earlier). This was then multiplied by the total rate of outcomes per 100 separations for the entire cohort to give the risk-adjusted rate of outcomes per 100 separations for that hospital.

Confidence intervals were calculated for the risk-adjusted rates, above. In general, the narrower the confidence interval the more likely the adjusted score is to be an accurate reflection of the true indicator status for a hospital. These confidence intervals can also be used to determine the extent to which each hospital conforms within a selected group with acceptable results.

For this purpose, accompanying 90% and 99.9% confidence intervals were computed for the risk-adjusted rates. Confidence intervals were calculated because the observed rate of adverse outcomes was for a given period of time (usually a single year), and therefore could be assumed to form a representative sample of the true long-term performance of that hospital (providing that other influencing factors remain unchanged). The confidence intervals also take into account any variability that may be introduced to the results as part of the risk-adjustment process. Therefore, the first confidence interval was constructed so that the true underlying rate of the outcome for the hospital would be expected to fall within this range with a 90% probability, while there was a 99.9% chance that the second confidence interval would include the actual risk-adjusted rate.

The evaluation of the performance of each hospital for the various indicators was based on how the mean rate for the peer group compared against the confidence intervals for the hospital-specific rate. Five levels of performance were defined, as explained below. The graphical representation of these performance levels is shown below in Figure 1.

**Figure 1: How Performance is Evaluated for Outcome Indicators**



Risk-Adjusted Rate per 100 Separations
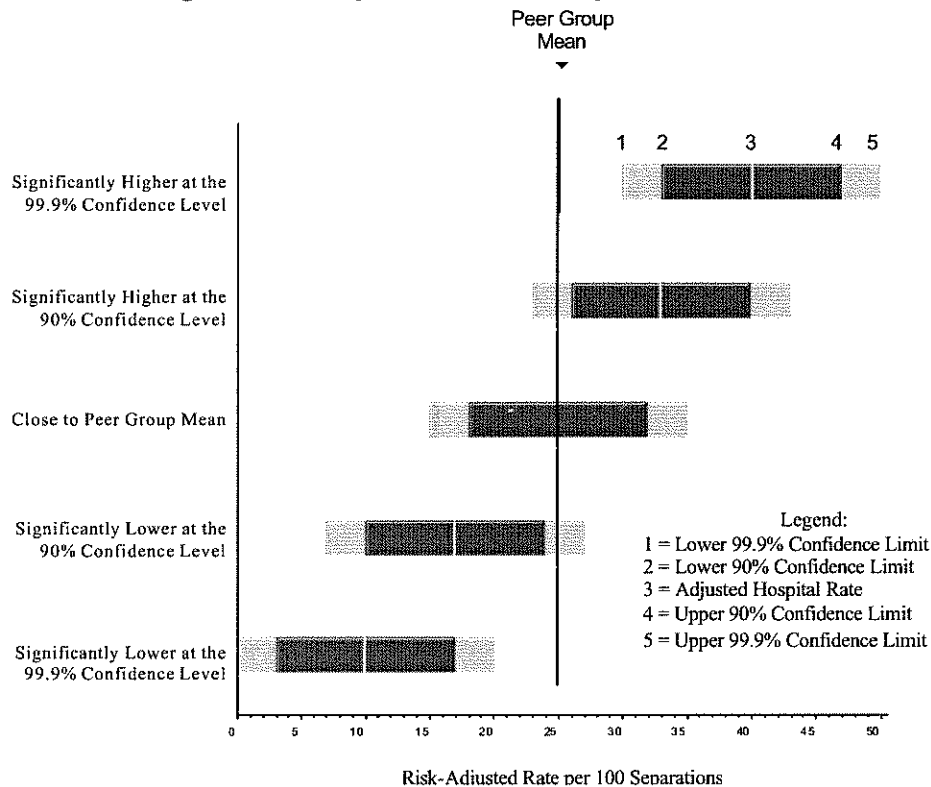
1. ***Significantly Higher at the 99.9% Confidence Level***: The lower bound for the 99.9% confidence interval is greater than the peer group mean. It is very likely that the true, underlying risk-adjusted rate for these hospitals is higher compared to the mean of all of the hospitals in their peer group.

2. ***Significantly Higher at the 90% Confidence Level***: The peer group mean falls between the lower bound of the 99.9% confidence interval and the lower bound of the 90% confidence interval. There is some evidence to suggest that the true, underlying risk-adjusted rate for these hospitals is higher compared to the mean of all of the hospitals in their peer group, although there is a reasonable possibility that the difference is due to chance.

3. ***Close to Peer Group Mean***: The peer group mean falls within the 90% confidence interval. There is no evidence to suggest that these hospitals are performing differently to the mean for all hospitals in their peer group.

4. ***Significantly Lower at the 90% Confidence Level***: The peer group mean falls between the upper bound of the 99.9% confidence interval and the upper bound of the 90% confidence interval. There is some evidence to suggest that the true, underlying risk-adjusted rate for these hospitals is lower compared to the mean of all of the hospitals in their peer group, although there is a reasonable possibility that the difference is due to chance.

5. ***Significantly Lower at the 99.9% Confidence Level***: The upper bound for the 99.9% confidence interval is less than the peer group mean. It is very likely that the true, underlying risk-adjusted rate for these hospitals is lower compared to the mean of all of the hospitals in their peer group.

## 2.8  Criteria for Determining Outliers for Indicators in the Clinical Quadrant

### 2.8.1  Outlier Identification:

Three different tests were applied to the data to determine qualification as an outlier.

1. Any report of an indicator whose result is either higher than or lower than the group (State or Peer) mean at the 99.9% confidence level (see Figure 1).

2. Reporting of an indicator whose result has changed such that it moves, in either direction, through more than one confidence level in two consecutive years (eg An indicator result lower than the group mean at the 90%confidence level in FY2000 and higher than the group mean at the 90%confidence level in FY2001) (see

Figure 1).

3. Reporting of an indicator whose result continues to be either higher than or lower than the group mean at the 90% confidence level for two consecutive years (see Figure 1).

### 2.8.2 Outlier Interpretation:

After verification of the data by the hospital, Outliers reported after application of the first test may indeed be models of best practice (lower than) or have problems within the service of the indicator (higher than) as long as the numbers for the indicator have been sufficient to acquire statistical significance. As an example, a high mortality rate may not be an issue if there were three deaths and only seven patients in the cohort that satisfied the indicator criteria in the period analysed).

If after application of the second test the indicator is reported as an outlier, then there is an indication that either a change in service, practice, or cohort has effected a significant change in the result. Hospitals should be able to identify what changes have influenced the movement reported. Improvements in service provision would usually be indicated by a positive change, while restriction or reduction of service or negative outcomes would be indicated by a negative change.

Application of the third test identifies those indicators where a hospital has performed at a level that may be consistently different to that of the group mean. The hospital has an opportunity to verify and explain the result, and act accordingly to use the advantage discovered or rectify any problem identified.

### 2.8.3 Methodological notes and limitations:

The peer group mean was based on the results for all hospitals within that particular peer group, irrespective of whether individual hospitals within the peer group had sufficient numbers of separations for each condition/procedure to be analysed separately.

For the purposes of this project, the peer group mean was treated as an exact value. However, in reality it is also only a point estimate (similar to the individual hospital rates) and therefore could also be represented with corresponding confidence intervals. This approach was not used for a number of reasons. First, the relatively large number of separations used to calculate the peer group mean would result in much smaller confidence intervals than those associated with individual hospital estimates, ie it was possible to measure the peer group mean more exactly. Second, the confidence interval for the peer group mean would not be independent of the confidence interval for an individual hospital that was part of that peer group, and so a comparison of the two confidence intervals would be inappropriate. Even if this were not the case, it would be more complicated to assign performance into the above categories should the confidence intervals for the individual hospital and peer group mean overlap. Third, the chosen confidence levels used were rather extreme. For example, if the hospital rate was different from the peer group mean at the 99.9% level based on the confidence interval for the hospital only, then this comparison is likely to still be highly significant even if there was some overlap with the confidence interval for the peer group mean. Last and most importantly from a practical viewpoint, the assignment of performance was not meant to be statistically definitive but merely to provide a guide as to how the individual hospital was performing in relation to other hospitals within its peer group.

The performance of individual hospitals was evaluated against the relevant peer group mean to ensure that the hospital was benchmarked against other hospitals with similar characteristics. However, the risk-adjustment procedure outlined earlier was done for all public hospitals combined. It would have been more technically correct for the risk-adjustment to also have been carried out at the peer group level. The main reason for risk-adjusting at the level of the entire cohort was that there were not always sufficient numbers at the peer group level for the logistic regression models to converge. Further, a comparison was made between the risk-adjusted results at both the peer group and entire cohort level for some of the indicators where the peer group models did converge. In nearly all instances, there were only minor differences between the risk-adjusted rates and associated confidence intervals that were obtained using the different populations for risk-adjustment.

### 2.8.4 Limitations

There are several caveats that should be kept in mind when interpreting the results of the analyses performed in this study. First, while every effort has been made to risk-adjust the data presented in the report, it is important to realise that risk-adjustment can only reduce, rather than completely remove, the effects of differences in the patient populations across hospitals. For example, hospitals that have the services to treat more complicated or specialised cases may appear to perform poorly in comparison to other hospitals, even after risk-adjustment, simply because they treat sicker patients in general.

Second, the number of cases used in the calculation affected the size of the confidence intervals for each hospital. Hospitals with greater volume will have smaller confidence intervals, and using the criteria outlined in the

"Methods" section, will therefore be more likely to be rated as performing either above or below the peer group mean than smaller hospitals which have similar outcome rates. While this effect will not be quite as obvious within a particular peer group, it will still exist when comparing hospitals belonging to different peer groups.

Third, it must be remembered that most of the analyses were based on a single year of data, which assumes that this data provides a reasonable representation of the usual happenings at each hospital. Yearly hospital comparisons are often found to be inconclusive due to the variation across time that inevitably occurs when outcomes for individual hospitals are measured. Other studies have found that the ranking of hospitals by outcome indicators similar to those used in this project are subject to considerable random variation from year to year (*Goldstein and Spiegelhalter, Journal of the Royal Statistical Society, Series A, 1996;159:385-409*). While confidence intervals have been used to reflect the possible extent of this variation, the results for individual hospitals should still be interpreted with some caution as there may be issues (such as organisational change, new technology etc.) which were not captured in the data.

Fourth, all of the analyses will only be as accurate as the original data source. This is the first time that data from either the QHAPDC or PDC have been investigated in this manner. While both of these collections are conducted according to well-established guidelines and involve extensive data audits, it is still quite possible that variation in the indicators between hospitals could be due to differences in coding practices. Indeed, it is hoped that one of the by-products of this project will be further improvement in the standardisation of coding practices across hospitals.

Finally, with regard to the aggregation of data across the Phases of the project, consistent capture of the data across years is dependent on the coding within the International Classification of Diseases (ICD) classification system being comparable. Changes occurred in the ICD system between Versions 10.2 (FY2001 and FY2002) and 10.3 (FY2003). While these changes were minor, in isolated instances it made extraction and comparison of data difficult, especially where codes were redefined separately or consolidated. Every attempt has been made to identify, capture and allow for these changes, though some variation will occur.

## 2.9 Definition of Clinical Indicators.

| CI01 | Acute Myocardial Infarction |
|------|------------------------------|
| **Definition** | |
| Principal Diagnosis Codes and/or Procedure Codes ICD-10.3-AM | I21, I22 |
| **Inclusion and Exclusion Criteria** | |
| Separation date | Phase 2(b) - Between 1 July 2001 and 30 June 2002 inclusive (year = "2001/2002")<br><br>Phase 3 – Between 1 July 2002 and 30 June 2003 inclusive (year = "2002/2003")<br><br>2005 Report–Between 1 July2003 and 30 June 2004 inclusive (year = "2003/2004") |
| State of usual residence | Queensland resident (state_id = "3") |
| Episode type | Acute patients (epis_type = "01") |
| Overnight stay patients | Patients must have spent at least one night in hospital (end_date > start_date) (With the exception of deaths due to AMI ) |
| Age | 30 – 89 years (age_grp >= "07" and age_grp <= "18") |
| Length of stay | 4 - 30 patient days (pat_day >= "4" and pat_day <= "30"), unless the patient had a length of stay from 1 - 3 patient days and died in hospital (pat_day >= "1" and pat_day <= "3" and sepn_mode = "05") |
| Admission source | Admissions through the emergency department only (orig_ref_code = "02") |
| Separation mode | Exclude transfers out (sepn_mode ≠ "16") |
| Procedures | Records with the following procedure codes (invasive coronary procedures) were excluded from the analysis for long stays only ("35304-00", "35304-01", "35305-00", "35305-01", "35310-00", "35310-01", "35310-02", "35310-03", "35310-04", "35310-05", "38215-00", "38218-00", "38218-01", "38218-02", "38497-00", "38497-01", "38497-02", "38497-03", "38497-04", "38497-05", "38497-06", "38497-07", "38500-00", "38500-01", "38500-02", "38500-03", "38500-04", "38503-00", "38503-01", "38503-02", "38503-03", "38503-04", "90201-00", "90201-01", "90201-02", "90201-03") |
| **Outcome Indicators** | |
| **In-Hospital Mortality**<br><br>**CI01.1** | Defined as the number of records where separation mode = "05" (death) and length of stay was less than or equal to 30 days (pat_day <= "30"), divided by the total number of records. Same day deaths have been included in this indicator. |
| **Long stay rate**<br><br>**CI01.2** | Long Stay Point = 12 Days<br><br>For the purposes of this project, the long stay point was chosen as the day closest to the 90th percentile of all eligible length of stays. Long stays were used as the outcome rather than average length of stay because long stays were thought to be a more sensitive indicator of quality of care. Additionally, long stays are expressed as a rate making this indicator consistent with all of the other indicators used.<br><br>Defined as the number of records where the number of patient days *equalled or exceeded* the long stay point, divided by the total number of records. Cases of in-hospital mortality prior to the long stay point were excluded from the calculation of the long stay rate, but patients who died on or after the long stay point were included for this indicator. |

| | |
|---|---|
| **Readmissions**<br><br>**CI01.3** | Defined as the number of records where a readmission was identified divided by the total number of records. Readmissions were identified using probabilistic matching of identified data to allow inclusion of readmissions to a different facility as well as readmissions to the same facility. Episodes were matched using patient name (first name, surname and phonetic version of surname), date of birth, address (street, suburb and postcode), age and sex. To be considered a match, patients were required to be of the same sex and to have at least four of the other eight variables matching. A manual check was also conducted of potential matches to eliminate any false matches. Records were matched for acute episodes only to avoid counting hospitalisation for rehabilitation as a readmission. Transfers in and out were also excluded from the set to avoid counting transfers as a readmission. |
| <div align="center">**Selected Comorbidities used for risk adjustment**</div> | |
| In an attempt to risk-adjust for illness severity and co-existing conditions, a range of comorbidities were considered. These comorbidities were chosen based on a number of criteria, including their frequency of occurrence within the various cohorts (based on diagnosis codes other than the principal diagnosis), specialist medical advice, and evidence from the literature (where it existed). | |
| Selected Comorbidities<br><br>Conditions/<br>Procedures<br><br>(ICD-10.3-AM Code available from Table 2-13) | Septicaemia, Malignancy, Anaemia, Diabetes, Other Hyponatremia Dementia (inc. Alzheimer's Disease), Hemiplegia, Valvular Disorders, Hypertension, Conduction Disorders, Dysrhythmias, Heart Failure, Cerebrovascular Disease, Peripheral Vascular Disease, Hypotension and Shock, Acute LRTI and Influenza, All Chronic Obstructive Pulmonary Diseases, Liver Disease, Ulcer of lower limb or decubitus ulcer, Renal Failure, Urinary Tract Infection (site not specified), Thyroid, Neuropathy, Other retinal Disorders, Cardiomyopathy. |

| CI02 | Heart Failure |
|---|---|

### Definition

| Principal Diagnosis Codes and/or Procedure Codes ICD-10.3-AM | I50 |
|---|---|

### Inclusion and Exclusion Criteria

| Separation date | Phase 2(b) - Between 1 July 2001 and 30 June 2002 inclusive (year = "2001/2002") |
|---|---|
| | Phase 3 -- Between 1 July 2002 and 30 June 2003 inclusive (year = "2002/2003") |
| | 2005 Report--Between 1 July2003 and 30 June 2004 inclusive (year = "2003/2004") |
| State of usual residence | Queensland resident (state_id = "3") |
| Episode type | Acute patients (epis_type = "01") |
| Overnight stay patients | Patients must have spent at least one night in hospital (end_date > start_date) |
| Age | 30 – 89 years (age_grp >= "07" and age_grp <= "18") |
| Length of stay | 1 - 30 patient days (pat_day >= "1" and pat_day <= "30") |
| Admission source | Exclude transfers in (orig_ref_code ≠ "24") |
| Separation mode | Exclude transfers out (sepn_mode ≠ "16") |

### Outcome Indicators

| In-Hospital mortality CI02.1 | Defined as the number of records where separation mode = "05" (death) and length of stay was less than or equal to 30 days (pat_day <= "30"), divided by the total number of records. |
|---|---|
| Long stay rate CI02.2 | Long Stay Point = 14 Days |
| | For the purposes of this project, the long stay point was chosen as the day closest to the 90th percentile of all eligible length of stays. Long stays were used as the outcome rather than average length of stay because long stays were thought to be a more sensitive indicator of quality of care. Additionally, long stays are expressed as a rate making this indicator consistent with all of the other indicators used. |
| | Defined as the number of records where the number of patient days *equalled or exceeded* the long stay point, divided by the total number of records. Cases of in-hospital mortality prior to the long stay point were excluded from the calculation of the long stay rate, but patients who died on or after the long stay point were included for this indicator. |
| Readmissions CI02.3 | Defined as the number of records where a readmission was identified divided by the total number of records. Readmissions were identified using probabilistic matching of identified data to allow inclusion of readmissions to a different facility as well as readmissions to the same facility. Episodes were matched using patient name (first name, surname and phonetic version of surname), date of birth, address (street, suburb and postcode), age and sex. To be considered a match, patients were required to be of the same sex and to have at least four of the other eight variables matching. A manual check was also conducted of potential matches to eliminate any false matches. Records were matched for acute episodes only to avoid counting hospitalisation for rehabilitation as a readmission. Transfers in and out were also excluded from the set to avoid counting transfers as a readmission. |

| | **Selected Comorbidities used for risk adjustment** | |
|---|---|---|
| In an attempt to risk-adjust for illness severity and co-existing conditions, a range of comorbidities were considered. These comorbidities were chosen based on a number of criteria, including their frequency of occurrence within the various cohorts (based on diagnosis codes other than the principal diagnosis), specialist medical advice, and evidence from the literature (where it existed). | | |
| Selected Comorbidities Conditions/ Procedures (ICD-10.3-AM Code available from Table2- 13) | Septicaemia, Malignancy, Anaemia, Diabetes, Hyponatremia, Ischaemic Heart Disease, Cardiomyopathy, Dementia (inc. Alzheimer's Disease), Valvular Disorders, Hypertension, Conduction Disorders, Dysrhythmias, Cerebrovascular Disease, Hypotension and Shock, Acute LRTI and Influenza, Other Chronic Obstructive Pulmonary Diseases, Liver Disease, Ulcer of lower limb or decubitus ulcer, Renal Failure, Urinary Tract Infection (s ite not specified), Disorders of Thyroid Gland, Asthma, Parkinson's Disease, Hemiplegia. | |

| CI03 | Stroke |
|---|---|

| **Definition** | |
|---|---|
| Principal Diagnosis Codes and/or Procedure Codes ICD-10.3-AM | I61-I64 |

| **Inclusion and Exclusion Criteria** | |
|---|---|
| Separation date | Phase 2(b) - Between 1 July 2001 and 30 June 2002 inclusive (year = "2001/2002") |
| | Phase 3 – Between 1 July 2002 and 30 June 2003 inclusive (year = "2002/2003") |
| | 2005 Report –Between 1 July2003 and 30 June 2004 inclusive (year = "2003/2004") |
| State of usual residence | Queensland resident (state_id = "3") |
| Episode type | Acute patients (epis_type = "01") |
| Overnight stay patients | Patients must have spent at least one night in hospital (end_date > start_date) (With the exception of deaths due to Stroke) |
| Age | 30 – 89 years (age_grp >= "07" and age_grp <= "18") |
| Length of stay | 3 or more patient days (pat_day >= "3"), unless the patient had a length of stay of 1 or 2 patient days and died in hospital (pat_day >= "1" and pat_day <= "2" and sepn_mode = "05") |
| Admission source | Exclude transfers in (orig_ref_code ≠ "24") and changes of episode type (orig_ref_code ≠ "06") |
| Separation mode | Exclude transfers out (sepn_mode ≠ "16"). In the case of changes of episode (sepn_mode = "06"), immediately ensuing non-acute episodes (eg. rehabilitation) were appended to the original acute episode to form a complete record of the hospital stay, including non-acute episodes that extended into the next analysis period. |
| Procedures | Exclude carotid endarterectomy ( "33500-00" or "32703-00") |

| **Outcome Indicators** | |
|---|---|
| **In-Hospital mortality** CI03.1 | Defined as the number of records where separation mode = "05" (death) and length of stay was less than or equal to 30 days (pat_day <= "30"), divided by the total number of records. |
| **Long Stay Rate** CI03.2 | Long Stay Point = 66 Days (Includes rehab) |
| | For the purposes of this project, the long stay point was chosen as the day closest to the 90th percentile of all eligible length of stays. Long stays were used as the outcome rather than average length of stay because long stays were thought to be a more sensitive indicator of quality of care. Additionally, long stays are expressed as a rate making this indicator consistent with all of the other indicators used. |
| | Defined as the number of records where the number of patient days *equalled or exceeded* the long stay point, divided by the total number of records. Cases of in-hospital mortality prior to the long stay point were excluded from the calculation of the long stay rate, but patients who died on or after the long stay point were included for this indicator. |
| **Long Stay Rate (Acute episode only)** CI03.2a | Acute Long Stay Point = 26 days |
| | Acute Long Stay is defined as the number of records where the number of **acute** patient days equalled or exceeded the long stay point, divided by the total number of records. Like long stay rate, the cases of in-hospital mortality prior to the long stay point of total length of stay (acute and non-acute) were excluded from the calculation of the acute long stay rate. Patients who died on or after the long stay point were included for this indicator. |

| Selected Comorbidities used for risk adjustment | |
|---|---|
| In an attempt to risk-adjust for illness severity and co-existing conditions, a range of comorbidities were considered. These comorbidities were chosen based on a number of criteria, including their frequency of occurrence within the various cohorts (based on diagnosis codes other than the principal diagnosis), specialist medical advice, and evidence from the literature (where it existed). | |
| Selected Comorbidities Conditions/ Procedures (ICD-10.3-AM Code available from Table 2-13) | Septicaemia, Malignancy, Anaemia, Hemiplegia, Valvular Disorders, Hypertension, Conduction Disorders, Dysrhythmias, Heart Failure, Ischemic Heart Disease, Cardiomyopathy, Peripheral Vascular Disease, Hypotension and Shock , Acute LRTI and Influenza, Other Chronic Obstructive Pulmonary Diseases , Asthma, Ulcer of lower limb or decubitus ulcer, Renal Failure, Urinary Tract Infection (site not specified). |

| CI04 | Pneumonia |
|---|---|

## Definition

| Principal Diagnosis Codes and/or Procedure Codes ICD-10.3-AM | J13-J16, J18. |
|---|---|

## Inclusion and Exclusion Criteria

| Separation date | Phase 2(b) - Between 1 July 2001 and 30 June 2002 inclusive (year = "2001/2002")<br><br>Phase 3 – Between 1 July 2002 and 30 June 2003 inclusive (year = "2002/2003")<br><br>2005 Report –Between 1 July2003 and 30 June 2004 inclusive (year = "2003/2004") |
|---|---|
| State of usual residence | Queensland resident (state_id = "3") |
| Episode type | Acute patients (epis_type = "01") |
| Overnight stay patients | Patients must have spent at least one night in hospital (end_date > start_date) |
| Age | 20 – 89 years (age_grp >= "05" and age_grp <= "18") |
| Length of stay | 1 - 30 patient days (pat_day >= "1" and pat_day <= "30") |
| Admission source | Exclude transfers in (orig_ref_code ≠ "24") |
| Separation mode | Exclude transfers out (sepn_mode ≠ "16") |
| Procedures | |

## Outcome Indicators

| In-Hospital mortality<br><br>CI04.1 | Defined as the number of records where separation mode = "05" (death) and length of stay was less than or equal to 30 days (pat_day <= "30"), divided by the total number of records. |
|---|---|
| Long Stay Rate<br><br>CI04.2 | Long Stay Point = 12 Days<br><br>For the purposes of this project, the long stay point was chosen as the day closest to the 90th percentile of all eligible length of stays. Long stays were used as the outcome rather than average length of stay because long stays were thought to be a more sensitive indicator of quality of care. Additionally, long stays are expressed as a rate making this indicator consistent with all of the other indicators used.<br><br>Defined as the number of records where the number of patient days *equalled or exceeded* the long stay point, divided by the total number of records. Cases of in-hospital mortality prior to the long stay point were excluded from the calculation of the long stay rate, but patients who died on or after the long stay point were included for this indicator. |

## Selected Comorbidities used for risk adjustment

In an attempt to risk-adjust for illness severity and co-existing conditions, a range of comorbidities were considered. These comorbidities were chosen based on a number of criteria, including their frequency of occurrence within the various cohorts (based on diagnosis codes other than the principal diagnosis), specialist medical advice, and evidence from the literature (where it existed).

| Selected Comorbidities Conditions/ Procedures (ICD-10.3-AM Code available from Table 2-13) | Septicaemia, Malignancy, Anaemia, Diabetes, Hyponatremia, Dementia (inc. Alzheimer's Disease), Parkinson's Disease, Polyneuropathy (unspecified), Hemiplegia, Epilepsy, Valvular Disorders, Hypertension, Ischaemic Heart Disease, Cardiomyopathy, Conduction Disorders, Dysrhythmias, Heart Failure, Cerebrovascular Disease, Peripheral Vascular Disease, Hypotension & Shock, Asthma, Other Chronic Obstructive Pulmonary Disease, Liver Disease, Ulcer of lower limb or decubitus ulcer, Renal Failure, Urinary Tract Infections (site not specified). |
|---|---|

| CI05 | Diabetic Foot |
|---|---|

| Definition | |
|---|---|
| Principal Diagnosis Codes and/or Procedure Codes ICD-10.3-AM | 1. A principal diagnosis code of E10.73, E11.73, E13.73 or E14.73 **OR** <br> 2. A principal diagnosis code of E10.69, E11.69, E13.69, E14.69, L02.4, L03.02, L03.11 or L89 with at least one of the following comorbidities: E10.42, E11.42, E13.42, E14.42, E10.43, E11.43, E13.43, E14.43, E10.51, E11.51, E13.51, E14.51, E10.52, E11.52, E13.52, E14.52, E10.61, E11.61, E13.61, E14.61, E10.71, E11.71, E13.71, E14.71, L84, M20.1, M20.2, M20.3, M20.4, M20.5, M21.27, M21.37, M21.4, M21.57, M21.67, M21.87, R09.2, Z89.4, Z89.5, Z89.6, Z89.7 **OR** vice versa. |

| Inclusion and Exclusion Criteria | |
|---|---|
| Separation date | Phase 2(b) - Between 1 July 2001 and 30 June 2002 inclusive (year = "2001/2002") <br><br> Phase 3 – Between 1 July 2002 and 30 June 2003 inclusive (year = "2002/2003") <br><br> 2005 Report –Between 1 July2003 and 30 June 2004 inclusive (year = "2003/2004") |
| State of usual residence | Queensland resident (state_id = "3") |
| Episode type | Acute patients (epis_type = "01") |
| Overnight stay patients | Patients must have spent at least one night in hospital (end_date > start_date) |
| Age | 20 – 89 years (age_grp >= "05" and age_grp <= "18") |
| Admission source | Exclude transfers in (orig_ref_code ≠ "24") and routine readmissions (orig_ref_code ≠ "19") |
| Separation mode | Exclude transfers out (sepn_mode ≠ "16"). In the case of changes of episode (sepn_mode = "06"), immediately ensuing non-acute episodes (eg. rehabilitation) were appended to the original acute episode to form a complete record of the hospital stay, including non-acute episodes that extended into the next analysis period. |
| Procedures | Exclude episodes with hyperbaric oxygen therapy (Procedure ≠ "13020-00" or "13025-00") where no other procedure was performed |

| Outcome Indicators | |
|---|---|
| **Long stay rate** <br><br> **CI05.1** | Long Stay Point = 30 days <br><br> Defined as the number of records where the number of patient days *equalled or exceeded* the long stay point, divided by the total number of records. Cases of in-hospital mortality prior to the long stay point were excluded from the calculation of the long stay rate, but patients who died on or after the long stay point were included for this indicator. <br><br> For the purposes of this project, the long stay point was chosen as the day closest to the 90th percentile of all eligible length of stays. Long stays were used as the outcome rather than average length of stay because long stays were thought to be a more sensitive indicator of quality of care. Additionally, long stays are expressed as a rate making this indicator consistent with all of the other indicators used. |

| Amputation Rate<br><br>**CI05.4** | The amputation rate was defined as the number of records where at least one of the procedures below was performed, with the denominator being the total number of records in the cohort. In other words, the amputation rate was based on the number of hospital stays during which an amputation occurred, rather than the number of *persons* in the cohort who had an amputation. |
|---|---|

| *Procedure* | *ICD-10.3-AM Code* | *Major/Minor* |
|---|---|---|
| Amputation of toe | 44338-00 [1533] | Minor |
| Amputation of toe including metatarsal bone | 44358-00 [1533] | Minor |
| Disarticulation through ankle | 44361-00 [1533] | Major |
| Amputation of ankle through malleoli of tibia and fibula | 44361-01 [1533] | Major |
| Midtarsal amputation | 44364-00 [1533] | Minor |
| Transmetatarsal amputation | 44364-01 [1533] | Minor |
| Amputation above knee | 44367-00 [1484] | Major |
| Disarticulation at knee | 44367-01 [1505] | Major |
| Amputation below knee | 44367-02 [1505] | Major |
| Disarticulation through toe | 90557-00 [1533] | Major |

## Selected Comorbidities used for risk adjustment

In an attempt to risk-adjust for illness severity and co-existing conditions, a range of comorbidities were considered. These comorbidities were chosen based on a number of criteria, including their frequency of occurrence within the various cohorts (based on diagnosis codes other than the principal diagnosis), specialist medical advice, and evidence from the literature (where it existed).

| Selected Comorbidities<br><br>Conditions/ Procedures<br><br>(ICD-10.3-AM Code available from Table 2-13) | Septicaemia, Anaemia, Dementia (inc. Alzheimer's Disease), Polyneuropathy (unspecified), Other Renal Disorders, Hypertension, Ischaemic Heart Disease, Dysrhythmias, Heart Failure, Peripheral Vascular Disease, Hypotension & Shock, Acute LRTI and Influenza, Other Chronic Obstructive Pulmonary Disease, Ulcer of lower limb or decubitus ulcer, Gangrene (nec), Renal Failure, Urinary Tract infection (site not specified). |
|---|---|

| CI06 | Fractured Neck of Femur |
|---|---|

| Definition | |
|---|---|
| Principal Diagnosis Codes and/or Procedure Codes ICD-10.3-AM | Principal diagnosis code of S72 with at least one of the following procedure codes: 47519.00, 47522.00, 47528.01, 47531.00 or 49315.00. |

| Inclusion and Exclusion Criteria | |
|---|---|
| Separation date | Phase 2(b) – Between 1 July 2001 and 30 June 2002 inclusive (year = "2001/2002") Phase 3 – Between 1 July 2002 and 30 June 2003 inclusive (year = "2002/2003") 2005 Report –Between 1 July2003 and 30 June 2004 inclusive (year = "2003/2004") |
| State of usual residence | Queensland resident (state_id = "3") |
| Episode type | Acute patients (epis_type = "01") |
| Overnight stay patients | Patients must have spent at least one night in hospital (end_date > start_date) |
| Age | 50 years or older (age_grp >= "11") |
| Admission source | Exclude transfers in (orig_ref_code ≠ "24") |
| Separation mode | Exclude transfers out (sepn_mode ≠ "16"). In the case of changes of episode (sepn_mode = "06"), immediately ensuing non-acute episodes (eg. rehabilitation) were appended to the original acute episode to form a complete record of the hospital stay, including non-acute episodes that extended into the next analysis period. |
| External Cause | Principal external cause of falls (ex_1 >= "W00" and ex_1 <= "W1999") |

| Outcome Indicators | |
|---|---|
| **In-Hospital mortality** **CI06.1** | Defined as the number of records where separation mode = "05" (death) and length of stay was less than or equal to 30 days (pat_day <= "30"), divided by the total number of records. |
| **Long stay rate** **CI06.2** | Long Stay Point = 47 Days<br>For the purposes of this project, the long stay point was chosen as the day closest to the 90th percentile of all eligible length of stays. Long stays were used as the outcome rather than average length of stay because long stays were thought to be a more sensitive indicator of quality of care. Additionally, long stays are expressed as a rate making this indicator consistent with all of the other indicators used.<br>Defined as the number of records where the number of patient days *equalled or exceeded* the long stay point, divided by the total number of records. Cases of in-hospital mortality prior to the long stay point were excluded from the calculation of the long stay rate, but patients who died on or after the long stay point were included for this indicator. |
| **Long Stay Rate (Acute episode only)** **CI06.2a** | Acute Long Stay Point = 26 days<br>Acute Long Stay is defined as the number of records where the number of **acute** patient days equalled or exceeded the long stay point, divided by the total number of records. Like long stay rate, the cases of in-hospital mortality prior to the long stay point of total length of stay (acute and non-acute) were excluded from the calculation of the acute long stay rate. Patients who died on or after the long stay point were included for this indicator. |

| Complications of Surgery **CI06.6** | Defined as the number of records where **any** of the external cause codes was between "Y60"-"Y6999" or "Y83"-"Y8499", divided by the total number of records. |
|---|---|
| | Because the external cause codes used to define complications of surgery (ie "Y60"-"Y6999" or "Y83"-"Y8499") are not very descriptive, a breakdown of the diagnosis codes that "triggered" the complication code was included in the output. This was done to provide clinicians with more detail about the type and seriousness of the complications. The diagnosis codes that were used for this further analysis are shown in Table 2-3. |
| | Both counts and percentages of the types of complications were provided. Note that each patient with a complication could have more than one type of complication, and therefore it was quite possible for the total number of complications shown to exceed the number of patients reported as having complications. Similarly, the percentages of complication type were based on the total number of patients with complications, rather than the total number of complications, and therefore the percentages for each hospital could add to more than 100%. |

| **Selected Comorbidities used for risk adjustment** ||
|---|---|
| In an attempt to risk-adjust for illness severity and co-existing conditions, a range of comorbidities were considered. These comorbidities were chosen based on a number of criteria, including their frequency of occurrence within the various cohorts (based on diagnosis codes other than the principal diagnosis), specialist medical advice, and evidence from the literature (where it existed). ||
| Selected Comorbidities Conditions/ Procedures (ICD-10.3-AM Code available from Table 2- 13) | Malignancy, Anaemia, Diabetes, Hyponatremia, Dementia (inc. Alzheimer's Disease), Hemiplegia, Valvular Disorders, Hypertension, Ischaemic Heart Disease, Conduction Disorders, Dysrhythmias, Heart Failure, Cerebrovascular Disease, Peripheral Vascular Disease, Hypotension & Shock, Other Chronic Obstructive Pulmonary Disease, Acute LRTI and influenza, Ulcer of lower limb or decubitus ulcer, Renal Failure, Urinary Tract Infections (site not specified). |

| CI07 | Knee Replacement Primary |
|---|---|

| Definition ||
|---|---|
| Principal Diagnosis Codes and/or Procedure Codes ICD-10.3-AM | Any principal diagnosis code with at least one of the following procedure codes: 49518-00, 49519-00, 49521-02. |

| Inclusion and Exclusion Criteria ||
|---|---|
| Separation date | Phase 2(b) - Between 1 July 2001 and 30 June 2002 inclusive (year = "2001/2002")

Phase 3 – Between 1 July 2002 and 30 June 2003 inclusive (year = "2002/2003")

2005 Report –Between 1 July2003 and 30 June 2004 inclusive (year = "2003/2004") |
| State of usual residence | Queensland resident (state_id = "3") |
| Episode type | Acute patients (epis_type = "01") |
| Overnight stay patients | Patients must have spent at least one night in hospital (end_date > start_date) |
| Age | 20 years or older (age_grp >= "05") |
| Length of stay | 4 patient days or longer (pat_day >= "4") |
| Admission source | Exclude transfers in (orig_ref_code ≠ "24") |
| Separation mode | Exclude transfers out (sepn_mode ≠ "16"). In the case of changes of episode (sepn_mode = "06"), immediately ensuing non-acute episodes (eg. rehabilitation) were appended to the original acute episode to form a complete record of the hospital stay, including non-acute episodes that extended into the next analysis period. |

| Outcome Indicators ||
|---|---|
| Long stay rate

CI07.1a | Long Stay Point = 13 Days

For the purposes of this project, the long stay point was chosen as the day closest to the 90th percentile of all eligible length of stays. Long stays were used as the outcome rather than average length of stay because long stays were thought to be a more sensitive indicator of quality of care. Additionally, long stays are expressed as a rate making this indicator consistent with all of the other indicators used.

Defined as the number of records where the number of patient days *equalled or exceeded* the long stay point, divided by the total number of records. Cases of in-hospital mortality prior to the long stay point were excluded from the calculation of the long stay rate, but patients who died on or after the long stay point were included for this indicator. |
| Complications of Surgery

CI07.3a | Defined as the number of records where **any** of the external cause codes was between "Y60"-"Y6999" or "Y83"-"Y8499", divided by the total number of records.

Because the external cause codes used to define complications of surgery (ie "Y60"-"Y6999" or "Y83"-"Y8499") are not very descriptive, a breakdown o f the diagnosis codes that "triggered" the complication code was included in the output. This was done to provide clinicians with more detail about the type and seriousness of the complications. The diagnosis codes that were used for this further analysé are shown in Table 2-3.

Both counts and percentages of the types of complications were provided. Note that each patient with a complication could have more than one type of complication, and therefore it was quite possible for the total number of comp lications shown to exceed the number of patients reported as having complications. Similarly, the percentages of complication type were based on the total number of patients with complications, rather than the total number of complications, and therefore the percentages for each hospital could add to more than 100%. |

| | **Selected Comorbidities used for risk adjustment** |
|---|---|
| | In an attempt to risk-adjust for illness severity and co-existing conditions, a range of comorbidities were considered. These comorbidities were chosen based on a number of criteria, including their frequency of occurrence within the various cohorts (based on diagnosis codes other than the principal diagnosis), specialist medical advice, and evidence from the literature (where it existed). |
| Selected Comorbidities

Conditions/ Procedures

(ICD-10.3-AM Code available from Table 2-13) | Anaemia, Diabetes, Hypertension, Ischaemic Heart Disease, Dysrhythmias, Heart Failure, Hypotension & Shock, Acute LRTI and influenza, Other Chronic Obstructive Pulmonary Disease, Renal Failure, Urinary Tract Infections (site not specified). |

| CI08 | Hip Replacement Primary |
|---|---|

| **Definition** ||
|---|---|
| Principal Diagnosis Codes and/or Procedure Codes ICD-10.3-AM | Any principal diagnosis code with at least one of the following procedure codes: 49318-00, 49319-00. |

| **Inclusion and Exclusion Criteria** ||
|---|---|
| Separation date | Phase 2(b) - Between 1 July 2001 and 30 June 2002 inclusive (year = "2001/2002")<br><br>Phase 3 – Between 1 July 2002 and 30 June 2003 inclusive (year = "2002/2003")<br><br>2005 Report –Between 1 July2003 and 30 June 2004 inclusive (year = "2003/2004") |
| State of usual residence | Queensland resident (state_id = "3") |
| Episode type | Acute patients (epis_type = "01") |
| Overnight stay patients | Patients must have spent at least one night in hospital (end_date > start_date) |
| Age | 20 years or older (age_grp >= "05") |
| Length of stay | 3 patient days or longer (pat_day >= "3") |
| Admission source | Exclude transfers in (orig_ref_code ≠ "24") |
| Separation mode | Exclude transfers out (sepn_mode ≠ "16"). In the case of changes of episode (sepn_mode = "06"), immediately ensuing non-acute episodes (eg. rehabilitation) were appended to the original acute episode to form a complete record of the hospital stay, including non-acute episodes that extended into the next analysis period. |

| **Outcome Indicators** ||
|---|---|
| **Long stay rate**<br><br>**CI08.1a** | Long Stay Point = 14 Days<br><br>For the purposes of this project, the long stay point was chosen as the day closest to the 90th percentile of all eligible length of stays. Long stays were used as the outcome rather than average length of stay because long stays were thought to be a more sensitive indicator of quality of care. Additionally, long stays are expressed as a rate making this indicator consistent with all of the other indicators used.<br><br>Defined as the number of records where the number of patient days *equalled or exceeded* the long stay point, divided by the total number of records. Cases of in-hospital mortality prior to the long stay point were excluded from the calculation of the long stay rate, but patients who died on or after the long stay point were included for this indicator. |
| **Complications of Surgery**<br><br>**CI08.3a** | Defined as the number of records where **any** of the external cause codes was between "Y60"-"Y6999" or "Y83"-"Y8499", divided by the total number of records.<br><br>Because the external cause codes used to define complications of surgery (ie "Y60"-"Y6999" or "Y83"-"Y8499") are not very descriptive, a breakdown of the diagnosis codes that "triggered" the complication code was included in the output. This was done to provide clinicians with more detail about the type and seriousness of the complications. The diagnosis codes that were used for this further analysis are shown in Table 2-3.<br><br>Both counts and percentages of the types of complications were provided. Note that each patient with a complication could have more than one type of complication, and therefore it was quite possible for the total number of complications shown to exceed the number of patients reported as having complications. Similarly, the percentages of complication type were based on the total number of patients with complications, rather than the total number of complications, and therefore the percentages for each hospital could add to more than 100%. |

| Selected Comorbidities used for risk adjustment | |
| --- | --- |
| In an attempt to risk-adjust for illness severity and co-existing conditions, a range of comorbidities were considered. These comorbidities were chosen based on a number of criteria, including their frequency of occurrence within the various cohorts (based on diagnosis codes other than the principal diagnosis), specialist medical advice, and evidence from the literature (where it existed). | |
| Selected Comorbidities<br><br>Conditions/<br>Procedures<br><br>(ICD-10.3-AM Code available from Table 2-13) | Anaemia, Diabetes, Hypertension, Ischaemic Heart Disease, Dysrhythmias, Heart Failure, Hypotension & Shock, Acute LRTI and influenza, Other Chronic Obstructive Pulmonary Disease, Ulcer of lower limb or decubitus ulcer, Renal Failure, Urinary Tract Infections (site not specified). |

| CI09 | Hysterectomy |
|---|---|

### Definition – Abdominal Hysterectomy

| Principal Diagnosis Codes and/or Procedure Codes ICD-10.3-AM | 35653-00, 35653-01, 35653-02, 35653-03, 35661-00, 35667-00, 35667-01, 35756-01, 35756-02 |
|---|---|

### Definition – Vaginal Hysterectomy

| Principal Diagnosis Codes and/or Procedure Codes ICD-10.3-AM | 35657-00, 35750-00, 35756-00, 35673-00, 35673-01, 35753-00, 35753-01 |
|---|---|

### Inclusion and Exclusion Criteria (for both)

| Separation date | Phase 2(b) - Between 1 July 2001 and 30 June 2002 inclusive (year = "2001/2002") <br><br> Phase 3 – Between 1 July 2002 and 30 June 2003 inclusive (year = "2002/2003") <br><br> 2005 Report – Between 1 July 2003 and 30 June 2004 inclusive (year = "2003/2004") |
|---|---|
| State of usual residence | Queensland resident (state_id = "3") |
| Episode type | Acute patients (epis_type = "01") |
| Overnight stay patients | Patients must have spent at least one night in hospital (end_date > start_date) |
| Age group | 20 – 89 years (age_grp >= "05" and age_grp <= "18") |
| Length of stay | 1 - 30 patient days (pat_day >= "1" and pat_day <= "30") |
| Admission source | Exclude transfers in (orig_ref_code ≠ "24") |
| Separation mode | Exclude transfers out (sepn_mode ≠ "16") |
| Medical conditions | Phases 2(b) – Exclude any condition code (principal diagnosis or other diagnosis) of malignant neoplasm of female genital organs or pelvic area (Diagnosis ≠ "C18"-"C21", "C48", "C51"- "C58", "C64"-"C68", "C76.3", "C77.5", "C78.6", "C79.6", "C79.82") |
| Procedures | Exclude hysterectomies involving radical excision of pelvic lymph nodes (Procedure ≠ "35664-00", "35664-01", "35670-00") |
| External causes | External cause code is either missing or due to complications of medical or surgical procedures (External cause = " " or External cause >= "Y40" and <= "Y8499") |

### Outcome Indicators

| Long stay rate<br><br>**CI09.11**<br><br>**CI09.12** | Long Stay Point Abdominal Hysterectomy = 6 Days <br><br> Long Stay Point Vaginal hysterectomy = 5 Days <br><br> For the purposes of this project, the long stay point was chosen as the day closest to the 90th percentile of all eligible length of stays. Long stays were used as the outcome rather than average length of stay because long stays were thought to be a more sensitive indicator of quality of care. Additionally, long stays are expressed as a rate making this indicator consistent with all of the other indicators used. <br><br> Defined as the number of records where the number of patient days *equalled or exceeded* the long stay point, divided by the total number of records. Cases of in-hospital mortality prior to the long stay point were excluded from the calculation of the long stay rate, but patients who died on or after the long stay point were included for this indicator. |
|---|---|

| | |
|---|---|
| **Complications of Surgery**<br><br>**CI09.31**<br><br>**CI09.32** | Defined as the number of records where **any** of the external cause codes was between "Y60"-"Y6999" or "Y83"-"Y8499", divided by the t otal number of records.<br><br>Because the external cause codes used to define complications of surgery (ie "Y60"-"Y6999" or "Y83"-"Y8499") are not very descriptive, a breakdown of the diagnosis codes that "triggered" the complication code was included in the output. This was done to provide clinicians with more detail about the type and seriousness of the complications. The diagnosis codes that were used for this further analysis are shown in Table 2-3.<br><br>Both counts and p ercentages of the types of complications were provided. Note that each patient with a complication could have more than one type of complication, and therefore it was quite possible for the total number of complications shown to exceed the number of patients reported as having complications. Similarly, the percentages of complication type were based on the total number of patients with complications, rather than the total number of complications, and therefore the percentages for each hospital could add t o more than 100%. |
| **On women < 35 yrs CI09.4** | Defined as the number of records where age group was between "05" and "07" (i.e. 20-34 years), divided by the total number of records. |
| **Blood transfusion rates**<br><br>**CI09.5** | The following table shows the ICD-10-AM procedure codes that were used to define the outcome of blood transfusion in the context of a surgical procedure. The procedure block codes are shown in bold following the ICD-10 code.<br><br>| *Procedure* | *ICD-10.1 and 10.2-AM Code* |<br>\|---\|---\|<br>\| Transfusion of whole blood \| 13706-01 **[1893]** \|<br>\| Transfusion of packed cells \| 13706-02 **[1893]** \|<br>\| Transfusion of platelets \| 13706-03 **[1893]** \|<br>\| Transfusion of leukocytes \| 13706-04 **[1893]** \|<br>\| Transfusion of gamma globulin \| 13706-05 **[1893]** \|<br>\| Transfusion of autologous blood \| 92060-00 **[1893]** \|<br>\| Transfusion of coagulation factors \| 92061-00 **[1893]** \|<br>\| Transfusion of other serum \| 92062-00 **[1893]** \|<br>\| Transfusion of blood expander \| 92063-00 **[1893]** \|<br>\| Transfusion of other substance \| 92064-00 **[1893]** \|<br>\| Exchange transfusion \| 92206-00 **[1893]** \|<br><br>The blood transfusion rate was defined as the number of records where at least one of these procedures was performed, with the denominator being the total number of records in the cohort. |

| | |
|---|---|
| **Selected Comorbidities used for risk adjustment** |
| In an attempt to risk-adjust for illness severity and co-existing conditions, a range of comorbidities were considered. These comorbidities were chosen based on a number of criteria, including their frequency of occurrence within the various cohorts (based on diagnosis codes other than the principal diagnosis), specialist medical advice, and evidence from the literature (where it existed). |
| Selected Comorbidities<br><br>Conditions/ Procedures<br><br>(ICD-10.3-AM Code available from Table 2-13) | Anaemia, Disorders of Thyroid Gland, Diabetes (combined), Hypertension, Dysrhythmias, Hypotension and Shock, Peritoneal Adhesions, Urinary Tract Infection (site not specified). |

| CI10 | Standard Primiparea (National Definition) |
|------|-------------------------------------------|

### Definition

| Principal Diagnosis Codes and/or Procedure Codes ICD-10.3-AM | Perinatal data collection (see criteria below). |
|---|---|

### Inclusion and Exclusion Criteria

| Separation date | Phase 2(b) - Between 1 July 2001 and 30 June 2002 inclusive (year = "2001/2002") Phase 3 – Between 1 July 2002 and 30 June 2003 inclusive (year = "2002/2003") 2005 Report –Between 1 July2003 and 30 June 2004 inclusive (year = "2003/2004") |
|---|---|
| State of usual residence | Queensland resident (state_id = "3") |
| Overnight stay patients | Patients must have spent at least one night in hospital (end_date > start_date) |
| Mother's age group | 25-29 years (moth_age_at_brth >= "25" and moth_age_at_brth <= "29") |
| Previous deliveries | No previous deliveries (pre_baby_alive = " " or "0" and pre_baby_not_alive = " " or "0") |
| Plurality | Singleton birth (plur = "1") |
| Period of gestation | 37-41 completed weeks (gest_weeks >= "37" and gest_weeks <= "41") |
| Presentation | Vertex presentation (pres = "1") |
| Place of birth | Exclude planned home births (intend_place_birth≠ "4" and fclty_id≠ "508 or 515") and not born in hospital (actual_place_birth = "1" or "2" and fclty_id≠ "00999") |
| Medical conditions (mother) | No exclusions |
| Complications of pregnancy | No exclusions |

### Outcome Indicators

| CI10.7 Caesarean Section Rate | Defined as the number of records where the method of delivery was a lower section Caesarean section or classical Caesarean section (deliv_code = "4" or "5"), divided by the total number of records. This outcome was only used for the standard primiparae cohort, and so all records relate to singleton births. Social Caesarean sections are a subset of all Caesarean sections, and were included in the numerator. |
|---|---|
| CI10.8 Induced Births | Defined as the number of records where the onset of labour was induced (labour_onset = "2"), divided by the total number of records. This outcome was only used for the standard primiparae cohort, and so all records relate to singleton births. Social inductions are a subset of all inductions, and were included in the numerator. |
| CI10.9 Severe Perineal Tears | Defined as the number of records where there was a 3$^{rd}$ or 4$^{th}$ degree laceration of the perineum (perinm= "4" or "5"), divided by the total number of records for vaginal births. Births by Caesarean section were excluded. This outcome was only used for the standard primiparae cohort, and so all records relate to singleton births. |

| Selected Comorbidities used for risk adjustment | |
|---|---|
| In an attempt to risk-adjust for illness severity and co-existing conditions, a range of comorbidities were considered. These comorbidities were chosen based on a number of criteria, including their frequency of occurrence within the various cohorts (based on diagnosis codes other than the principal diagnosis), specialist medical advice, and evidence from the literature (where it existed). | |
| Selected Comorbidities<br><br>Conditions/ Procedures<br><br>(ICD-10.3-AM Code available from Table 2-13) | Pre-existing hypertension complicating pregnancy, Pre- existing hypertension complicating pregnancy with superimposed proteinuria, Gestational Diabetes, Epilepsy, Placenta Praevia with haemorrhage, Premature separation of Placenta, Antepartum Haemorrhage (nec), Sexually Transmitted Diseases, Diseases of the Circulatory System, Renal Disease, Gestational hypertension/pre-eclampsia, Prolonged rupture of membranes. |

| CI13 | Maternal Post-Natal Long Stay Rate |
|---|---|

| | **Definition Vaginal Birth** |
|---|---|
| Principal Diagnosis Codes and/or Procedure Codes ICD-10.3-AM | Perinatal data collection (see "Additional Criteria" section). Includes the following methods of delivery: spontaneous vertex (deliv_code = "1"), forceps (deliv_code = "2"), vacuum extractor (deliv_code = "3"), breech (deliv_code = "6") or other cephalic (deliv_code = "7"). |

| | **Definition Caesarean Section Births** |
|---|---|
| Principal Diagnosis Codes and/or Procedure Codes ICD-10.3-AM | Perinatal data collection (see "Additional Criteria" section). Includes the following methods of delivery: lower segment Caesarean section (deliv_code = "4") and classical Caesarean section (deliv_code = "5"). |

| | **Inclusion and Exclusion Criteria** |
|---|---|
| Separation date | Phase 2(b) - Between 1 July 2001 and 30 June 2002 inclusive (year = "2001/2002") Phase 3 – Between 1 July 2002 and 30 June 2003 inclusive (year = "2002/2003") 2005 Report – Between 1 July2003 and 30 June 2004 inclusive (year = "2003/2004") |
| State of usual residence | Queensland resident (state_id = "3") |
| Overnight stay patients | Patients must have spent at least one night in hospital (end_date > start_date) |
| Postnatal length of stay | 0 - 30 patient days (postnatal_stay >= "0" and postnatal_stay <= "30") |
| Place of birth | Exclude planned home births (intend_place_birth≠ "4" and fclty_id≠ "508 or 515") and not born in hospital (actual_place_birth = "1" or "2" and fclty_id≠ "00999") |
| Maternal discharge status | Discharged home (mother_disch = "1") |
| Charging status | Public patients (chrg_status = "1") |

| | **Outcome Indicators** |
|---|---|
| **Long stay rate** **CI13.3** **CI13.4** | Vaginal Births Long Stay Point = 5 days Caesarean Section Long Stay Point = 7 Days For the purposes of this project, the long stay point was chosen as the day closest to the 90th percentile of all eligible length of stays. Long stays were used as the outcome rather than average length of stay because long stays were thought to be a more sensitive indicator of quality of care. Additionally, long stays are expressed as a rate making this indicator consistent with all of the other indicators used. Defined as the number of records where the number of patient days *equalled or exceeded* the long stay point, divided by the total number of records. Cases of in-hospital mortality prior to the long stay point were excluded from the calculation of the long stay rate, but patients who died on or after the long stay point were included for this indicator. |

**Selected Comorbidities used for risk adjustment**

In an attempt to risk-adjust for illness severity and co-existing conditions, a range of comorbidities were considered. These comorbidities were chosen based on a number of criteria, including their frequency of occurrence within the various cohorts (based on diagnosis codes other than the principal diagnosis), specialist medical advice, and evidence from the literature (where it existed).

| Selected Comorbidities Conditions/ Procedures (ICD-10.3-AM Code available from Table 2-13) | Herpes, Disorders of Thyroid Gland, Asthma, Urinary Tract Infection (site not specified), Pre-existing hypertension complicating pregnancy, Gestational hypertension without significant proteinuria, Gestational hypertension with significant proteinuria, Gestational Diabetes, Placenta Praevia with haemorrhage, Premature separation of Placenta, Antepartum Haemorrhage (nec). |
|---|---|

| CI14 | Asthma |
|---|---|

### Definition

| Principal Diagnosis Codes and/or Procedure Codes ICD-10.3-AM | J45, J46 |
|---|---|

### Inclusion and Exclusion Criteria

| Separation date | Phase 2(b) - Between 1 July 2001 and 30 June 2002 inclusive (year = "2001/2002") |
|---|---|
| | Phase 3 – Between 1 July 2002 and 30 June 2003 inclusive (year = "2002/2003") |
| | 2005 Report – Between 1 July2003 and 30 June 2004 inclusive (year = "2003/2004") |
| State of usual residence | Queensland resident (state_id = "3") |
| Episode type | Acute patients (epis_type = "01") |
| Overnight stay patients | Patients must have spent at least one night in hospital (end_date > start_date |
| Age | 20 – 89 years (age_grp >= "05" and age_grp <= "18") |
| Length of stay | 1 - 30 patient days (pat_day >= "1" and pat_day <= "30") |
| Admission source | Exclude transfers in (orig-ref-code ≠ 24) |
| Separation mode | Exclude transfers out (sepn_mode ≠ "16") |

### Outcome Indicators

| **Long stay rate**<br><br>**CI14.1** | Long Stay Point = 7 Days |
|---|---|
| | For the purposes of this project, the long stay point was chosen as the day closest to the 90<sup>th</sup> percentile of all eligible length of stays. Long stays were used as the outcome rather than average length of stay because long stays were thought to be a more sensitive indicator of quality of care. Additionally, long stays are expressed as a rate making this indicator consistent with all of the other indicators used. |
| | Defined as the number of records where the number of patient days *equalled or exceeded* the long stay point, divided by the total number of records. Cases of in-hospital mortality prior to the long stay point were excluded from the calculation of the long stay rate, but patients who died on or after the long stay point were included for this indicator. |

### Selected Comorbidities used for risk adjustment

In an attempt to risk-adjust for illness severity and co-existing conditions, a range of comorbidities were considered. These comorbidities were chosen based on a number of criteria, including their frequency of occurrence within the various cohorts (based on diagnosis codes other than the principal diagnosis), specialist medical advice, and evidence from the literature (where it existed).

| Selected Comorbidities<br><br>Conditions/ Procedures<br><br>(ICD-10.3-AM Code available from Table 2-13) | Anaemia, Disorders of Thyroid Gland, Diabetes (combined),Hypertension, Ischaemic Heart Disease, Dysrhythmias, Heart Failure, Acute LRTI and Influenza, Other Obstructive Pulmonary Disease, Renal Failure, Urinary Tract Infection (site not specified). |
|---|---|

| CI15 | Colorectal Carcinoma |
|---|---|

## Definition

| Principal Diagnosis Codes and/or Procedure Codes ICD-10.3-AM | Principal diagnosis code of C18-C20 or C21.8 with at least one of the following procedure codes: 32000-00, 32000-01, 32003-00, 32003-01, 32004-00, 32005-00, 32006-00, 32006-01, 32012-00, 32015-00, 32024-00, 32025-00, 32026-00, 32028-00, 32030-00, 32033-00, 32039-00, 32051-00, 32051-01. |
|---|---|

## Inclusion and Exclusion Criteria

| Separation date | Phase 2(b) - Between 1 July 2001 and 30 June 2002 inclusive (year = "2001/2002") Phase 3 – Between 1 July 2002 and 30 June 2003 inclusive (year = "2002/2003") 2005 Report –Between 1 July2003 and 30 June 2004 inclusive (year = "2003/2004") |
|---|---|
| State of usual residence | Queensland resident (state_id = "3") |
| Episode type | Acute patients (epis_type = "01") |
| Overnight stay patients | Patients must have spent at least one night in hospital (end_date > start_date |
| Age | 20 years or older (age_grp >= "05") |
| Length of stay | 4 - 30 patient days (pat_day >= "4" and pat_day <= "30"), unless the patient had a length of stay from 1 - 3 patient days and died in hospital (pat_day >= "1" and pat_day <= "3" and sepn_mode = "05") |
| Admission source | Excludes transfers in (orig-ref-code ≠ 4") |
| Separation mode | Exclude transfers out (sepn_mode ≠ "16") |

## Outcome Indicators

| **Long stay rate** **CI15.1** | Long Stay Point = 19 Days For the purposes of this project, the long stay point was chosen as the day closest to the 90th percentile of all eligible length of stays. Long stays were used as the outcome rather than average length of stay because long stays were thought to be a more sensitive indicator of quality of care. Additionally, long stays are expressed as a rate making this indicator consistent with all of the other indicators used. Defined as the number of records where the number of patient days *equalled or exceeded* the long stay point, divided by the total number of records. Cases of in-hospital mortality prior to the long stay point were excluded from the calculation of the long stay rate, but patients who died on or after the long stay point were included for this indicator. |
|---|---|
| **Complications of Surgery** **CI15.3** | Defined as the number of records where **any** of the external cause codes was between "Y60"-"Y6999" or "Y83"-"Y8499", divided by the total number of records. Because the external cause codes used to define complications of surgery (ie "Y60"-"Y6999" or "Y83"-"Y8499") are not very descriptive, a breakdown of the diagnosis codes that "triggered" the complication code was included in the output. This was done to provide clinicians with more detail about the type and seriousness of the complications. The diagnosis codes that were used for this further analysis are shown in Table 2-3. Both counts and percentages of the types of complications were provided. Note that each patient with a complication could have more than one type of complication, and therefore it was quite possible for the total number of complications shown to exceed the number of patients reported as having complications. Similarly, the percentages of complication type were based on the total number of patients with complications, rather than the total number of complications, and therefore the percentages for each hospital could add to more than 100%. |

| **Selected Comorbidities used for risk adjustment** | |
|---|---|
| In an attempt to risk-adjust for illness severity and co-existing conditions, a range of comorbidities were considered. These comorbidities were chosen based on a number of criteria, including their frequency of occurrence within the various cohorts (based on diagnosis codes other than the principal diagnosis), specialist medical advice, and evidence from the literature (where it existed). | |
| Selected Comorbidities Conditions/ Procedures (ICD-10.3-AM Code available from Table 2-13) | Septicaemia, Anaemia, Hypertension, Ischaemic Heart Disease, Dysrhythmias, Heart Failure, Hypotension & Shock, Other Chronic Obstructive Pulmonary Disease, Acute LRTI and influenza, Peritoneal Adhesions, Renal Failure, Urinary Tract Infections (site not specified). |

| CI16 | Laparoscopic Cholecystectomy |
|---|---|

### Definition

| Principal Diagnosis Codes and/or Procedure Codes ICD-10.3-AM | Any diagnosis code with at least 30445-00 as a procedure code |
|---|---|

### Inclusion and Exclusion Criteria

| Separation date | Phase 2(b) - Between 1 July 2001 and 30 June 2002 inclusive (year = "2001/2002") |
|---|---|
| | Phase 3 -- Between 1 July 2002 and 30 June 2003 inclusive (year = "2002/2003") |
| | 2005 Report--Between 1 July2003 and 30 June 2004 inclusive (year = "2003/2004") |
| State of usual residence | Queensland resident (state_id = "3") |
| Episode type | Acute patients (epis_type = "01") |
| Age Group | 20 years or older (age_grp >= "05") |
| Length of Stay | 0 - 30 patient days (pat_day >= "0" and pat_day <= "30") |
| Admission source | Exclude transfers in  (orig_ref_code ≠ "24") |
| | Include same day patients |
| | Include planned elective patients only (elect_status = "2") |
| Separation mode | Exclude transfers out (sepn_mode ≠ "16") |

### Outcome Indicators

| **Long stay rate**<br><br>**CI16.1** | Long Stay Point = 3 Days |
|---|---|
| | For the purposes of this project, the long stay point was chosen as the day closest to the 90th percentile of all eligible length of stays.  Long stays were used as the outcome rather than average length of stay because long stays were thought to be a more sensitive indicator of quality of care.  Additionally, long stays are expressed as a rate making this indicator consistent with all of the other indicators used. |
| | Defined as the number of records where the number of patient days *equalled or exceeded* the long stay point, divided by the total number of records.  Cases of in-hospital mortality prior to the long stay point were excluded from the calculation of the long stay rate, but patients who died on or after the long stay point were included for this indicator. |
| **Complications of Surgery**<br><br>**CI16.2** | Defined as the number of records where **any** of the external cause codes was between "Y60"-"Y6999" or "Y83"-"Y8499", divided by the total number of records. |
| | Because the external cause codes used to define complications of surgery (ie "Y60"-"Y6999" or "Y83"-"Y8499") are not very descriptive, a breakdown of the diagnosis codes that "triggered" the complication code was included in the output.  This was done to provide clinicians with more detail about the type and seriousness of the complications.  The diagnosis codes that were used for this further analysis are shown in Table 2-3. |
| | Both counts and percentages of the types of complications were provided.  Note that each patient with a complication could have more than one type of complication, and therefore it was quite possible for the total number of complications shown to exceed the number of patients reported as having complications.  Similarly, the percentages of complication type were based on the total number of patients with complications, rather than the total number of complications, and therefore the percentages for each hospital could add to more than 100%. |

### Selected Comorbidities used for risk adjustment

In an attempt to risk-adjust for illness severity and co-existing conditions, a range of comorbidities were considered.  These comorbidities were chosen based on a number of criteria, including their frequency of occurrence within the various cohorts (based on diagnosis codes other than the principal diagnosis), specialist medical advice, and evidence from the literature (where it existed).

| Selected Comorbidities Conditions/ Procedures (ICD-10.3-AM Code available from Table 2- 13) | Malignancy, Diabetes (combined), Hypertension, Ischaemic Heart Disease, Dysrhythmias, Other Chronic Obstructive Pulmonary Disease, Peritoneal Adhesions, Liver Disease. |
|---|---|

| CI17 | Mastectomy |
|---|---|

### Definition

| Principal Diagnosis Codes and/or Procedure Codes ICD-10.3-AM | Procedure code of 30351-00 |
|---|---|

### Inclusion and Exclusion Criteria

| Separation date | Phase 2(b) - Between 1 July 2001 and 30 June 2002 inclusive (year = "2001/2002") |
|---|---|
| | Phase 3 – Between 1 July 2002 and 30 June 2003 inclusive (year = "2002/2003") |
| | 2005 Report – Between 1 July 2003 and 30 June 2004 inclusive (year = "2003/2004") |
| State of usual residence | Queensland resident (state_id = "3") |
| Episode type | Acute patients (epis_type = "01") |
| Age Group | 20 years or older (age_grp >= "05") |
| Length of Stay | 0 - 30 patient days (pat_day >= "0" and pat_day <= "30") |
| Admission source | Exclude transfers in (orig_ref_code ≠ "24") |
| | Include same day patients |
| Separation mode | Exclude transfers out (sepn_mode ≠ "16"). |
| Sex | Female (sex = "2") |

### Outcome Indicators

| Long stay rate CI17.1 | Long Stay Point = 8 days |
|---|---|
| | For the purposes of this project, the long stay point was chosen as the day closest to the 90th percentile of all eligible length of stays. Long stays were used as the outcome rather than average length of stay because long stays were thought to be a more sensitive indicator of quality of care. Additionally, long stays are expressed as a rate making this indicator consistent with all of the other indicators used. |
| | Defined as the number of records where the number of patient days *equalled or exceeded* the long stay point, divided by the total number of records. Cases of in-hospital mortality prior to the long stay point were excluded from the calculation of the long stay rate, but patients who died on or after the long stay point were included for this indicator. |

### Selected Comorbidities used for risk adjustment

In an attempt to risk-adjust for illness severity and co-existing conditions, a range of comorbidities were considered. These comorbidities were chosen based on a number of criteria, including their frequency of occurrence within the various cohorts (based on diagnosis codes other than the principal diagnosis), specialist medical advice, and evidence from the literature (where it existed).

| Selected Comorbidities Conditions/ Procedures (ICD-10.3-AM Code available from Table 2-13) | Anaemia. |
|---|---|

| CI18 | Lumpectomy |
|---|---|

| Definition | |
|---|---|
| Principal Diagnosis Codes and/or Procedure Codes ICD-10.3-AM | Procedure code of 30347-00 |

| Inclusion and Exclusion Criteria | |
|---|---|
| Separation date | Phase 2(b) - Between 1 July 2001 and 30 June 2002 inclusive (year = "2001/2002")<br><br>Phase 3 – Between 1 July 2002 and 30 June 2003 inclusive (year = "2002/2003")<br><br>2005 Report – Between 1 July 2003 and 30 June 2004 inclusive (year = "2003/2004") |
| State of usual residence | Queensland resident (state_id = "3") |
| Episode type | Acute patients (epis_type = "01") |
| Age Group | 20 years or older (age_grp >= "05") |
| Length of Stay | 0 - 30 patient days (pat_day >= "0" and pat_day <= "30") |
| Admission source | Exclude transfers in (orig_ref_code ≠ "24")<br><br>Include same day patients |
| Separation mode | Exclude transfers out (sepn_mode ≠ "16"). |
| Sex | Female (sex = "2") |

| Outcome Indicators | |
|---|---|
| **Long stay rate**<br><br>**CI18.1** | Long Stay Point = 4 days<br><br>For the purposes of this project, the long stay point was chosen as the day closest to the 90th percentile of all eligible length of stays. Long stays were used as the outcome rather than average length of stay because long stays were thought to be a more sensitive indicator of quality of care. Additionally, long stays are expressed as a rate making this indicator consistent with all of the other indicators used.<br><br>Defined as the number of records where the number of patient days *equalled or exceeded* the long stay point, divided by the total number of records. Cases of in-hospital mortality prior to the long stay point were excluded from the calculation of the long stay rate, but patients who died on or after the long stay point were included for this indicator. |

| Selected Comorbidities used for risk adjustment | |
|---|---|
| In an attempt to risk-adjust for illness severity and co-existing conditions, a range of comorbidities were considered. These comorbidities were chosen based on a number of criteria, including their frequency of occurrence within the various cohorts (based on diagnosis codes other than the principal diagnosis), specialist medical advice, and evidence from the literature (where it existed). | |
| Selected Comorbidities<br><br>Conditions/ Procedures<br><br>(ICD-10.3-AM Code available from Table 2-13) | Malignancy, Diabetes (combined), Hypertension. |

| CI19 | Prostatectomy |
|---|---|

| Definition ||
|---|---|
| Principal Diagnosis Codes and/or Procedure Codes ICD-10.3-AM | Procedure code of 37203-00 |

| Inclusion and Exclusion Criteria ||
|---|---|
| Separation date | Phase 2(b) - Between 1 July 2001 and 30 June 2002 inclusive (year = "2001/2002") <br><br> Phase 3 – Between 1 July 2002 and 30 June 2003 inclusive (year = "2002/2003") <br><br> 2005 Report–Between 1 July2003 and 30 June 2004 inclusive (year = "2003/2004") |
| State of usual residence | Queensland resident (state_id = "3") |
| Episode type | Acute patients (epis_type = "01") |
| Length of Stay | 0 - 30 patient days (pat_day >= "0" and pat_day <= "30") |
| Admission source | Exclude transfers in (orig_ref_code ≠ "24") <br><br> Include same day patients |
| Separation mode | Exclude transfers out (sepn_mode ≠ "16"). |
| Sex | Male (sex = "1") |

| Outcome Indicators ||
|---|---|
| **Long stay rate** <br><br> **CI19.1** | Long Stay Point = 7 Days <br><br> For the purposes of this project, the long stay point was chosen as the day closest to the $90^{th}$ percentile of all eligible length of stays. Long stays were used as the outcome rather than average length of stay because long stays were thought to be a more sensitive indicator of quality of care. Additionally, long stays are expressed as a rate making this indicator consistent with all of the other indicators used. <br><br> Defined as the number of records where the number of patient days *equalled or exceeded* the long stay point, divided by the total number of records. Cases of in-hospital mortality prior to the long stay point were excluded from the calculation of the long stay rate, but patients who died on or after the long stay point were included for this indicator. |
| **Complications of Surgery** <br><br> **CI19.2** | Defined as the number of records where **any** of the external cause codes was between "Y60"-"Y6999" or "Y83"-"Y8499", divided by the total number of records. <br><br> Because the external cause codes used to define complications of surgery (ie "Y60"-"Y6999" or "Y83"-"Y8499") are not very descriptive, a breakdown of the diagnosis codes that "triggered" the complication code was included in the output. This was done to provide clinicians with more detail about the type and seriousness of the complications. The diagnosis codes that were used for this further analysis are shown in Table 7. <br><br> Both counts and percentages of the types of complications were provided. Note that each patient with a complication could have more than one type of complication, and therefore it was quite possible for the total number of complications shown to exceed the number of patients reported as having complications. Similarly, the percentages of complication type were based on the total number of patients with complications, rather than the total number of complications, and therefore the percentages for each hospital could add to more than 100%. |

**Selected Comorbidities used for risk adjustment**

In an attempt to risk-adjust for illness severity and co-existing conditions, a range of comorbidities were considered. These comorbidities were chosen based on a number of criteria, including their frequency of occurrence within the various cohorts (based on diagnosis codes other than the principal diagnosis), specialist medical advice, and evidence from the literature (where it existed).

| Selected Comorbidities Conditions/ Procedures (ICD-10.3-AM Code available from Table 2-13) | Malignancy, Anaemia, Diabetes (combined), Hypertension, Ischaemic Heart Disease, Dysrhythmias, Hypotension and Shock, Renal Failure, Urinary Tract Infection (site not specified). |
|---|---|

.

| CI20 | Depression |
|---|---|

<div align="center"><b>Definition</b></div>

| Principal Diagnosis Codes and/or Procedure Codes ICD-10.3-AM | Principal diagnosis code of F313-F315,F3200,F3210,F3220,3230,F3280,F3290, F330-F334, F338-F339 |
|---|---|

<div align="center"><b>Inclusion and Exclusion Criteria</b></div>

| Separation date | Phase 2(b) - Between 1 July 2001 and 30 June 2002 inclusive (year = "2001/2002")<br><br>Phase 3 – Between 1 July 2002 and 30 June 2003 inclusive (year = "2002/2003")<br><br>2005 Report –Between 1 July2003 and 30 June 2004 inclusive (year = "2003/2004") |
|---|---|
| State of usual residence | Queensland resident (state_id = "3") |
| Episode type | Includes only patients admitted to acute psych units(stnd_unit_code="PYAA"). |
| Overnight stay patients | Patients must have spent at least one night in hospital (end_date > start_date) |
| Age Group | 18-65 |
| Length of Stay | 2 patient days or longer (ie. same day patients excluded).  Patients admitted for one night with a principal procedure code of  93340-00 or 93340-01 were also excluded |
| Admission source | Patients being transferred in were included.  Patients who had no fixed abode were excluded (usual_accom_type ≠ "8"). |
| Separation mode | Exclude transfers out (sepn_mode ≠ "16") |
| Readmissions | Patients readmitted to any Queensland hospital within 28 days of discharge to home/usual residence (sepn_mode="01") with a principal diagnosis of depression. |

<div align="center"><b>Outcome Indicators</b></div>

| **Long stay rate**<br><br>**CI20.1** | Long Stay Point = 21 Days<br><br>For the purposes of this project, the long stay point was chosen as the day closest to the 90th percentile of all eligible length of stays.  Long stays were used as the outcome rather than average length of stay because long stays were thought to be a more sensitive indicator of quality of care.  Additionally, long stays are expressed as a rate making this indicator consistent with all of the other indicators used.<br><br>Defined as the number of records where the number of patient days *equalled or exceeded* the long stay point, divided by the total number of records.  Cases of in-hospital mortality prior to the long stay point were excluded from the calculation of the long stay rate, but patients who died on or after the long stay point were included for this indicator. |
|---|---|
| **Readmissions**<br><br>**CI20.2** | Defined as the number of records where a readmission was identified divided by the total number of records.  Readmissions were identified using probabilistic matching of identified data to allow inclusion of readmissions to a different facility as well as readmissions to the same facility.  Episodes were matched using patient name (first name, surname and phonetic version of surname), date of birth, address (street, suburb and postcode), age and sex.  To be considered a match, patients were required to be of the same sex and to have at least four of the other eight variables matching.  A manual check was also conducted of potential matches to eliminate any false matches.  Records were matched for acute episodes only to avoid counting hospitalisation for rehabilitation as a readmission.  Transfers in and out were also excluded from the set to avoid counting transfers as a readmission. |

| **Selected Comorbidities used for risk adjustment** | |
|---|---|
| In an attemp t to risk-adjust for illness severity and co-existing conditions, a range of comorbidities were considered. These comorbidities were chosen based on a number of criteria, including their frequency of occurrence within the various cohorts (based on diagnos is codes other than the principal diagnosis), specialist medical advice, and evidence from the literature (where it existed). | |
| Selected Comorbidities<br><br>Conditions/ Procedures<br><br>(ICD-10.3-AM Code available from Table 2-13) | Hypertension, Intestinal Disorders, Burns, Poisoning, Hypotension. |

| CI21 | Schizophrenia |
|---|---|

| Definition ||
|---|---|
| Principal Diagnosis Codes and/or Procedure Codes ICD-10.3-AM | Principal diagnosis code of F200,F201,F202,F203,F205,F209,F232 |

| Inclusion and Exclusion Criteria ||
|---|---|
| Separation date | Phase 2(b) - Between 1 July 2001 and 30 June 2002 inclusive (year = "2001/2002") Phase 3 – Between 1 July 2002 and 30 June 2003 inclusive (year = "2002/2003") 2005 Report –Between 1 July2003 and 30 June 2004 inclusive (year = "2003/2004") |
| State of usual residence | Queensland resident (state_id = "3") |
| Episode type | Includes only patients admitted to acute psych units (stnd_unit_code="PYAA"). |
| Overnight stay patients | Patients must have spent at least one night in hospital (end_date > start_date) |
| Age Group | 18-65 |
| Length of Stay | 2 patient days or longer (ie. same day patients excluded). Patients admitted for one night with a principal procedure code of 93340-00 or 93340-01 were also excluded |
| Admission source | Patients being transferred in were included. Patients who had no fixed abode were excluded (usual_accom_type ≠ "8"). |
| Separation mode | Exclude transfers out (sepn_mode ≠ "16") |
| Readmissions | Patients readmitted to any Queensland hospital within 28 days of discharge to home/usual residence (sepn_mode="01") with a principal diagnosis of schizophrenia. |

| Outcome Indicators ||
|---|---|
| Long stay rate CI21.1 | Long Stay Point = 39 Days For the purposes of this project, the long stay point was chosen as the day closest to the 90th percentile of all eligible length of stay. Long stays were used as the outcome rather than average length of stay because long stays were thought to be a more sensitive indicator of quality of care. Additionally, long stays are expressed as a rate making this indicator consistent with all of the other indicators used. Defined as the number of records where the number of patient days *equalled or exceeded* the long stay point, divided by the total number of records. Cases of in-hospital mortality prior to the long stay point were excluded from the calculation of the long stay rate, but patients who died on or after the long stay point were included for this indicator. |
| Readmissions CI21.2 | Defined as the number of records where a readmission was identified divided by the total number of records. Readmissions were identified using probabilistic matching of identified data to allow inclusion of readmissions to a different facility as well as readmissions to the same facility. Episodes were matched using patient name (first name, surname and phonetic version of surname), date of birth, address (street, suburb and postcode), age and sex. To be considered a match, patients were required to be of the same sex and to have at least four of the other eight variables matching. A manual check was also conducted of potential matches to eliminate any false matches. Records were matched for acute episodes only to avoid counting hospitalisation for rehabilitation as a readmission. Transfers in and out were also excluded from the set to avoid counting transfers as a readmission. |

| Selected Comorbidities used for risk adjustment | |
|---|---|
| In an attempt to risk-adjust for illness severity and co-existing conditions, a range of comorbidities were considered. These comorbidities were chosen based on a number of criteria, including their frequency of occurrence within the various cohorts (based on diagnosis codes other than the principal diagnosis), specialist medical advice, and evidence from the literature (where it existed). | |
| Selected Comorbidities<br><br>Conditions/ Procedures<br><br>(ICD-10.3-AM Code available from Table 2-13) | Hypertension, Ischaemic Heart Disease, Hypotension and Shock, Urinary tract Infection (site not specified), Acute Upper RTI, Migraine, Intestinal Disorders, Open wound of wrist or hand, Cellulitis, Other Urinary Symptoms. |

| CI50 | Paediatric Bronchiolitis |
|---|---|

| **Definition** ||
|---|---|
| Principal Diagnosis Codes and/or Procedure Codes ICD-10.3-AM | Procedure code of J11.1, J21.0, J21.8, J21.9, J44.8, J68.4 or J84.8. |

| **Inclusion and Exclusion Criteria** ||
|---|---|
| Separation date | Phase 2(b) - Between 1 July 2001 and 30 June 2002 inclusive (year = "2001/2002")<br><br>Phase 3 – Between 1 July 2002 and 30 June 2003 inclusive (year = "2002/2003")<br><br>2005 Report –Between 1 July2003 and 30 June 2004 inclusive (year = "2003/2004") |
| State of usual residence | Queensland resident (state_id = "3") |
| Episode type | Acute patients (epis_type = "01") |
| Age Group | 0 – 14 years (age_grp <= "03") |
| Length of Stay | 0 - 30 patient days (pat_day >= "0" and pat_day <= "30") |
| Admission source | Exclude transfers in  (orig_ref_code ≠ "24")<br><br>Include same day patients |
| Separation mode | Exclude transfers out (sepn_mode ≠ "16") |

| **Outcome Indicators** ||
|---|---|
| **Long stay rate**<br><br>**CI50.1** | Long Stay Point = 7 Days<br><br>For the purposes of this project, the long stay point was chosen as the day closest to the 90th percentile of all eligible length of stays.  Long stays were used as the outcome rather than average length of stay because long stays were thought to be a more sensitive indicator of quality of care.  Additionally, long stays are expressed as a rate making this indicator consistent with all of the other indicators used.<br><br>Defined as the number of records where the number of patient days *equalled or exceeded* the long stay point, divided by the total number of records.  Cases of in-hospital mortality prior to the long stay point were excluded from the calculation of the long stay rate, butpatients who died on or after the long stay point were included for this indicator. |

| **Selected Comorbidities used for risk adjustment** |
|---|
| This indicator has not been risk adjusted for selected comorbidities |

| CI51 | Paediatric Gastroenteritis |
|---|---|

## Definition

| Principal Diagnosis Codes and/or Procedure Codes ICD-10.3-AM | Procedure code of A09, K52.0, K52.1, K52.2, K52.8, K52.9, A07.2, A05.9, A08.1, A08.3, A08.0, A08.4, A08.5 or A02.0. |
|---|---|

## Inclusion and Exclusion Criteria

| Separation date | Phase 2(b) - Between 1 July 2001 and 30 June 2002 inclusive (year = "2001/2002") |
|---|---|
| | Phase 3 – Between 1 July 2002 and 30 June 2003 inclusive (year = "2002/2003") |
| | 2005 Report – Between 1 July 2003 and 30 June 2004 inclusive (year = "2003/2004") |
| State of usual residence | Queensland resident (state_id = "3") |
| Episode type | Acute patients (epis_type = "01") |
| Age Group | 0 – 14 years (age_grp <= "03") |
| Length of Stay | 0 - 30 patient days (pat_day >= "0" and pat_day <= "30") |
| Admission source | Exclude transfers in (orig_ref_code ≠ "24") |
| | Include same day patients |
| Separation mode | Exclude transfers out (sepn_mode ≠ "16") |

## Outcome Indicators

| **Long stay rate** **CI51.1** | Long Stay Point = 3 Days |
|---|---|
| | For the purposes of this project, the long stay point was chosen as the day closest to the 90th percentile of all eligible length of stays. Long stays were used as the outcome rather than average length of stay because long stays were thought to be a more sensitive indicator of quality of care. Additionally, long stays are expressed as a rate making this indicator consistent with all of the other indicators used. |
| | Defined as the number of records where the number of patient days *equalled or exceeded* the long stay point, divided by the total number of records. Cases of in-hospital mortality prior to the long stay point were excluded from the calculation of the long stay rate, but patients who died on or after the long stay point were included for this indicator. |

## Selected Comorbidities used for risk adjustment

| This indicator has not been risk adjusted for selected comorbidities. |
|---|

| CI52 | Paediatric Asthma |
|---|---|

### Definition

| Principal Diagnosis Codes and/or Procedure Codes ICD-10.3-AM | Principal diagnosis of J45.0, J45.1, J45.8, J45.9, J46 |
|---|---|

### Inclusion and Exclusion Criteria

| Separation date | Phase 2(b) - Between 1 July 2001 and 30 June 2002 inclusive (year = "2001/2002")<br><br>Phase 3 – Between 1 July 2002 and 30 June 2003 inclusive (year = "2002/2003")<br><br>2005 Report–Between 1 July2003 and 30 June 2004 inclusive (year = "2003/2004") |
|---|---|
| State of usual residence | Queensland resident (state_id = "3") |
| Episode type | Acute patients (epis_type = "01") |
| Age Group | 0 – 14 years (age_grp <= "03") |
| Length of Stay | 0 - 30 patient days (pat_day >= "0" and pat_day <= "30") |
| Admission source | Exclude transfers in (orig_ref_code ≠ "24")<br><br>Include same day patients |
| Separation mode | Exclude transfers out (sepn_mode ≠ "16") |
| Readmissions | Not calculated due to small number of outcomes (<1%) |

### Outcome Indicators

| Long stay rate<br><br>CI52.1 | Long Stay Point = 4 Days |
|---|---|
| | For the purposes of this project, the long stay point was chosen as the day closest to the 90th percentile of all eligible length of stays. Long stays were used as the outcome rather than average length of stay because long stays were thought to be a more sensitive indicator of quality of care. Additionally, long stays are expressed as a rate making this indicator consistent with all of the other indicators used. |
| | Defined as the number of records where the number of patient days *equalled or exceeded* the long stay point, divided by the total number of records. Cases of in-hospital mortality prior to the long stay point were excluded from the calculation of the long stay rate, but patients who died on or after the long stay point were included for this indicator. |

### Selected Comorbidities used for risk adjustment

In an attempt to risk-adjust for illness severity and co-existing conditions, a range of comorbidities were considered. These comorbidities were chosen based on a number of criteria, including their frequency of occurrence within the various cohorts (based on diagnosis codes other than the principal diagnosis), specialist medical advice, and evidence from the literature (where it existed).

| Selected Comorbidities<br><br>Conditions/ Procedures<br><br>(ICD-10.3-AM Code available from Table 2-13) | Respiratory Syndrome, Acute LRTI. |
|---|---|

| CI53 | Paediatric Tonsillectomy and/or Adenoidectomy |
|---|---|

| Definition | |
|---|---|
| Principal Diagnosis Codes and/or Procedure Codes ICD-10.3-AM | Procedure code of 41789-00, 41801-00 or 41789-01 |

| Inclusion and Exclusion Criteria | |
|---|---|
| Separation date | Phase 2(b) - Between 1 July 2001 and 30 June 2002 inclusive (year = "2001/2002") <br><br> Phase 3 – Between 1 July 2002 and 30 June 2003 inclusive (year = "2002/2003") <br><br> 2005 Report –Between 1 July2003 and 30 June 2004 inclusive (year = "2003/2004") |
| State of usual residence | Queensland resident (state_id = "3") |
| Episode type | Acute patients (epis_type = "01") |
| Age Group | 0 – 14 years (age_grp <= "03") |
| Length of Stay | 0 – 30 patient days (pat_day >= "0" and pat_day <= "30") |
| Admission source | Exclude transfers in (orig_ref_code ≠ "24") <br><br> Include same day patients |
| Separation mode | Exclude transfers out (sepn_mode ≠ "16") |
| Readmissions | Patients readmitted to any Queensland hospital within 15 days of discharge to home/usual residence (sepn_mode="01") for a condition that could be considered a consequence of the procedure |

| Outcome Indicators | |
|---|---|
| Long stay rate <br><br> CI53.1 | Long Stay Point = 2 Days <br><br> For the purposes of this project, the long stay point was chosen as the day closest to the 90th percentile of all eligible length of stays. Long stays were used as the outcome rather than average length of stay because long stays were thought to be a more sensitive indicator of quality of care. Additionally, long stays are expressed as a rate making this indicator consistent with all of the other indicators used. <br><br> Defined as the number of records where the number of patient days *equalled or exceeded* the long stay point, divided by the total number of records. Cases of in-hospital mortality prior to the long stay point were excluded from the calculation of the long stay rate, but patients who died on or after the long stay point were included for this indicator. |
| Readmissions <br><br> CI53.2 | Defined as the number of records where a readmission was identified divided by the total number of records. Readmissions were identified using probabilistic matching of identified data to allow inclusion of readmissions to a different facility as well as readmissions to the same facility. Episodes were matched using patient name (first name, surname and phonetic version of surname), date of birth, address (street, suburb and postcode), age and sex. To be considered a match, patients were required to be of the same sex and to have at least four of the other eight variables matching. A manual check was also conducted of potential matches to eliminate any false matches. Records were matched for acute episodes only to avoid counting hospitalisation for rehabilitation as a readmission. Transfers in and out were also excluded from the set to avoid counting transfers as a readmission. |

| Selected Comorbidities used for risk adjustment |
|---|

This indicator has not been risk adjusted for selected comorbidities.

# Efficiency

## Chapter 3

### 3.1 Overview

Measures of (technical) efficiency performance are an important component of reports on hospital performance. Efficient use of resources is critical to a hospital's ability to provide the right amount of quality services. This section describes the methodology used to define and calculate the measures of efficiency performance presented in the hospital report. A brief overview of data sources used together with the steps taken to verify and validate data prior to calculating indicators is provided. The role of the 'experts' is discussed together with the process used to select the measures of efficiency performance presented in the hospital report. The methods used to compare hospitals and assign relative performance ratings are then outlined. The last section concludes with the definitions of the measures.

This supplement is to be read in conjunction with previous Technical Supplements and Measured Quality Hospital Reports.

### 3.2 Data Sources

#### 3.2.1 Use of Experts

The Measured Quality Service sought the assistance of experts with the aim to assist in the selection of a small number of indicators that are both meaningful and relevant. The following steps were taken:

For the initial phases of the project:
Two workshops were held to provide guidance on the selection of indicators;
Consultations were held with relevant data experts or custodians in corporate office;
Information presented to Measured Quality Program Area Board;
Information presented to Measured Quality Program Area Sponsors.
An additional review of indicator selection was undertaken by the Measured Quality Efficiency Review Working Party
Indicators represented to the Measured Quality Program Area Board and Sponsors

For the third phase of the project:
Consultation was undertaken with relevant data experts and data custodians in Corporate Office;
Documented end user feedback was taken into consideration with regards to indicator refinement and scope;
Presented to Measured Quality Service Board;
Presented to Measured Quality Service Sponsors.
A review of indicator selection was undertaken by the Measured Quality Efficiency Review Working Party including data experts, Hospital Managers, end users and data custodians;
Indicators represented to the Measured Quality Service Board and Sponsors.

For the current report:
Consultation was undertaken with relevant data experts and data custodians in Corporate Office;
Documented end user feedback and the outcomes of Hospital presentations were taken into consideration with regards to indicator refinement and scope;
A review of indicator selection was undertaken by the Measured Quality Efficiency Review Working Party including data experts, Hospital Managers, end users and data custodians;

#### 3.2.2 Developing the Indicators

The work completed for the hospital report identified hundreds of indicators that have been applied in hospital settings. Twenty-five were initially selected for the hospital report. The current suite of indicators has been enhanced from those previously released. These indicators may be classified into three broad categories:

**Cost of the service:** for example cost per weighted separations; cost of catering; energy costs;
**Activity of the service:** for example bed occupancy; length of stay; and day surgery;
**Staff resources:** for example number of staff, sick leave, overtime and Work Cover.

Readers will note that these measures are related to the capacity and utilisation (as measured by cost and activity, and staffing levels) of hospital services. It is assumed that there is capacity for improving the utilisation of services. It is reasonable to expect that if an individual hospital's utilisation is consistently higher than comparable hospitals, capacity to increase service delivery is lower. Alternatively, if an individual hospital utilisation is consistently lower than comparable hospitals, the assumption is that there is a greater capacity to increase service delivery. The testing

of these assumptions is outside the scope of this report. However, a technical efficiency analysis will identify potential sources of inefficiency. Benchmarks may then be established based on these data, in order to set standards of efficiency for hospitals that are feasible and maintain a level of service quality (Berman, 1995, Degeling et al., 2000)

Section 3.3 provides the descriptive definitions for the indicators. These definitions provide the necessary information required to replicate indicator calculations.

Section 3.4 provides a detailed summary of the Data Envelopment Analysis technique used to assess relative Technical Efficiency of the selected hospitals in the study.

### 3.2.3  Sources of Data

The majority of information provided in this study is derived from data collected for the 2003/04 (current), 2002/03 and 2001/02 financial years. This represents the most recent data available at the time of publication. The various data sources used are provided in the following table.

**Table 3-1 Data Characteristics**

| Data Source | Current Year | Indicators | Corporate Responsibility |
|---|---|---|---|
| LATTICE / HR Decision Support System(DSS) | 2003/04 | EFF-01, EFF-02, EFF-03, EFF-05, EFF-08, EFF-11, EFF-13, EFF-64 | QH Human Resources Information Systems Project |
| Finance Department WorkCover reconciliation | 2003/04 | EFF-06D | Finance Department |
| Monthly Activity Collection / Qld Health Admitted Patient Data Collection | 2003/04 | EFF-08,  EFF-13,  EFF-30,  EFF-31, EFF-32,  EFF-33,  EFF-39,  EFF-43, EFF-46, EFF-47, EFF-48, EFF-64 | Client Services Unit |
| Surgical Access Service Executive Information System | 2003/04 | EFF-34,  EFF-35,  EFF-36,  EFF-37, EFF-38,  EFF-40,  EFF-41,  EFF-42, EFF-44,  EFF-45, EFF-49 | Health Systems Development Unit - SH&CSB |
| NHCDC | 2002/03 | EFF-50,  EFF-54,  EFF-55,  EFF-56 EFF-68, EFF-71 | Costing and Analysis Team |
| FRAC data collection | 2003/04 | EFF-51 | Client Services |
| Transition II | 2002/03 2003/04 | EFF-52 EFF-53 | Costing and Analysis Team |
| Finance and Materials Management Information System (FAMMIS) | 2003/04 | EFF-57,  EFF-58,  EFF-59,  EFF-63 EFF-64 | Finance/Asset Accounting Team |
| Finance and Materials Management Information System (FAMMIS) | 2003/04 | EFF-65, EFF-66, EFF-67 | Finance Department |
| Litigation Database | 2003/04 | EFF-69 | Legal and Administrative Law Unit |
| Support Services Reform Project Survey | 2003/04 | EFF-60, EFF-61, EFF-62 | Support Services Unit |

### 3.2.4 Data Verification and Validation

Efficiency data used in this report was extracted from routine corporate data collections that are generally used for other reporting purposes (for example, reporting to the Treasury Department and Commonwealth). These data collections are bound by strict guidelines and in some instances Acts of parliament (for example, the Financial Administration and Audit Act) and are subject to extensive audits and data validation processes. However, anecdotal evidence with using internally generated records for performance measurement has shown that data quality problems and reporting variations among hospitals may still be present.

One of the objectives in publishing the information on the performance of Queensland public hospitals is to improve the quality of data used for management decision-making and reporting purposes. As such, steps were taken to ensure that the most accurate data available were used for the indicators. To achieve this, a data verification process

that allowed hospitals to identify and comment on data validity was undertaken during Phase 1.

All hospitals were initially provided with verification reports during Phase 1, summarising data elements used in the calculation of indicators. Hospitals were asked to provide feedback on these reports. Where possible, data items were corrected. Where it could not be corrected the data available within Corporate Office was used since this represents the official data source for Queensland Health. An additional verification process was undertaken during Phase 3. Data custodians were requested to either verify a sample of the data provided to the Measured Quality Service with their data sources and / or provide a statement detailing the procedures and processes in place to ensure that the information provided was accurate.

### *3.2.5 Performance Allocations*

In the absence of broadly accepted and validated benchmarks of "excellent" performance for each of the efficiency indicators presented in the hospital report, it was decided to assess the performance of a particular hospital relative to the performance of its peers. While such an approach does not necessarily guarantee being able to identify outstanding performers or weak performers, identifying the extent to which performance differs from the mean performance of a group provides a valuable first step in moving toward the development of accepted and valid benchmarks.

This report uses median, $10^{th}$ and $90^{th}$ percentile values to compare a hospital with other hospitals in the peer group, and determine relative performance for measures of efficiency performance for each peer group of hospitals.

**Median values** are the single best measure for evaluating relative performance. Many statisticians prefer medians over averages for describing the typical hospital for several reasons. First, for distributions of values that are symmetrical, the mean (average) and median are the same value. Second, for distributions of values that are asymmetrical, but still approximate a statistical "normal" distribution, the mean and median assume nearly the same value. (A statistically normal distribution has many values clustered around the mean and progressively fewer values toward the extremes of the range of values.) However, for distributions that are skewed or have a relatively large number of extreme values, such as the distribution of average lengths of stay, the median is a better measure of the performance of the "typical" hospital because, unlike the mean, it is not as greatly affected by extreme values.

**Percentile values** divide a sample of hospitals into the extreme ranges for the peer group result. The $10^{th}$ percentile is the value for which 10 percent of the sample has lesser values and 90 percent of the sample has greater values. The $50^{th}$ percentile (the middle or median value) is the value for which 50 percent of the sample has lesser values and 50 percent of the sample has greater values (the value that divides the sample into halves). The $90^{th}$ percentile is the value for which 90 percent of the sample has lesser values and 10 percent of the sample has greater values.

Indications of whether higher or lower values are favourable for each performance measure are included in the descriptions in the next section.

### *3.2.6 Data Presentation*

The Efficiency Hospital Report provides data for each indicator applicable to the facility. Each year of available information is presented from the current year (2003/04) to 2001/02. The current year Peer Group median followed by the State median is then presented. The next data presented is the potential saving, calculated by the variance between current performance and performance at the peer group median where appropriate. The final data item is a marker of the status of the indicator for Phase 3 reports. A "#" symbol notes the indicator was previously identified by the facility as a key indicator.

**Table 3-2** Additional highlighting is presented on the results.

| Data Column | Red Text | Blue Text |
|---|---|---|
| 2003/04<br>2002/03<br>2001/02 | Indicates the result is in the 10th or 90th percentile for the peer group and performance is **less** favourable than peer hospitals | Indicates the result is in the $10^{th}$ or $90^{th}$ percentile for the peer group and performance is **more** favourable than peer hospitals |

An additional outlier report is presented to provide a summary of the indicators that have triggered the outlier criteria in addition to a brief description of the criteria. The outlier criteria are triggered when the result for the facility is at the $10^{th}$ or $90^{th}$ percentile for the peer group for the most recent year of data.

### *3.2.7 Efficiency Appendices*

Appendix 2 of the report provides additional detailed information regarding EFF-46 Avoidable Admissions. The report details the number of admissions for each episode type and group used to determine the overall rate.

Appendix 3 provides a summary of the results for EFF-64 Relative Technical Efficiency. This section must be read

in conjunction with the detailed specification provided in section 4.4 regarding Data Envelopment Analysis. The report details the raw data used in determining the result in addition to output / input targets and comparative information where appropriate.

### 3.3 Assistance Available

Assistance is available from the Measured Quality Service for interpretation and advice regarding indicators. Additionally, Facilities are encouraged to use the Client Services Unit with respect to indicators using the QHAPDC. Phone:     (07) 3234 1875 Fax: (07) 3234 0254 Internet Email hlthstat@health.qld.gov.a

### 3.4 Definition of Efficiency Indicators

#### 3.4.1 Staff Indicators

| Identifier | EFF-01 |
|---|---|
| Indicator Name | Ordinary FTE (Worked) |
| Description | Provides an indication of the amount of staff working. |
| Numerator | Ordinary Hours Worked |
| Denominator | Standard Award Hours |
| Data Exclusions | Non hospital entities as defined by the Corporate reporting hierarchical view |
| Data Inclusions | Pay codes 001, 002, 003, 004, 005, 007, 800, 801, X72 (hr_ord_fg) |
| Data Source | HRDSS, Lattice |
| Data Definition | HRDSS Report Reference Manual |
| Favourable Values | Lower |
| Notes | Managerial and Clerical – only 6 months data from 1/1/04 due to shared services implementation<br>Includes agency staff<br>Data is comparable with Phase 2 and 3 Report<br>Hospitals identified by the Corporate rollup structure |
| Contact | HRMIS Unit ph 3006 5174 |
| MQ Comment | Feedback suggests data not indicative of performance. However is useful as a descriptive indicator of facility size.<br>Results not used to identify outliers |

| Identifier | EFF-01.01 – EFF-01.08 |
|---|---|
| Indicator Name | Ordinary FTE (Worked) – pay stream |
| Description | Provides and indication of the amount of staff working by pay stream |
| Numerator | Ordinary Hours Worked by pay stream |
| Denominator | Standard Award Hours by pay stream |
| Data Exclusions | Non hospital entities as defined by the Corporate reporting hierarchical view |
| Data Inclusions | Pay codes 001, 002, 003, 004, 005, 007, 800, 801, X72 (hr_ord_fg)<br>Pay Streams as defined by StreamID |
| Data Source | HRDSS, Lattice |
| Data Definition | HRDSS Report Reference Manual |
| Favourable Values | Lower |
| Notes | Managerial and Clerical – only 6 months data from 1/1/04 due to shared services implementation<br>EFF-01.03 Includes nurse agency staff<br>EFF-01.03a Agency Nurses identified specifically<br>Data is comparable with Phase 2 and 3 Report<br>Hospitals identified by the Corporate rollup structure. |
| Contact | HRMIS Unit ph 3006 5174 |
| MQ Comment | Feedback suggests data not indicative of performance. However is useful as a descriptive indicator of facility size when compared with Peer Group Median.<br>Results not used to identify outliers |

| Identifier | EFF-02 |
|---|---|
| Indicator Name | Proportion of Sick Leave |
| Description | The proportion of Ordinary FTE (Worked) attributed to sick leave FTE |
| Numerator | Sick Leave FTE (Sick Leave hours / Standard award hours) |
| Denominator | Ordinary FTE (Worked) (*see EFF-01*) |
| Data Exclusions | Non hospital entities as defined by the Corporate reporting hierarchical view |
| Data Inclusions | Pay codes 220, 221, 223, 224, 227, 229, 366, 367, 368 (hr_sck_fg) |
| Data Source | HRDSS, Lattice |
| Data Definition | HRDSS Report Reference Manual |
| Favourable Values | Lower |
| Notes | Managerial and Clerical – only 6 months data from 1/1/04 due to shared services implementation<br>Includes paid and unpaid leave<br>Data is comparable with Phase 2 and 3 Report<br>Hospitals identified by the Corporate rollup structure. |
| Contact | HRMIS Unit ph 3006 5174 |
| MQ Comment | Feedback suggests data is indicative of performance and of operational use. |

| Identifier | EFF-02.01 – EFF-02.08 |
|---|---|
| Indicator Name | Proportion of Sick Leave – pay stream |
| Description | The proportion of Ordinary FTE (Worked) attributed to sick leave FTE by pay stream |
| Numerator | Sick Leave FTE (Sick Leave hours / Standard award hours) – by pay stream |
| Denominator | Ordinary FTE (Worked) (*see EFF-01*) – by pay stream |
| Data Exclusions | Non hospital entities as defined by the Corporate reporting hierarchical view |
| Data Inclusions | Pay codes 220, 221, 223, 224, 227, 229, 366, 367, 368 (hr_sck_fg)<br>Pay Streams as defined by StreamID |
| Data Source | HRDSS, Lattice |
| Data Definition | HRDSS Report Reference Manual |
| Favourable Values | Lower |
| Notes | Managerial and Clerical – only 6 months data from 1/1/04 due to shared services implementation<br>Includes paid and unpaid leave<br>Data is comparable with Phase 2 and 3 Report<br>Hospitals identified by the Corporate rollup structure. |
| Contact | HRMIS Unit ph 3006 5174 |
| MQ Comment | Feedback suggests data is indicative of performance and of operational use.<br>Data not provided for Small and Medium Facilities due to limited number of staff |

| Identifier | EFF-03 |
|---|---|
| Indicator Name | Cost of Overtime per FTE |
| Description | The amount of Overtime ($) per Ordinary FTE (Worked) |
| Numerator | Overtime cost |
| Denominator | Ordinary FTE (Worked) EFF-01 |
| Data Exclusions | Non hospital entities as defined by the Corporate reporting hierarchical view |
| Data Inclusions | Pay Codes 048, 049, 050, 051, 052, 053, 054, 055, 056, 057, 058, 059, 060, 061, 062, 063, 064, 065, 066, 067, 068, 069, 070, 071, 072, 073, 074, 075, 076, 077, 078, 090, 091, 092, 093, 094, 095, X73 (hr_ovt_fg) |
| Data Source | HRDSS, Lattice |
| Data Definition | HRDSS Report Reference Manual |
| Favourable Values | Lower |
| Notes | Managerial and Clerical – only 6 months data from 1/1/04 due to shared services implementation<br>Includes agency staff<br>Data is comparable with Phase 2 and 3 Report<br>Hospitals identified by the Corporate rollup structure. |
| Contact | HRMIS Unit ph 3006 5174 |
| MQ Comment | Feedback suggests data is indicative of performance and of operational use. |

| Identifier | EFF-03.01 – EFF-03.08 |
|---|---|
| Indicator Name | Cost of Overtime per FTE – pay stream |
| Description | The amount of Overtime ($) per Ordinary FTE (Worked) by pay stream |
| Numerator | Overtime cost by pay stream |
| Denominator | Ordinary FTE (Worked) by pay stream EFF-01* |
| Data Exclusions | Non hospital entities as defined by the Corporate reporting hierarchical view |
| Data Inclusions | Pay Codes 048, 049, 050, 051, 052, 053, 054, 055, 056, 057, 058, 059, 060, 061, 062, 063, 064, 065, 066, 067, 068, 069, 070, 071, 072, 073, 074, 075, 076, 077, 078, 090, 091, 092, 093, 094, 095, X73 (hr_ovt_fg)<br>Pay Streams as defined by StreamID |
| Data Source | HRDSS, Lattice |
| Data Definition | HRDSS Report Reference Manual |
| Favourable Values | Lower |
| Notes | Managerial and Clerical – only 6 months data from 1/1/04 due to shared services implementation<br>Includes agency staff<br>EFF-03.02a Senior Medical staff only<br>EFF-03.02b Junior Medical staff only<br>Data is comparable with Phase 2 and 3 Report<br>Hospitals identified by the Corporate rollup structure. |
| Contact | HRMIS Unit ph 3006 5174 |
| MQ Comment | Feedback suggests data is indicative of performance and of operational use.<br>Data not provided for Small and Medium Facilities due to limited number of staff |

| Identifier | EFF-05 |
|---|---|
| Indicator Name | Proportion of Work Cover Leave |
| Description | The proportion of Ordinary FTE (Worked) attributed to Work Cover leave FTE |
| Numerator | Work Cover Leave FTE (Work Cover hours / standard award hours) |
| Denominator | Ordinary FTE (Worked) EFF-01 |
| Data Exclusions | Non hospital entities as defined by the Corporate reporting hierarchical view |
| Data Inclusions | Pay Codes 288, 289, 290, 291, 294 (hr_wcv_fg) |
| Data Source | HRDSS, Lattice |
| Data Definition | HRDSS Report Reference Manual |
| Favourable Values | Lower |
| Notes | Managerial and Clerical – only 6 months data from 1/1/04 due to shared services implementation<br>Includes paid and unpaid leave<br>Data is comparable with Phase 2 and 3 Report<br>Hospitals identified by the Corporate rollup structure. |
| Contact | HRMIS Unit ph 3006 5174 |
| MQ Comment | Feedback suggests data is indicative of performance and of operational use. |

| Identifier | EFF-05.01 – EFF-05.08 |
|---|---|
| Indicator Name | Proportion of WorkCover Leave – pay stream |
| Description | The proportion of Ordinary FTE (Worked) attributed to WorkCover leave FTE by pay stream |
| Numerator | WorkCover Leave FTE (WorkCover hours / standard award hours) by pay stream |
| Denominator | Ordinary FTE (Worked) by pay stream EFF-01* |
| Data Exclusions | Non hospital entities as defined by the Corporate reporting hierarchical view |
| Data Inclusions | Pay Codes 288, 289, 290, 291, 294 (hr_wcv_fg)<br>Pay Streams as defined by StreamID |
| Data Source | HRDSS, Lattice |
| Data Definition | HRDSS Report Reference Manual |
| Favourable Values | Lower |
| Notes | Managerial and Clerical – only 6 months data from 1/1/04 due to shared services implementation Includes paid and unpaid leave. Data is comparable with Phase 2 and 3 Report Hospitals identified by the Corporate rollup structure. |
| Contact | HRMIS Unit ph 3006 5174 |

| MQ Comment | Feedback suggests data is indicative of performance and of operational use. Data not provided for Small and Medium Facilities due to limited number of staff |
|---|---|

| Identifier | EFF-06D |
|---|---|
| Indicator Name | WorkCover Risk – District Indicator |
| Description | The WorkCover risk rate as determined by WorkCover Queensland (Q-Comp) |
| Numerator | WorkCover Risk Rate |
| Denominator | One (1) |
| Data Exclusions | Non hospital entities as defined by the Corporate reporting hierarchical view<br>Exclude non salaries and wages pay codes |
| Data Inclusions | |
| Data Source | Finance department |
| Data Definition | Finance department |
| Favourable Values | Lower |
| Notes | Included at the request of Dr Buckland Board meeting 8/10/02<br>Result provided is calculated at on a District-wide basis<br>Data is comparable with Phase 2 and 3 Report<br>Hospitals identified by the Corporate rollup structure. |
| Contact | Finance Unit ph 3225 2539 |
| MQ Comment | Feedback suggests data is indicative of performance and of operational use. |

| Identifier | EFF-08 |
|---|---|
| Indicator Name | Nursing Hours per Patient Day |
| Description | The number of nursing hours worked per patient day |
| Numerator | Ordinary Hours Worked – Nursing (EFF-01.03 numerator – see inclusions below) |
| Denominator | Accrued Patient days |
| Data Exclusions | Accrued Patient Days: periods of leave are excluded where the patient was absent at midnight. The day of separation is excluded. |
| Data Inclusions | NO1, NO2, AIN and EN's including agency staff<br>Pay codes 001, 002, 003, 004, 005, 007, 800, 801, X72 (hr_ord_fg) plus pay codes 048, 049, 050, 051, 052, 053, 054, 055, 056, 057, 058, 059, 060, 061, 062, 063, 064, 065, 066, 067, 068, 069, 070, 071, 072, 073, 074, 075, 076, 077, 078, 090, 091, 092, 093, 094, 095, X73 (hr_ovt_fg)<br>Accrued Patient Days: The number of days or part days of stay accrued during the reference period. Days are accrued by admitted patients who underwent separation during the reference period or were remaining in the hospital at the end of the reference period. Same day patients are counted as having a stay of one day. The day of admission is included in the count if it occurred within the reference period. |
| Data Source | Num: HR Decision Support System<br>Den: Client Services |
| Data Definition | |
| Favourable Values | |
| Notes | Data will be skewed with variances in inpatient / outpatient ratios. Data is comparable over time.<br>Data not provided in Phase 2 Report. Comparable with Phase 3 report<br>Hospitals identified by the Corporate rollup structure for HR data. |
| Contact | Numerator: HRMIS Unit ph 3006 5174<br>Denominator: Client Services Unit ph 3234 1130 |
| MQ Comment | Indicator developed from Phase 2 user feedback |

| Identifier | EFF-11.01 to 11.08 |
|---|---|
| Indicator Name | Staff Ratio |
| Description | The proportion of Staff category to Total staff |
| Numerator | Ordinary FTE (Worked) – Staff category (EFF-01.*) |
| Denominator | Ordinary FTE (Worked) – all staff (EFF-01) |
| Data Exclusions | Non hospital entities as defined by the Corporate reporting hierarchical view |
| Data Inclusions | Pay codes 001, 002, 003, 004, 005, 007, 800, 801, X72 (hr_ord_fg) |
| Data Source | HRDSS, Lattice |
| Data Definition | HRDSS Report Reference Manual |
| Favourable Values | |
| Notes | Managerial and Clerical – only 6 months data from 1/1/04 due to shared services implementation<br>Includes agency staff<br>Data provided for Managerial and Clerical only in Phase 3 Report (EFF-11)<br>Hospitals identified by the Corporate rollup structure. |
| Contact | HRMIS Unit ph 3006 5174 |
| MQ Comment | New indicator developed from Phase 3 user feedback |

| Identifier | EFF-13 |
|---|---|
| Indicator Name | Staff to patient ratio |
| Description | The number of staff working per adjusted daily patient workload |
| Numerator | Ordinary FTE (Worked) (EFF-01) |
| Denominator | Adjusted daily average |
| Data Exclusions | |
| Data Inclusions | |
| Data Source | HRDSS, Lattice<br>Client Services – Monthly Activity Collection (MAC) |
| Data Definition | The adjusted daily average is the daily average occupancy of the hospital together with the daily average outpatient occasions of service in the period. The outpatient data is then converted to an equivalent occupied bed day by multiplying it by 0.14904. |
| Favourable Values | Lower |
| Notes | Managerial and Clerical – only 6 months data from 1/1/04 due to shared services implementation<br>Data not provided in Phase 2 Report. Data is comparable with Phase 3 report.<br>Hospitals identified by the Corporate rollup structure. |
| Contact | Numerator: HRMIS Unit ph 3006 5174<br>Denominator: Client Services Unit ph 3234 1130 |
| MQ Comment | Indicator developed from Phase 2 user feedback |

*3.4.2 Activity Indicators*

| Identifier | EFF-30 |
|---|---|
| Indicator Name | Occupancy Rate (Bed Day Efficiency) |
| Description | The degree to which hospital beds are filled across hospitals. |
| Numerator | Accrued Patient Days |
| Denominator | Available Bed Days |
| Data Exclusions | Accrued Patient Days: periods of leave are excluded where the patient was absent at midnight. The day of separation is excluded.<br>Available Bed Days: bed temporarily unavailable due to wards that were closed for any reason (except weekend closures for beds / wards staffed and available week days only) |
| Data Inclusions | Accrued Patient Days: The number of days or part days of stay accrued during the reference period. Days are accrued by admitted patients who underwent separation during the reference period or were remaining in the hospital at the end of the reference period. Same day patients are counted as having a stay of one day. The day of admission is included in the count if it occurred within the reference period.<br>Available Bed Days: The number of available beds on each day during the reference period, multiplied by the number of days in the reference period that such beds were available. |
| Data Source | Client Services Unit - Monthly Activity Collection (MAC) Contact |
| Data Definition | Queensland Health Data Dictionary (QHDD) |
| Favourable Values | Literature reviews suggest a rate of between 80 and 85 percent for operational efficiency. |
| Notes | Data is comparable with Phase 2 and 3 Report |
| Contact | Client Services Unit ph 3234 1130 |
| MQ Comment | Feedback suggests data is indicative of performance and of operational use. Results not used to identify outliers |

| Identifier | EFF-31 |
|---|---|
| Indicator Name | Average Length of Stay |
| Description | A measure of the amount of days patients remain in hospital for a particular episode of care. |
| Numerator | Total number of patient days |
| Denominator | Total number of separations |
| Data Exclusions | Patient days: Periods of leave are excluded where the patient was absent at midnight. The day of separation is excluded. |
| Data Inclusions | Acute episodes of care only<br>Patient days: Same day patients are counted as having a stay of one day. Days on contract leave are included. The day of admission is included. |
| Data Source | Queensland Health Admitted Patient Data Collection (QHAPDC) |
| Data Definition | Queensland Health Data Dictionary (QHDD)<br>Patient days: The total number of days or part days of stay for all patients who were admitted for an episode of care and who underwent separation during the reference period.<br>Separation: The process by which an admitted patient completes an episode of care. A separation may be formal or statistical. |
| Favourable Values | Lower |
| Notes | Data is comparable with Phase 2 and 3 Report |
| Contact | Client Services Unit ph 3234 1130 |
| MQ Comment | Feedback suggests data is indicative of performance and of operational use. Results not used to identify outliers |

| Identifier | EFF-32 |
|---|---|
| Indicator Name | Proportion of same day patients |
| Description | A measure of the amount of completed episodes of care occurring on the day of admission as a proportion of total separations. |
| Numerator | Number of same day separations |
| Denominator | Number of separations |
| Data Exclusions | |
| Data Inclusions | Acute episodes only |
| Data Source | QHAPDC |
| Data Definition | Queensland Health Data Dictionary (QHDD) |
| Favourable Values | Higher |
| Notes | A separation is the process by which an admitted patient completes an episode of care. A separation may be formal or statistical.<br>Data is comparable with Phase 2 and 3 Report |
| Contact | Client Services Unit ph 3234 1130 |
| MQ Comment | Feedback suggests data is indicative of performance and of operational use. Results not used to identify outliers |

| Identifier | EFF-33 |
|---|---|
| Indicator Name | Proportion of Nursing Home Type Patients (NHTP) |
| Description | The proportion of NHTP bed days |
| Numerator | NHTP discharge bed days |
| Denominator | Total discharge bed days |
| Data Exclusions | |
| Data Inclusions | NHTP defined as admission type 11 – Maintenance and period type is NHT |
| Data Source | QHAPDC |
| Data Definition | QHDD |
| Favourable Values | Lower |
| Notes | |
| Contact | Client Services Unit ph 3234 1130 |
| MQ Comment | Indicator developed from Phase 2 user feedback |

| Identifier | EFF-34.01 |
|---|---|
| Indicator Name | Elective Surgery Long Wait Category 1 proportion |
| Description | The proportion of Elective Surgery Category 1 patients waiting longer than 30 days at the census date. |
| Numerator | Number of Category 1 patients waiting longer than 30 days |
| Denominator | Number of Category 1 patients on the waiting list |
| Data Exclusions | Patients awaiting other types of elective hospital care (code 2) eg. Specific procedures frequently done by non-surgical clinicians |
| Data Inclusions | |
| Data Source | Surgical Access Service (Elective Admissions Module) |
| Data Definition | National Health Data Dictionary (NHDD)<br>Elective surgery comprises elective care where the procedures required by patients are listed in the surgical operations section of the Medicare Benefits Schedule.<br><br>Elective care is care that, in the opinion of the treating clinician, is necessary and admission for which can be delayed for at least twenty-four hours.<br><br>Admission within 30 days desirable for a condition that has the potential to deteriorate quickly to the point that it may become an emergency |
| Favourable Values | Lower |
| Notes | QH Target 5%<br>Data is comparable with Phase 2 and 3 Report |
| Contact | Health Systems Development Unit - SH&CSB ph 3131 6922 |
| MQ Comment | Feedback suggests data is indicative of performance and of operational use. |

| Identifier | EFF-34.02 |
|---|---|
| Indicator Name | Elective Surgery Long Wait Category 2 proportion |
| Description | The proportion of Elective Surgery Category 2 patients waiting longer than 90 days at the census date. |
| Numerator | Number of Category 2 patients waiting longer than 90 days |
| Denominator | Number of Category 2 patients on the waiting list |
| Data Exclusions | Patients awaiting other types of elective hospital care (code 2) eg. Specific procedures frequently done by non-surgical clinicians |
| Data Inclusions | |
| Data Source | Surgical Access Service (Elective Admissions Module) |
| Data Definition | National Health Data Dictionary (NHDD)<br>Elective surgery comprises elective care where the procedures required by patients are listed in the surgical operations section of the Medicare Benefits Schedule.<br><br>Elective care is care that, in the opinion of the treating clinician, is necessary and admission for which can be delayed for at least twenty-four hours.<br><br>Category 2: Admission within 90 days desirable for a condition causing some pain, dysfunction or disability but which is not likely to deteriorate quickly or become an emergency. |
| Favourable Values | Lower |
| Notes | QH Target 5%<br>Data is comparable with Phase 2 and 3 Report |
| Contact | Health Systems Development Unit - SH&CSB ph 3131 6922 |
| MQ Comment | Feedback suggests data is indicative of performance and of operational use. |


| Identifier | EFF-34.03 |
|---|---|
| Indicator Name | Elective Surgery Long Wait Category 3 proportion |
| Description | The proportion of Elective Surgery Category 3 patients waiting longer than 365 days at the census date. |
| Numerator | Number of Category 3 patients waiting longer than 365 days |
| Denominator | Number of Category 3 patients on the waiting list |
| Data Exclusions | Patients awaiting other types of elective hospital care (code 2) eg. Specific procedures frequently done by non-surgical clinicians |
| Data Inclusions | |
| Data Source | Surgical Access Service (Elective Admissions Module) |
| Data Definition | National Health Data Dictionary (NHDD)<br>Elective surgery comprises elective care where the procedures required by patients are listed in the surgical operations section of the Medicare Benefits Schedule.<br><br>Elective care is care that, in the opinion of the treating clinician, is necessary and admission for which can be delayed for at least twenty-four hours.<br><br>Category 3: Admission at some time in the future acceptable for a condition causing minimal or no pain, dysfunction or disability, which is unlikely to deteriorate quickly and which does not have the potential to become an emergency. |
| Favourable Values | Lower |
| Notes | Data is comparable with Phase 2 and 3 Report |
| Contact | Health Systems Development Unit - SH&CSB ph 3131 6922 |
| MQ Comment | Feedback suggests data is indicative of performance and of operational use. |

| Identifier | EFF-35.* |
|---|---|
| Indicator Name | Elective Surgery – average waiting time to admission by Category |
| Description | The average waiting time for admission for elective surgery by category |
| Numerator | Sum of number of days on the waiting list prior to admission by category |
| Denominator | Sum of number of patients admitted from the waiting list by category |
| Data Exclusions | |
| Data Inclusions | See EFF-34 |
| Data Source | Surgical Access Services (EAM) |
| Data Definition | National Health Data Dictionary (NHDD) |
| Favourable Values | Lower |
| Notes | Data is comparable with Phase 3 Report |
| Contact | Health Systems Development Unit - SH&CSB ph 3131 6922 |
| MQ Comment | Indicator developed for Phase 3 |

| Identifier | EFF-36.* |
|---|---|
| Indicator Name | Elective Surgery – proportion of long wait admissions by category |
| Description | The proportion of elective surgery patients waiting an inappropriate amount of time for admission by category |
| Numerator | Number of long wait admissions from the waiting list by category |
| Denominator | Number of admissions from the waiting list by category |
| Data Exclusions | |
| Data Inclusions | See EFF-34 |
| Data Source | Surgical Access Services (EAM) |
| Data Definition | National Health Data Dictionary (NHDD) |
| Favourable Values | Lower |
| Notes | Data is comparable with Phase 3 Report |
| Contact | Health Systems Development Unit - SH&CSB ph 3131 6922 |
| MQ Comment | Indicator developed for Phase 3 |

| Identifier | EFF-37 |
|---|---|
| Indicator Name | Day Surgery Rate |
| Description | The proportion of patients undergoing a surgical procedure that are admitted and discharged on the day of their operation. |
| Numerator | The number of patients admitted and discharged on the day of surgery |
| Denominator | The number of patients discharged from surgery |
| Data Exclusions | |
| Data Inclusions | Patients with an elective status of 2 and<br>A Waiting List Category of 1, 2 or 3 and<br>An NMDS category of 1 to 11 (see NHDD) |
| Data Source | Surgical Access Service (QHAPDC) |
| Data Definition | Day Surgery is where a patient is admitted and discharged from hospital on the day that their operation occurs. |
| Favourable Values | Higher |
| Notes | QH target 50%<br>Data is comparable with Phase 2 and 3 Report |
| Contact | Health Systems Development Unit - SH&CSB ph 3131 6922 |
| MQ Comment | Feedback suggests data is indicative of performance and of operational use. |

| Identifier | EFF-38 |
|---|---|
| Indicator Name | Day of Surgery Admission Rate |
| Description | The proportion of patients undergoing a surgical procedure that are admitted on the day of their operation. |
| Numerator | The number of overnight patients admitted on the day of surgery and subsequently discharged |
| Denominator | The number of overnight patients discharged from surgery |
| Data Exclusions | |

| Data Inclusions | Patients with an elective status of 2 and<br>A Waiting List Category of 1, 2 or 3 and<br>An NMDS category of 1 to 11 (see NHDD) |
|---|---|
| Data Source | Surgical Access Service (QHAPDC) |
| Data Definition | Day of Surgery Admission is where a patient is admitted to hospital on the day that their operation occurs. |
| Favourable Values | Higher |
| Notes | Day of surgery identified by the 'Planned Operation Date' field in HBCIS-EAM<br>QH target by June 2003 80%<br>Data is comparable with Phase 2 and 3 Report |
| Contact | Health Systems Development Unit - SH&CSB ph 3131 6922 |
| MQ Comment | Feedback suggests data is indicative of performance and of operational use. |


| Identifier | EFF-39.01 to EFF-39.19 |
|---|---|
| Indicator Name | Day Surgery Rate – Procedure |
| Description | The proportion of day surgery undertaken for the selected procedure |
| Numerator | The number of patients admitted and discharged on the day of surgery for the procedure |
| Denominator | The number of patients discharged from surgery for the procedure |
| Data Exclusions | Children aged less than 15 years<br>Facilities with less than 150 selected episodes in 3 years<br>Facilities with less than 10 episodes in a procedure in a year<br>Peer Groups with less than 4 facilities |
| Data Inclusions | Elective patients only in the following procedures<br>1. Inguinal hernia repair, 2. Excision of breast lump, 3. Anal fistula dilatation or excision, 4. Haemorrhoidectomy, 5. Laparoscopic cholecystectomy, 6. Varicose vein stripping or ligation, 7. Transurethral resection of bladder tumour, 8. Excision of Dupuytren's contracture, 9. Carpal tunnel decompression, 10. Excision of ganglion, 11. Arthroscopy, 12. Bunion operation, 13. Removal of metalware, 14. Extraction of cataract with/without implant, 15. Myringotomy, 16. Tonsillectomy, 17. Reduction of nasal fracture, 18. Dilatation and curettage/hysteroscopy, 19.Laparoscopy |
| Data Source | QHAPDC – Clinical Strategy Team |
| Data Definition | *Elective Day Surgery in Queensland – An analysis of the patterns of service provision for a basket of 21 surgical procedures 1999 – 2002* – Clinical Strategy Team<br>Detailed ICD10 codes available upon request |
| Favourable Values | Higher |
| Notes | Includes public and private patients |
| Contact | Client Services Unit ph 3234 1130 |
| MQ Comment | Approved for inclusion by SDG August 2003<br>Indicator developed for Phase 3 |


| Identifier | EFF-40 |
|---|---|
| Indicator Name | Access Block (8hrs) |
| Description | The proportion of patients waiting less than 8 hours for admission or transfer in the Emergency Department. |
| Numerator | Number of patients waiting less than 8 hours for admission or transfer. |
| Denominator | Number of patients admitted or transferred from the Emergency Department |
| Data Exclusions | Patients not admitted or transferred. |
| Data Inclusions | |
| Data Source | Surgical Access Service (EDIS, EMG) |
| Data Definition | The waiting time in the Emergency Department prior to admission or transfer measured from time of presentation to time of admission or transfer. |
| Favourable Values | Higher |
| Notes | |
| Contact | Health Systems Development Unit - SH&CSB ph 3131 6922 |
| MQ Comment | Indicator developed for Phase 3 |


| Identifier | EFF-41.01 to EFF-41.05 |
|---|---|
| Indicator Name | Emergency Department Waiting Time – Triage Category 1 to 5 |
| Description | The proportion of patients seen in the Emergency Department within time by triage category |

| Numerator | Number of patients seen within time by triage category |
|---|---|
| Denominator | Number of patients seen by triage category |
| Data Exclusions | |
| Data Inclusions | |
| Data Source | Surgical Access Service (EMG, EDIS) |
| Data Definition | *'Development of agreed set of national access performance indicators for elective surgery, emergency departments and outpatient services'* – Commonwealth Dept of Health and Family Services, July 1997<br>ATS Category 1 – Resuscitation, treat immediately<br>ATS Category 2 – Emergency, treat within 10 minutes<br>ATS Category 3 – Urgent, treat within 30 minutes<br>ATS Category 4 – Semi-urgent, treat within 60 minutes<br>ATS Category 5 – Non-urgent, treat within 120 minutes |
| Favourable Values | ATS Category 1 – 100%<br>ATS Category 2 – 80%+<br>ATS Category 3 – 75%+<br>ATS Category 4 – 70%+<br>ATS Category 5 – 70%+ |
| Notes | |
| Contact | Health Systems Development Unit - SH&CSB ph 3131 6922 |
| MQ Comment | Indicator developed for Phase 3 |

| Identifier | EFF-42.01 to EFF-42.05 |
|---|---|
| Indicator Name | Proportion of Emergency Department Admissions – by triage category |
| Description | The proportion of Emergency Department presentations that are subsequently admitted or transferred by triage category |
| Numerator | Number of patients admitted or transferred – by triage category |
| Denominator | Number of patients seen – by triage category |
| Data Exclusions | |
| Data Inclusions | |
| Data Source | Surgical Access Service (EMG, EDIS) – Gary Walker |
| Data Definition | Australian Council for Healthcare Standards<br>Australasian College for Emergency Medicine |
| Favourable Values | ATS Category 1 – 75-90%<br>ATS Category 2 – 60-70%<br>ATS Category 3 – 40-60%<br>ATS Category 4 – 20-30%<br>ATS Category 5 – 5-10% |
| Notes | |
| Contact | Health Systems Development Unit - SH&CSB ph 3131 6922 |
| MQ Comment | Indicator developed for Phase 3 |

| Identifier | EFF-43 |
|---|---|
| Indicator Name | Outpatient Throughput |
| Description | The proportion of outpatients to total activity |
| Numerator | Casemix weighted outpatient Occasions of Service |
| Denominator | Weighted Total activity |
| Data Exclusions | |
| Data Inclusions | |
| Data Source | QHAPDC, MAS |
| Data Definition | Weighted total activity – Sum of weighted outpatient occasions of service, weighted acute inpatient activity and weighted other care using the Hospital Benchmarking Prices Model 2002/03 |
| Favourable Values | |
| Notes | |
| Contact | Client Services Unit ph 3234 1130 |
| MQ Comment | Indicator developed for Phase 3 |

| Identifier | EFF-44 |
|---|---|
| Indicator Name | Theatre Utilisation |
| Description | The proportion of Operating Theatres utilisation |

| Numerator | Patient out of OR – Patient in OR X 100% |
|---|---|
| Denominator | Sessional Hours |
| Data Exclusions | |
| Data Inclusions | |
| Data Source | Surgical Access Service (ORMIS, TMS) |
| Data Definition | Surgical Access Service – Theatre Utilisation Definitions 2000 |
| Favourable Values | Higher |
| Notes | Large data variance |
| Contact | Health Systems Development Unit - SH&CSB ph 3131 6922 |
| MQ Comment | Included at the request of G. Cuffe 14/10/03<br>Indicator developed for Phase 3 |

| Identifier | EFF-45 |
|---|---|
| Indicator Name | Theatre Cancellations |
| Description | The proportion of theatre cancellations. |
| Numerator | Number of cancellations |
| Denominator | Total number of operations |
| Data Exclusions | |
| Data Inclusions | |
| Data Source | Surgical Access Service (TMS, ORMIS) |
| Data Definition | Surgical Access Service Theatre Utilisation Definitions 2000 |
| Favourable Values | Lower |
| Notes | |
| Contact | Health Systems Development Unit - SH&CSB ph 3131 6922 |
| MQ Comment | Feedback suggests data is indicative of performance and of operational use. Included at the request of G. Cuffe 14/10/03<br>Indicator developed for Phase 3 |

| Identifier | EFF-46 |
|---|---|
| Indicator Name | Avoidable admission rate |
| Description | The proportion of avoidable admissions or potentially preventable hospitalisations for conditions where hospitalisation is thought to be avoidable if timely and adequate non-hospital care is provided. |
| Numerator | The number of avoidable admission |
| Denominator | The number of admissions |
| Data Exclusions | |
| Data Inclusions | |
| Data Source | QHAPDC |
| Data Definition | Australian Institute of Health and Welfare (AIHW) 2003. Australian hospital statistics 2001–02. AIHW cat. no. HSE 25. Canberra: AIHW (Health Services Series no. 20).<br>Applicable ICD-10-AM detailed below:<br>**Influenza and pneumonia**<br>J10, J11, J13, J14, J153, J154, J157, J159, J168, J181, J188 in any diagnosis field, excludes cases with additional diagnosis of D57 (sickle-cell disorders) and people under 2 months.<br>**Other vaccine-preventable conditions**<br>A35, A36, A37, A80, B05, B06, B161, B169, B180, B181, B26, G000, M014 in any diagnosis field.<br>**Asthma**<br>J45, J46 as principal diagnosis only.<br>Continues next page. |

| | |
|---|---|
| | **Congestive cardiac failure** |
| | I50, I110, J81 as principal diagnosis only, exclude cases with the following procedure codes: |
| | 33172-00, 35304-00, 35305-00, 35310-02, 35310-00, 38281-11, 38281-07, 38278-01, 38278-00, 38281-02, 38281-01, 38281-00, 38256-00, 38278-03, 38284-00, 38284-02, 38521-09, 38270-01, 38456-19, 38456-15, 38456-12, 38456-11, 38456-10, 38456-07, 38456-01, 38470-00, 38475-00, 38480-02, 38480-01, 38480-00, 38488-06, 38488-04, 38489-04, 38488-02, 38489-03, 38487-00, 38489-02, 38488-00, 38489-00, 38490-00, 38493-00, 38497-04, 38497-03, 38497-02, 38497-01, 38497-00, 38500-00, 38503-00, 38505-00, 38521-04, 38606-00, 38612-00, 38615-00, 38653-00, 38700-02, 38700-00, 38739-00, 38742-02, 38742-00, 38745-00, 38751-02, 38751-00, 38757-02, 38757-01, 38757-00, 90204-00, 90205-00, 90219-00, 90224-00 |
| | **Diabetes complications** |
| | E101, E102, E103, E104, E105, E106, E107, E108, E110, E111, E112, E113, E114, E115, E116, E117, E118, E130, E131, E132, E133, E134, E135, E136, E137, E138, E140, E141, E142, E143, E144, E145, E146, E147, E148 in any diagnosis field. |
| | **COPD** |
| | J20, J41, J42, J43, J44, J47 as principal diagnosis only, J20 only with additional diagnoses of J41, J42, J43, J47, J44. |
| | **Angina** |
| | I20, I240, I248, I249 as principal diagnosis only, exclude cases with procedure codes NOT in blocks 1820 to 2016. |
| | **Iron deficiency anaemia** |
| | D501, D508, D509 as principal diagnosis only. |
| | **Hypertension** |
| | I10, I119 as principal diagnosis only, exclude cases with procedure codes according to the list of procedures excluded from the Congestive cardiac failure category above. |
| | **Nutritional deficiencies** |
| | E40, E41, E42, E43, E550, E643 as principal diagnosis only. |
| | **Dehydration and gastroenteritis** |
| | E86, K522, K528, K529 as principal diagnosis only. |
| | **Pyelonephritis** |
| | N390, N10, N12, N11, N136 as principal diagnosis only. |
| | **Perforated/bleeding ulcer** |
| | K250, K251, K252, K254, K255, K256, K260, K261, K262, K264, K265, K266, K270, K271, K272, K274, K275, K276, K280, K281, K282, K284, K285, K286 as principal diagnosis only. |
| | **Cellulitis** |
| | L03, L04, L08, L980, L88, L983 as principal diagnosis only, exclude cases with any procedure except those in blocks 1820 to 2016 or if procedure is 30216-02, 30676-00, 30223-02, 30064-00, 34527-01, 34527-00, 90661-00 and this is the only listed procedure. |
| | **Pelvic inflammatory disease** |
| | N70, N73, N74 as principal diagnosis only. |
| | **Ear, nose and throat infections** |
| | H66, H67, J02, J03, J06, J312 as principal diagnosis only. |
| | **Dental conditions** |
| | K02, K03, K04, K05, K06, K08, K098, K099, K12, K13 as principal diagnosis only. |
| | **Appendicitis** |
| | K35, K36, K37 in any diagnosis field. |
| | **Convulsions and epilepsy** |
| | O15, G40, G41, R56 as principal diagnosis only. |
| | **Gangrene** |
| | R02 in any diagnosis field. |
| **Favourable Values** | Lower |
| **Notes** | A high rate may indicate an increased prevalence of the conditions in the community, poorer functioning of the non-hospital care system or an appropriate use of the hospital system to respond to greater demand. |
| | Diabetes co-morbidities for renal dialysis patients are not currently coded in a standardised manner across Queensland Health. This practice is currently under review by the Queensland Coding Committee. |
| **Contact** | Client Services Unit ph 3234 1130 |
| **MQ Comment** | Indicator developed for Phase 3 |

| | |
|---|---|
| **Identifier** | **EFF-47.01, 47.02, 47.03, 47.04** |

| Indicator Name | Relative Stay Index<br>47.01 – Total, 47.02 – Medical, 47.03 – Surgical, 47.04 - Other |
|---|---|
| Description | An index of actual patient days in comparison with anticipated patient days |
| Numerator | Number of patient days |
| Denominator | Number of patient days expected adjusted for casemix. |
| | |
| Data Exclusions | - Exclude DRGs which are overwhelmingly sameday: R63Z, L61Z<br>- Exclude AR-DRGs with a length of stay component in the definition: G41B G42B G44C G45B R61C S60Z U40Z U60Z V62B B70D P01Z P60A P60B W60Z Y60Z<br>- Exclude rehabilitation DRGs: Z60A Z60B Z60C<br>- Exclude error AR-DRGs 960Z, 961Z, 962Z and 963Z<br>- Exclude separations for patients who died or were transferred within two days of admission<br><br>- Exclude episodes with length of stay greater than 120 days. |
| Data Inclusions | - Include only acute care type |
| Data Source | QHAPDC |
| Data Definition | Australian Institute of Health and Welfare (AIHW) 2003. Australian hospital statistics 2001–02. AIHW cat. no. HSE 25. Canberra: AIHW (Health Services Series no. 20). |
| Favourable Values | Lower |
| Notes | Data for Small and Medium Facilities presented as a three year average in the current year.<br><br>The actual number of patient days for separations in selected AR-DRGs divided by the number of patient days expected (based on national figures) adjusted for casemix. The adjustment for casemix (based on the AR-DRG and age of the patient for each separation) allows comparisons to be made that take into account variation in types of services provided, but does not take into account other influences on length of stay, such as Indigenous status |
| | |
| Methodology | The Relative Stay Index (RSI) was calculated following the method used by the AIHW as described in the Australian Hospital Statistics Report (2001, 2002). The RSI is calculated as the observed number of patient days (length of stay) for separations in a selection of AR-DRGs divided by the 'expected' length of stay for those patients. Expected length of stay is equal to observed length of stay for the whole state (included admissions only) adjusted by casemix (AR-DRG and age as a cubic regression within each AR-DRG). This provides a measure of whether an average patient's length of stay is higher or lower than would be expected based on the casemix for the group of patients of interest.<br><br>The index was calculated using Queensland hospital admitted patient data with the following inclusions and exclusions:<br>Including patients admitted to public facilities only<br>Including Acute care type and qualified neonates only<br>Excluding AR-DRGs where the majority of patients are sameday (R63Z Chemotherapy and L61Z Admit for renal dialysis)<br>Excluding AR-DRGs with a length of stay component in the definition (G41B, G42B, G44C, G45B, R61C, S60Z, U40Z, U60Z, V62B, B70D, P01Z, P60A, P60B, W60Z, Y60Z)<br>Excluding rehabilitation AR-DRGs (Z60A, Z60B, Z60C)<br>Excluding error AR-DRGs (960Z, 961Z, 962Z and 963Z)<br>Excluding separations for patients who died or were transferred within two days of admission<br>Excluding episodes with length of stay greater then 120 days<br><br>Confidence intervals for the index were calculated following the parametric procedure described by Hosmer and Lemeshow (1995).<br><br>Ref:<br>Hosmer DW and Lemeshow, S (1995). *"Confidence interval estimates of an index of quality performance based on logistic regression models"*. Statistics in Medicine, 14, 2161-2172. |
| Contact | Client Services Unit ph 3234 1130 |
| MQ Comment | Indicator developed for Phase 3 developed from user feedback |


| Identifier | EFF-48.01 to 48.10 |
|---|---|
| Indicator Name | Adverse Events |
| Description | The proportion of separations with adverse events. |

| Numerator | Number of separations with and adverse event (defined) |
|---|---|
| Denominator | Total number of separations |
| Data Exclusions | Separations for which the care type was reported as Newborn with no qualified days, and records for Hospital boarders and Posthumous organ procurement have been excluded. |
| Data Inclusions | **External Cause Codes**<br>EFF-48.01 - Y40–Y59 Adverse effects of drugs, medicaments and biological substances<br>EFF-48.02 - Y60–Y82 Misadventures to patients during surgical and medical care<br>EFF-48.03 - Y83–Y84 Procedures causing abnormal reactions/complications<br>EFF-48.04 - Y88 & Y95 Other external causes of adverse events<br>**Place of occurrence codes**<br>EFF-48.05 - Y92.22 Health service area<br>**Diagnosis codes**<br>EFF-48.06 - E89, G97, H59, H95, I97, J95, K91, M96 Selected post-procedural disorders<br>EFF-48.07 - T81.0 Haemorrhage and haematoma complicating a procedure, n.e.c.<br>EFF-48.08 - T81.4 Infection following a procedure, n.e.c.<br>EFF-48.09 - T82–T85 Complications of internal prosthetic devices, implants and grafts<br>EFF-48.10 - Other diagnoses of complications of medical and surgical care (T80 to T88 and T98.3, not including above) |
| Data Source | QHAPDC |
| Data Definition | Adverse events are defined as incidents in which harm resulted to a person receiving health care. They include infections, falls and other injuries, and medication and medical device problems, some of which may be preventable. The data presented may be interpreted as representing selected adverse events in health care that have<br>resulted in, or have affected, hospital admissions, rather than all adverse events that occurred in hospitals.<br>Australian Institute of Health and Welfare (AIHW) 2004. *Australian hospital statistics 2002–03.* AIHW cat. no. HSE 32. Canberra: AIHW (Health Services Series no. 22). |
| Favourable Values | Lower |
| Notes | Separations that included ICD-10-AM diagnosis and/or external cause codes that indicated an adverse event was treated and/or occurred during the hospitalisation. Other ICD-10-AM codes may also indicate that an adverse event has occurred, and some adverse events are not identifiable using ICD-10-AM codes. Hence these data will underestimate the total number of adverse events.<br>Categories do not sum to the totals because multiple diagnoses and external causes can be recorded for each separation and external cause codes and diagnosis codes can be used together to describe an adverse event. |
| Contact | Client Services Unit ph 3234 1130 |
| MQ Comment | New indicator developed for Phase 4 |

| Identifier | EFF-49 |
|---|---|
| Indicator Name | Emergency Category 4 and 5 presentation |
| Description | The proportion of Category 4 and 5 Emergency Department presentations. |
| Numerator | Number of Category 4 and 5 Emergency Department presentations |
| Denominator | Total number Emergency Department presentations |
| Data Exclusions | |
| Data Inclusions | |
| Data Source | Surgical Access Service (EM G, EDIS) – Gary Walker |
| Data Definition | Australian Council for Healthcare Standards<br>Australasian College for Emergency Medicine |
| Favourable Values | Lower |
| Notes | |
| Contact | Health Systems Development Unit - SH&CSB ph 3131 6922 |
| MQ Comment | Indicator developed for Phase 4 from user feedback. |

| Identifier | EFF-50 |
|---|---|
| Indicator Name | Average cost per weighted separation (NHCDC) |
| Description | The average cost of inpatients per separation adjusted by National AR-DRG cost weights. |
| Numerator | Total expenditure on inpatients. |
| Denominator | Number of separations by national average cost weight |
| Data Exclusions | |
| Data Inclusions | NHCDC Hospital Reference Manual Round 7 (2002-03) Financial years 2002/03, 2001/02, 2000/01 |
| Data Source | National Hospital Cost Data Collection (Commonwealth Department of Health and Aged Care) |
| Data Definition | NHCDC Cost Report Round 7, 2002-03 |
| Favourable Values | Lower |
| Notes | The methodology used to calculate the cost per casemix adjusted separation uses the method agreed by the National Health Ministers' Benchmarking Working Group (NHMBWG 1998).<br>Data is 1 year older than other data presented in the report |
| Contact | Costing and Analysis Team ph 3234 1366 |
| MQ Comment | Feedback suggests data is indicative of performance and of operational use.<br>Data is comparable with Phase 2 and 3 Report |

| Identifier | EFF-51 |
|---|---|
| Indicator Name | Average Cost per Weighted Separation (FRAC) |
| Description | The average cost of inpatients per separation adjusted by National AR-DRG cost weights. |
| Numerator | Recurrent expenditure x Inpatient fraction (IFRAC) |
| Denominator | Total separations x Average cost weight |
| Data Exclusions | |
| Data Inclusions | |
| Data Source | Australian Institute of Health and Welfare (Financial and Residential Activity collection) |
| Data Definition | Australian Hospital Statistics 2001-02 (AIHW)<br>Recurrent expenditure is as defined by the recurrent expenditure data elements in the *National Health Data Dictionary* (with depreciation excluded)<br>IFRAC (admitted patient cost proportion) is the estimated proportion of total hospital expenditure that related to admitted patients<br>Total separations include all care types, including those other than acute. It excludes Newborns with no qualified days, and records that do not relate to admitted patients (boarders and post-humous organ procurement).<br>Average cost weight is a single number representing the relative costliness of the separations. |
| Favourable Values | Lower |
| Notes | Data is comparable with Phase 2 and 3 Report |
| Contact | Client Services Unit ph 3234 1130 |
| MQ Comment | Feedback suggests data is indicative of performance and of operational use. |

| Identifier | EFF-52.01 – EFF-52.10 |
|---|---|
| Indicator Name | Top 10 DRG Average Cost |
| Description | The average cost for a DRG identified in the top 10 for the facility |
| Numerator | Total cost of providing care for a DRG identified in the top 10 |
| Denominator | Number of separations for the DRG |
| Data Exclusions | |
| Data Inclusions | Financial years 2002/03, 2001/02, 2000/01 are presented in the report |
| Data Source | Pricing Strategy Team (TII) NHCDC |
| Data Definition | Top 10 DRG's identified on a cost by volume measure |
| Favourable Values | Lower |
| Notes | The current financial year reported is for the previous year to enable 3 years of data presentation. |
| Contact | Costing and Analysis Team ph 3234 1366 |
| MQ Comment | Feedback suggests data is indicative of performance and of operational use.<br>Data is comparable with Phase 2 and 3 Report |

| Identifier | EFF-53 |
|---|---|
| Indicator Name | Casemix Efficiency – Acute Inpatients |
| Description | A measure of the financial performance of a facility with regards to theoretical casemix revenue. |
| Numerator | Actual Cost |
| Denominator | Casemix Revenue |
| Data Exclusions | Hospitals' expenditure is adjusted where a facility provides services for another facility, eg payroll functions.<br>Budgets for renal services are deducted<br>MSU funding should be excluded<br>Patient Travel Subsidy Scheme is excluded |
| Data Inclusions | An appropriate share of District wide costs (eg District Office) should be shown against each Hospital.<br>Pathology should be included in the comparative budgets as the pathology service weight has been included in the DRG cost weights and ambulatory prices.<br>The hospital component of Integrated Mental Health Services should be included.<br>The same budget line items are included as have been used in the compilation of casemix budgets.<br>The activity targets used in the calculation of casemix budgets should only include that activity which is associated with the budget line items included in comparative budgets.<br>Only Acute Inpatient admissions selected (Patient Type 01) |
| Data Source | Pricing Strategy Team (Transition II, Casemix DSS) |
| Data Definition | Hospital Funding Model Technical Paper and Supplement 2002/03 (Phase 8) |
| Favourable Values | Lower |
| Notes | 2002/03 and 03/04 |
| Contact | Costing and Analysis Team ph 3234 1366 |
| MQ Comment | Feedback suggests data is indicative of performance and of operational use.<br>Indicator developed for Phase 3 |

| Identifier | EFF-54 |
|---|---|
| Indicator Name | Pharmacy Efficiency |
| Description | A measure of the amount of drugs used in comparison with anticipated expenditure. |
| Numerator | Actual cost of drugs |
| Denominator | Anticipated cost of drugs (average cost for casemix peer group) |
| Data Exclusions | |
| Data Inclusions | |
| Data Source | Pricing Strategy Team – (TII) NHCDC |
| Data Definition | Anticipated expenditure is calculated as the weighted average of expenditure for the peer group |
| Favourable Values | Lower |
| Notes | Financial years 2002/03 and 2001/02 |
| Contact | Costing and Analysis Team ph 3234 1366 |
| MQ Comment | Indicator developed for Phase 3 |

| Identifier | EFF-55 |
|---|---|
| Indicator Name | Pathology Usage Efficiency |
| Description | A measure of the amount of pathology used in comparison with anticipated expenditure. |
| Numerator | Actual cost of pathology |
| Denominator | Anticipated cost of pathology (average cost for casemix peer group) |
| Data Exclusions | |
| Data Inclusions | |
| Data Source | Pricing Strategy Team – (TII) NHCDC |
| Data Definition | Anticipated expenditure is calculated as the weighted average of expenditure for the peer group |
| Favourable Values | Lower |
| Notes | Financial years 2002/03 and 2001/02 |

| Contact | Costing and Analysis Team ph 3234 1366 |
|---|---|
| MQ Comment | Indicator developed for Phase 3 |

| Identifier | EFF-56 |
|---|---|
| Indicator Name | Radiology Usage Efficiency |
| Description | A measure of the amount of radiology used in comparison with anticipated expenditure. |
| Numerator | Actual cost of radiology |
| Denominator | Anticipated cost of radiology (average cost for casemix peer group) |
| Data Exclusions | |
| Data Inclusions | |
| Data Source | Pricing Strategy Team NHCDC |
| Data Definition | Anticipated expenditure is calculated as the weighted average of expenditure for the peer group |
| Favourable Values | Lower |
| Notes | Financial years 2002/03 and 2001/02 |
| Contact | Costing and Analysis Team ph 3234 1366 |
| MQ Comment | Indicator developed for Phase 3 |

| Identifier | EFF-57 |
|---|---|
| Indicator Name | Asset Condition |
| Description | A measure of the financial condition of assets |
| Numerator | Depreciated replacement value (net book value) |
| Denominator | Total replacement value (gross book value) |
| Data Exclusions | |
| Data Inclusions | |
| Data Source | Statewide asset management services (SAMS) FAMMIS |
| Data Definition | |
| Favourable Values | Higher |
| Notes | All asset clases |
| Contact | Finance/Asset Accounting Team ph 323 40775 |
| MQ Comment | Feedback suggests data is indicative of performance and of operational use. Data is comparable with Phase 2 and 3 Report |

| Identifier | EFF-58 |
|---|---|
| Indicator Name | Asset Utilisation |
| Description | A financial measure of the amount of asset investment for activity production |
| Numerator | Total replacement value (gross book value) |
| Denominator | Weighted Separations |
| Data Exclusions | |
| Data Inclusions | |
| Data Source | Statewide asset management services (SAMS) FAMMIS |
| Data Definition | |
| Favourable Values | Lower |
| Notes | |
| Contact | Numerator: Finance/Asset Accounting Team ph 323 40775 Denominator: Client Services Unit ph 3234 1130 |
| MQ Comment | Indicator developed for Phase 3 |

| Identifier | EFF-59D |
|---|---|
| Indicator Name | Repairs and Maintenance proportion - District |
| Description | The proportion of total budget that is expended on Repairs and Maintenance |
| Numerator | Repairs and Maintenance expenditure |
| Denominator | Total Budget |
| Data Exclusions | |
| Data Inclusions | |
| Data Source | Statewide asset management services (SAMS) FAMMIS |
| Data Definition | |
| Favourable Values | |
| Notes | Result provided is calculated at on a District-wide basis |

| Contact | Finance/Asset Accounting Team ph 323 40775 |
|---|---|
| MQ Comment | Indicator developed for Phase 3 |

| Identifier | EFF-60 |
|---|---|
| Indicator Name | Food Services – total cost per OBD |
| Description | The cost of providing food services per Occupied Bed Day |
| Numerator | Total cost of Food Services |
| Denominator | Total patient days |
| Data Exclusions | |
| Data Inclusions | |
| Data Source | Support Services Reform Project – Survey |
| Data Definition | Support Services Reform Project |
| Favourable Values | Lower |
| Notes | Data is comparable with Phase 2 and 3 Report<br>S&W are discounted to EB2 rates |
| Contact | Numerator: Support Services Reform Unit ph 323 41705<br>Denominator: Client Services Unit ph 3234 1130 |
| MQ Comment | Feedback suggests data is indicative of performance and of operational use. |

| Identifier | EFF-61 |
|---|---|
| Indicator Name | Cleaning – total cost per $m^2$ |
| Description | The cost of providing cleaning services per square metre of floor space |
| Numerator | Total cost of cleaning |
| Denominator | Total floor space ($m^2$) |
| Data Exclusions | |
| Data Inclusions | |
| Data Source | Support Services Reform Project – Survey |
| Data Definition | Support Services Reform Project |
| Favourable Values | Lower |
| Notes | Data is comparable with Phase 2 and 3 Report<br>S&W are discounted to EB2 rates |
| Contact | Support Services Reform Unit ph 323 41705 |
| MQ Comment | Feedback suggests data is indicative of performance and of operational use. |

| Identifier | EFF-62 |
|---|---|
| Indicator Name | Linen cost per OBD |
| Description | The cost of linen per occupied bed day |
| Numerator | Total cost of linen |
| Denominator | Occupied Bed Days |
| Data Exclusions | |
| Data Inclusions | |
| Data Source | Support Services Reform Project – Survey |
| Data Definition | Support Services Reform Project |
| Favourable Values | Lower |
| Notes | Data is comparable with Phase 3 Report.<br>S&W are discounted to EB2 rates |
| Contact | Numerator: Support Services Reform Unit ph 323 41705<br>Denominator: Client Services Unit ph 3234 1130 |
| MQ Comment | Feedback suggests data is indicative of performance and of operational use. |

| Identifier | EFF-63 |
|---|---|
| Indicator Name | Energy consumption per $m^2$ |
| Description | The cost of energy per square metre of floor space |
| Numerator | Total cost of energy |
| Denominator | Total floor space ($m^2$) |

| Data Exclusions | |
|---|---|
| Data Inclusions | |
| Data Source | Statewide Asset Management Services (SAMS) FAMMIS |
| Data Definition | Statewide Asset Management Services (SAMS) |
| Favourable Values | Lower |
| Notes | Data is comparable with Phase 2 and 3 Report |
| Contact | Numerator: Finance/Asset Accounting Team ph 323 40775<br>Denominator: Support Services Reform Unit ph 323 41705 |
| MQ Comment | Feedback suggests data is indicative of performance and of operational use. |

| Identifier | EFF-64 |
|---|---|
| Indicator Name | DEA – Technical Efficiency |
| Description | The relative technical efficiency of each Hospital |
| Numerator | Weighted Separations, Weighted OOS, Weighted other care |
| Denominator | Ordinary FTE - Worked, Non labour expenditure, Gross asset value |
| Data Exclusions | |
| Data Inclusions | |
| Data Source | QHAPDC, MAS, HRDSS |
| Data Definition | DEA is a non-parametric linear programming tool – refer to section 4.4 for a detailed definition. Ref: T. Coelli, D.S.P. Rao, and G.E. Battese. *"An Introduction to Efficiency and Productivity Analysis"*, Norwell, MA: Kluwer, 1998. |
| Favourable Values | 100% |
| Notes | See section 4.4 of Efficiency Technical Supplement |
| Contact | Measured Quality Service ph 3247 4908 |
| MQ Comment | Indicator developed for Phase 3 |

| Identifier | EFF-65D |
|---|---|
| Indicator Name | Revenue retention – District |
| Description | The proportion of total budget generated through Category B revenue |
| Numerator | Generated Category B revenue – user charges |
| Denominator | Total state recurrent budget excluding Category B revenue – user charges |
| Data Exclusions | |
| Data Inclusions | Category B revenue – user charges |
| Data Source | FAMMIS |
| Data Definition | |
| Favourable Values | Higher |
| Notes | Result provided is calculated at on a District-wide basis |
| Contact | Finance Unit ph 3225 2539 |
| MQ Comment | Indicator developed for Phase 3 from user feedback |

| Identifier | EFF-66D |
|---|---|
| Indicator Name | Debtor Turnover – District |
| Description | The average number of days outstanding for trade debtors |
| Numerator | Trade Debtors * 365 |
| Denominator | Trade Revenue |
| Data Exclusions | |
| Data Inclusions | |
| Data Source | FAMMIS |
| Data Definition | |
| Favourable Values | Lower (Corporate benchmark of 90 days) |
| Notes | Higher values indicate a risk of higher bad debts<br>Result provided is calculated at on a District-wide basis |
| Contact | Finance Unit ph 3225 2539 |
| MQ Comment | Indicator developed for Phase 3 |

| Identifier | EFF-67. D* |
|---|---|

| Indicator Name | Stock Turnover –District<br>67.01 Drugs,<br>67.02 Medical Supplies<br>67.03 Catering Domestic |
|---|---|
| Description | The number of times the average value of stock on hand is turned over during a financial year |
| Numerator | Value of stock distributed |
| Denominator | Average value of stock on hand |
| Data Exclusions | |
| Data Inclusions | |
| Data Source | FAMMIS |
| Data Definition | |
| Favourable Values | Higher |
| Notes | Result provided is calculated at on a District-wide basis |
| Contact | Finance Unit ph 3225 2539 |
| MQ Comment | Indicator developed for Phase 3 from user feedback |

| Identifier | EFF-68 |
|---|---|
| Indicator Name | Critical Care Efficiency |
| Description | A measure of the amount of CC cost in comparison with anticipated expenditure. |
| Numerator | Actual cost of Critical Care |
| Denominator | Anticipated cost of Critical Care (average cost for casemix peer group) |
| Data Exclusions | |
| Data Inclusions | |
| Data Source | Pricing Strategy Team – (TII) NHCDC |
| Data Definition | Anticipated expenditure is calculated as the weighted average of expenditure for the peer group |
| Favourable Values | Lower |
| Notes | Financial years 2002/03 and 2001/02 |
| Contact | Costing and Analysis Team ph 3234 1366 |
| MQ Comment | Indicator developed for Phase 4 from user feedback |

| Identifier | EFF-69 |
|---|---|
| Indicator Name | Litigation per 100 Beds |
| Description | The amount of litigation per 100 available beds |
| Numerator | Number of Health Litigation Claims x 100 |
| Denominator | Number of Available Beds |
| Data Exclusions | |
| Data Inclusions | Health Litigation Claims |
| Data Source | LALU |
| Data Definition | Date instruction received is applicable to the financial year of the report. Includes all claims regardless of outcome.<br>Available Bed: The number of beds, occupied or not, which are staffed and immediately available for use by admitted patients if required. It does not include wards that are shut for any reason. (QHDD) |
| Favourable Values | Lower |
| Notes | The denominator of number of beds is used as a proxy for the capacity of the Facility / District to generate legal claims, due to the high correlation between the number of beds and the amount of patient / staff activity. |
| Contact | Numerator: Legal and Administrative Law Unit 3234 0302<br>Denominator: Client Services Unit ph 3234 1130 |
| MQ Comment | Indicator developed for Phase 3 on sponsors request |

| Identifier | EFF-71.* |
|---|---|
| Indicator Name | Component Proportion of Total Cost |
| Description | The proportion of total cost of treating patients attributed to each component cost |
| Numerator | Component Cost |

| Denominator | Total Cost |
|---|---|
| Data Exclusions | |
| Data Inclusions | 71.01 – Ward Medical, 71.02 – Ward Nursing, 71.03 – Other Costs, 71.04 – Pathology, 71.05 – Imaging, 71.06 - Allied Health, 71.07 – Pharmacy, 71.08 - Critical Care, 71.09 - Operating Rooms, 71.10 - Emergency Department, 71.11 - Ward Supplies, 71.12 - Specialised Procedure Suites, 71.13 – Prostheses, 71.14 - On-costs, 71.15 – Hotel, 71.16 - Depreciation |
| Data Source | National Hospital Cost Data Collection (Commonwealth Department of Health and Aged Care)<br>Pricing Strategy Team – (TII) NHCDC |
| Data Definition | NHCDC Cost Report Round 7, 2002-03 |
| Favourable Values | |
| Notes | Financial years 2002/03 and 2001/02 |
| Contact | Costing and Analysis Team ph 3234 1366 |
| MQ Comment | New indicator for Phase 4 developed from user feedback. |

## 3.5 Relative Technical Efficiency

### 3.5.1 Context

The Data Envelopment Analysis (DEA) model is commonly used to evaluate the performance of hospitals. DEA is a non-parametric mathematical programming tool that is designed to evaluate how efficiently a hospital (hereafter referred to as 'decision-making unit' or 'DMU') produces a mixture of outputs with an available mixture of inputs, relative to other DMUs in the group. The appeal of DEA lies in the ability to measure relative productivity and efficiency for multiple inputs and multiple outputs such as those commonly encountered in health settings.

As the DEA approach produces efficiency scores for a DMU relative to other DMUs in a group, the relative productivity and/or efficiency of DMUs is implicitly determined through a benchmarking or best practice process. Hence, the approach has useful applications, particularly in the context of a balanced scorecard approach where the decision-maker has to evaluate performance in the context of how efficient various inputs (labour, equipment, beds, materials, etc) have been used to produce hospital outputs (inpatient episodes and occasions of service) and to what extent the production of desired outputs have an impact on quality. These types of questions are best addressed using a DEA framework.

### 3.5.2 Technical Efficiency

In attempting to measure the efficiency of hospitals, it is common practice to commence with some explanations about the concepts to be used in the DEA. In this study, we are concerned with technical efficiency only because reliable price data are not available. The application of DEA, however, is not restricted to technical efficiency. Indeed, the original theoretical efficiency framework by Farrell (1957) proposed that the efficiency of a DMU may be decomposed into technical and a locative efficiency.

Technical efficiency reflects the ability of a DMU to obtain maximum output for a given set of inputs. Allocative efficiency reflects the ability of a DMU to use the inputs in optimal proportions, given their respective prices. Many researchers have used these simple concepts and expanded on the components of technical efficiency to incorporate measures such scale and pure technical efficiency and the state of the technology (such as constant to scale and decreasing to scale).

Figure 1 below demonstrates the concept of technical efficiency in the context of linear programming and DEA framework.

## Figure 2 – Technical Efficiency Using Input-Orientated Approach
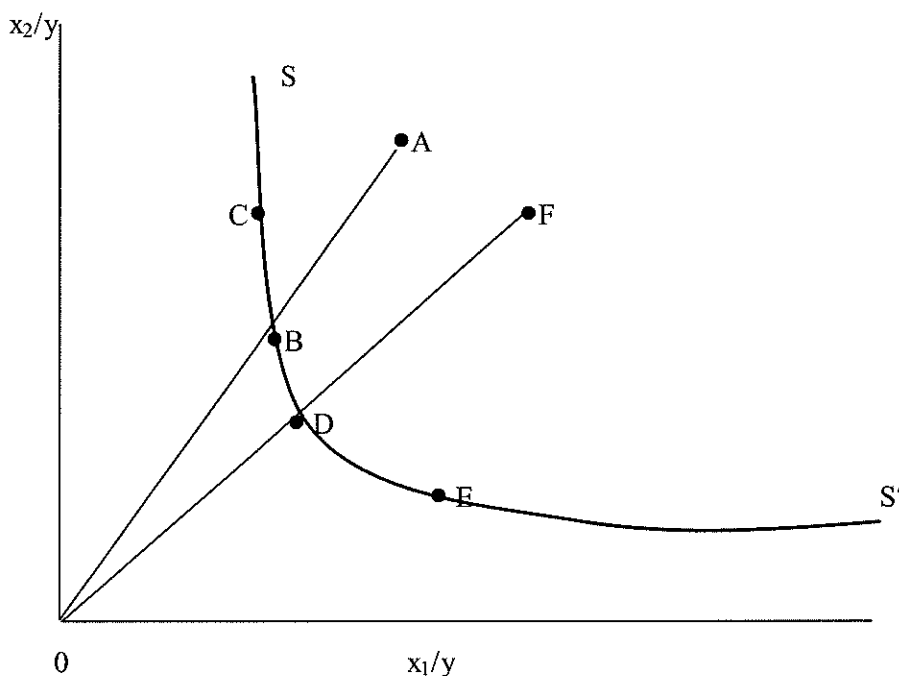
By using a linear programming solution, we can produce a non-parametric piece-wise linear frontier (SS') shown in Figure 1 above. DMUs which lie on the frontier are fully efficient (ie. DMUs B, C, D & E). DMUs which lie above and to the right of the frontier are inefficient (ie. DMUs A & F).

Any point (i.e. input combinations of say medical FTE and number of beds) on the frontier SS' is technically efficient in the sense that it is not possible to reduce the two inputs proportionally and still produce the same level of output. The DMU located at point B uses input quantities $x^B = (x^B_1, x^B_2)$ and is technically efficient.

The DMU located at point A uses input quantities $x^A = (x^A_1, x^A_2)$ and is technically inefficient. The technical inefficiency of DMU A can be represented as the radial distance from B to A, which is simply the amount by which both inputs could be proportionally reduced without a reduction in output.

### 3.5.3 Input-Oriented CRS DEA

Farrell's approach was later modified and extended by Charnes, Cooper and Rhodes (1978) and applied in the context of the DEA technique. Essentially, efficiency 'scores' for each DMU in the sample are calculated using linear programming. The percentage reduction in the use of all inputs that can be achieved to make a particular DMU comparable with the best and similar DMUs in the sample can be achieved with no reduction in the amount of output. This approach is known as the input-orientated constant return to scale (CRS) DEA linear programming. Input-orientated DEA essentially means that a DMU has the power to control inputs (eg. labour inputs) used in producing outputs.

The input-orientated CRS DEA linear programming is used by many researchers including Coelli (1998) in his DEA application package which is used in this study. The CRS DEA is an equivalent envelopment in the form of (1):

$$(1) \qquad \min_{\theta,\lambda} \theta$$
$$\text{subject to} \quad -y_i + Y\lambda \geq 0$$
$$\theta x_i - X\lambda \geq 0$$
$$\lambda \geq 0$$

where, $X$ is a K×N input matrix, $Y$ is an M×N output matrix, $\theta$ is a scalar and $\lambda$ is an N×1 vector of constants. The value of $\theta$ represents the efficiency scores for the $i^{th}$ DMU. The DEA problem must be solved once for each DMU. In (1), the CRS property is imposed on the technology. A technically efficient firm has a value of one indicating that the DMU lies on the frontier. In the DEA *envelopment* problem, the performance of a DMU is evaluated in terms of the ability of the firm to expand its input vector subject to the constraints imposed by best-observed practice. A variation of the CRS DEA model is the variable returns to scale (VRS) model which is less restrictive than CRS.

In formulation (1) above, the assumption of CRS is imposed on every DMU in the sample. Factors which may make DMUs unique beyond the simple input-output mix are not considered in the CRS formulation. Another assumption in the linear programming in (1) is that of strong disposability of inputs, which means that a DMU is able to dispose of unwanted inputs with no additional costs. It is therefore only appropriate to use CRS DEA when all DMUs are operating at an optimal scale. However, in reality, the market is less than perfect. To address these 'imperfections', Banker, Charnes and Cooper (1984) suggested a model that can be used for variable returns to scale (VRS) situations.

### 3.5.4 Input-Oriented VRS DEA

The CRS DEA formulation in (1) can be altered to estimate technical efficiency in the case of a VRS DEA model in the form:

$$(2) \qquad \min_{\theta,\lambda} \theta$$
$$\text{subject to} \quad -y_i + Y\lambda \geq 0$$
$$\theta x_i - X\lambda \geq 0$$
$$\tau'\lambda = 1$$
$$\lambda \geq 0$$

where $\tau$ is an N×1 vector of ones. The constraint in (2) ensures that inefficient DMUs are benchmarked against other DMUs of similar size. In practice, this results in a 'tighter' fitting frontier with more DMUs near to the

efficiency frontier. A combination of CRS and VRS DEA formulations can be used to calculate scale efficiency for each DMU in the sample. As suggested by Coelli (1996), if there is a difference between the CRS technical efficiency score and the VRS technical efficiency score, then this indicates that the DMU has scale inefficiency.

The concept of input-orientated DEA, whilst useful, is difficult to sustain as it is unlikely that hospital managers are (or will be) in a position to dispose of many of the labour inputs (such as medical and paramedical labour). Furthermore, it is unlikely that all DMUs will be operating at an optimal scale and are of the same size and capacity. Given these factors, it is also appropriate to calculate technical efficiency from an output-orientated perspective.

### 3.5.5 Output-Orientated DEA

It is possible to calculate technical efficiency scores by varying combinations of outputs to be produced by a particular DMU but keeping the amount of inputs fixed. This concept is also appropriate for the hospital sector. As with input-orientated DEA, the technical efficiency scores for a DMU can be calculated using either a CRS or a VRS output-orientated DEA. The scores indicate, given a set of inputs, by how much a DMU can increase each output to ensure comparability with the nearest compatible DMU(s) in the sample with no increase in the use of inputs.

Analogous with the input-orientated formulation, outputs of inefficient DMUs are radially increased towards the frontier making the formulation invariant to the units used to measure each output.

The VRS output-orientated DEA formulation is shown in (3):

(3)        $\max_{\phi\lambda}$

   subject to $-\phi y_i + Y\lambda \geq 0$

   $x_i \times \lambda \geq 0,$

   $\tau'\lambda = 1$

   $\lambda \geq 0$

where $1 \leq \phi < \infty$, and $\phi - 1$ is the proportional increase in outputs that could be achieved by the $i$[th] DMU with input quantities held constant. Since hospital size is an important factor in determining the technical efficiency, the assumption of CRS is inappropriate. This is particularly relevant in DMUs where doubling of all inputs lead to more than doubling outputs as these DMUs are likely to be able to spread their fixed costs more effectively.

In such situations, it is appropriate to decompose technical efficiency scores into scale inefficiency and pure technical inefficiency. As alluded to above, technical efficiency can be decomposed into scale and pure technical efficiency. Scale efficiency is the measure of the ability to remove waste by operating at, or near, to the most productive scale. Pure technical efficiency is the measure of the extent to which a DMU can dispose of unwanted inputs. Pure technical efficiency is composed of congestion efficiency and other effects. Input congestion efficiency is the measure of the component of pure technical efficiency due to the existence of negative marginal returns to input and the inability of a DMU to dispose of unwanted inputs without additional costs. The inability to costlessly dispose of unwanted inputs is referred to as weak disposability of inputs. Scale efficiency measures have been calculated in this study.

Some plausible reasons justifying the use of an output-orientated DEA under the assumption of VRS include:

- Hospital managers have limited ability to control inputs, particularly labour inputs due to industrial constraints.
- It is difficult to decrease the number of medical inputs on the basis of excessive supply of medical officers.
- The existence of waiting lists indicates that rising output levels are more preferable to lower inputs under conditions of budget constraints.
- Hospital managers may not have the incentive to reduce inputs.
- Hospitals have been funded on the basis of achieving targeted outputs.

In this study, the preference is to use the formulation in (3) and undertake a decomposition of the technical efficiency scores to derive scale and pure technical efficiencies under the condition of VRS.

### 3.5.6 Targets & Peers

In the DEA formulation, disturbance terms are 'inefficiency terms' reflected by the distance between the firm and the efficient frontier. The terms targets and peers are often referred to as points of efficiency for the production surface in respect of each DMU in the sample. The target of a DMU refers to coordinates of the efficient projection point for that particular DMU. To illustrate the identification of targets, consider the single output two-input DEA frontier depicted in Figure 2 below.

**Figure 3 – A DEA Frontier**
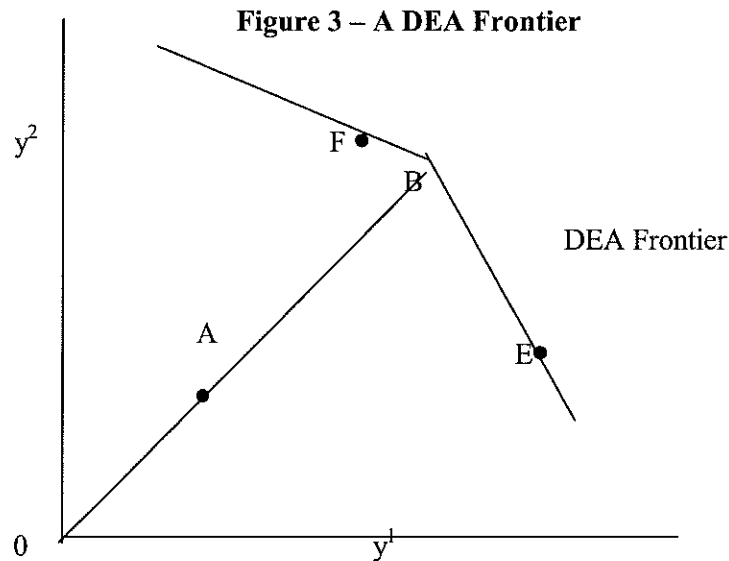


In Figure 2, the DMU operating at point A is technically inefficient, and that it could become fully efficient through a radial movement or expansion along the ray OA to point B. A radial expansion corresponds to an equi-proportionate increase in all inputs. In this sense, the co-ordinates of point B provide a set of *targets* for the firm operating at point A.

Also, note that from Figure 1, point B lies on the segment joining points F and E. This means that it is possible to write the co-ordinates (i.e. output levels) at point B as a weighted sum of the co-ordinates at points F and E. In this sense, points F and E are reference points, or *peers*, for the DMU operating at point A.

In this study, targets and peers of each DMU in the sample are identified using the DEAP package (Coelli, 1996).

### 3.5.7 Application of DEA

Several hospital-based studies by Webster, et al. (1998), the Commonwealth of Australia (1997), Vladmanis (1992) and Nunamaker (1985) have developed an appropriate DEA model using various types of inputs and outputs. There are very few Australian DEA studies examining technical efficiency.

### 3.5.8 Labour Inputs

Physical labour input measures that have been used in two Australian studies are medical (SMO and VMO), nursing and non-paramedical (Australian Bureau of Statistics (Webster, et al. (1998)) and The Steering Committee for the Review of Commonwealth/State Service Provision, Data Envelopment Analysis: A Technique for Measuring the Efficiency of Government Service Provision (1997)). In these studies, full time equivalents (FTEs) were used as a unit measure of physical labour.

In this study we used Medical (including VMO), Nursing and Other FTEs as key inputs to the production process. The definition of FTE was obtained from the HRDSS data dictionary. The measure used was Ordinary FTE – Worked.

Several models were tested during the initial DEA study conducted during October 2003. The final model, as presented in the previous study, uses the summation of all staffing categories.

### 3.5.9 Non-Labour Inputs

Non-labour input items consist of food, drug, domestic supplies, clinical and non-clinical supplies, patient transport services, repairs and maintenance, energy costs and administration cost. With the exception of a recent study on the productive efficiency of private hospitals in Australia (Webster, et al. 1998), non-labour items have not been extensively discussed in the hospital-related literature. Most studies have assumed non-labour inputs costs and prices to be either unimportant or constant. Non-labour components are a mixture of clinical and non-clinical items and are therefore not amenable to quantification using a single representative unit measure.

Non-labour expenses have been used in a NSW Study of a sample of public hospitals (Wang & Mahmood, 2000). Non-labour expenses are important inputs in the provision of hospital care and include items such as drug supplies, medical/surgical supplies, food, domestic services, repairs and maintenance, patient transport, administrative, depreciation and other non-salary expenses.

In this study we use non-labour expenditure as a measure of non-labour inputs. Data was extracted from the Decision Support System and defined as all non-labour related expenditure, over which districts had responsibility. The inputs were expressed in terms of dollar cost.

### 3.5.10 Capital Input

The most common definition and measure of capital input in previous hospital related DEA studies is the number of available beds. This measure was tested during this study. Beds are often used as a proxy measure of capital stock in hospital cost studies. A reliable measure associated with the value of assets, such as depreciation and cost of capital are often not available. A study by Webster et al (1997) used the Australian Private Hospital Establishment Classification dataset that contains data on depreciation and gross capital expenditure. In the study by Webster et al (1997), the capital stock measure was derived using the Perpetual Inventory Model that incorporates several assumptions associated with the investment history of hospitals. However, due to substantial inconsistencies in the data at the unit record level, the estimates were abandoned in the study by Webster et al (1997).

Depreciation profiles of public hospitals in more recent times (around 1998), have improved significantly with some States moving to accrual-based accounting and financial systems that require hospitals to revalue assets and calculate the depreciated value of the physical hospital infrastructure.

In this study we use the Gross Asset Value ($M) as a measure of capital input. This enables a more accurate analysis of facilities of similar sizes (as measured by the number of available beds) with varying investments in technology. Additionally, the importance of the number of beds at a given facility has traditionally had high political and community interest.

### 3.5.11 Hospital Outputs

To date, studies have used various surrogate measures of fixed factors of production or capital costs. These measures of capital include user cost of capital (Cowing and Holtmann, 1983); sum of interest and depreciation expense (Hornbrook and Monheit, 1985); physical input reflected by the number of beds (Evans and Walker, 1972; Lave, Lave and Silverman, 1972; Culyer, et al. 1978; Watts and Klastorin, 1980; Chernichovsky and Zmora, 1986; Vita, 1990; Scuffman, et al., 1996); and the amount of floor space in each hospital (Fahrer, 1995 and 1996).

Seven basic approaches to the definition of hospital output can be considered: patient days (weighted and unweighted); hospital services; treated cases; episodes of illness; end-results and health levels; intermediate inputs; and a composite of one or more of those just mentioned. Feldstein (quoted in Collopy and Balding, 1993) provided a definition of hospital output from a broad resource allocation and market perspective. According to the study, hospital output may be legitimately and usefully defined in any of four ways: by an index of the number of services provided, the number of cases treated, the number of successful treatments or the measures of community's health.

Each definition is progressively more difficult to implement, but comes closer to the welfare-oriented comparisons of output. Similarly, Butler (1995, p.48) defined hospital outputs in terms of whether the output of a hospital is the actual provision of the medical treatment itself or the resulting improvement in the health status of the patient.

In this study we have used the following measures of hospital outputs:
- Phase 8 Weighted Separations
- Phase 8 Weighted Outpatient Occasions of Service

- Phase 8 Weighted Other Care Types

### 3.5.12 Other Measures

Other measures examined in the previous study however not included in the Phase 3 report were:
- Long Stay Rates – the proportion of patients exceeding the Phase 8 Extra High Trim Point
- Mortality Rates – a proxy for quality of care
- Available Beds – a proxy for capital
- Investment in Staff Training – a measure of the investment in quality terms made for the improvement of the health service.

As a result of the model development and limited variance in some of the results, these other measures were unable to be included in the initial study. Depending on the measures, an increasing number of measures used will lead towards an increased amount of efficient DMUs, to the extent that all DMUs may be considered efficient.

## 3.6 Method

For the purposes of this study, a Variable Returns to Scale (VRS) model with an output orientation is presented.

A Constant Returns to Scale (CRS) model is generally only appropriate when all firms in the study are operating at an optimal scale. The use of the CRS specification when all firms are not operating at the optimal scale results in measures of Technical Efficiency which are confounded by Scale Efficiencies. Scale Efficiency has been calculated separately in this study.

The selection of both input and output orientations is used for presenting targets as generally, hospital managers may have some degree of control over both some of their inputs and some outputs. Therefor it appears convenient to present both orientations, specifically for target estimations, in both formats.

The selection of inputs and outputs is a difficult and onerous task. Initially seven output measures and seven input measures were selected for inclusion in the initial study. This amount of data, whilst giving a broad and detailed description of hospital management issues, is inappropriate for the size of the population in this study. As only 74 facilities data was available, a reduction and combination of the measures was required. The following table details this process.

**Table 3-61 Method**

| Measure | Initial Model | Final Model |
|---|---|---|
| **Outputs** | | |
| Weighted Separations level 1 (high volume, low acuity) | ✓ | |
| Weighted Separations level 2 | ✓ | ✓ |
| Weighted Separations level 3 (low volume, high acuity) | ✓ | |
| Weighted Outpatient Occasions of Service | ✓ | ✓ |
| Weighted Other Care types | ✓ | ✓ |
| Long stay rate (proportion of patient separated prior to the extra long stay trim point) | ✓ | ✗ |
| Mortality rate (proportion of patients separated and not deceased within 30 days of admission) | ✓ | ✗ |
| **Inputs** | | |
| Medical Full Time Equivalent staff | ✓ | |
| Nursing Full Time Equivalent staff | ✓ | ✓ |
| Other Full Time Equivalent staff | ✓ | |
| Non Labour Expenditure | ✓ | ✓ |
| Available Beds | ✓ | ✗ |
| Gross Asset Value | ✓ | ✓ |
| Inverse of Training expenditure | ✓ | ✗ |

## 3.7 Data

Data was collected from several sources for three years to the 2003/04 financial year.

- Weighted Separations - Queensland Hospital Admitted Patient Data Collection
- Outpatient Occasions of Service – Monthly Activity Collection
- Other Care Types - Queensland Hospital Admitted Patient Data Collection
- Ordinary FTE - Worked – Human Resource Decision Support System
- Non Labour Expenditure – Decision Support System
- Gross Asset Value – State-wide Asset Management Service

Appendix 3 of the Hospital Report details the raw data used for the Hospital.

Partial productivity analysis was undertaken to identify outliers within the data sets. Whilst none of the 73 selected facilities were excluded from the analysis, there is evidence to suggest that some significant variations in the measures exist.

## 3.8 Conclusions

Hospital management is a complex issue. The ever-increasing demand to produce more with less necessitates efficiently managed services. This paper has attempted to demonstrate that there are alternatives to the traditional methods of measuring hospital efficiency. Partial productivity measures that have been used do not provide accurate measures of overall efficiency leading to the establishment of dozens if not hundreds of indicators to measure performance, or their definitions are so generalised that meaningful comparisons are difficult to achieve.

DEA is a proven mathematical model that enables the comparison of hospitals across several input and output measures. The ability to determine efficiently performing facilities, establish targets for under-performing facilities and identify peer hospitals to facilitate improved performance has obvious benefits.

Whilst caution should be used in resource allocation decisions based upon any data source, DEA may provide an alternate analysis method to aid in this difficult decision making process.

The Measured Quality Service envisages that further development of the model, to include the analysis of alternate input and output measures, will be incorporated in future MQ Hospital Reports. Additional investigations to include further measures of efficiency such as allocative, cost and technical change and techniques such as the Malmquist TFP index, to measure efficiency change over time, will be progressed.

### 3.9 Example Study

Which are the most efficient or best practice hospitals in following table?

**Table 3-62 Example Study**

| Hospital | Nurses | | Cases | Nurses per case | Beds per case |
|:---:|:---:|:---:|:---:|:---:|:---:|
| 1 | 200 | 600 | 200 | 1 | 3 |
| 2 | 600 | 1200 | 300 | 2 | 4 |
| 3 | 200 | 200 | 100 | 2 | 2 |
| 4 | 600 | 300 | 200 | 3 | 1.5 |
| 5 | 500 | 200 | 100 | 5 | 2 |

Graph 1 – Sample Hospital data
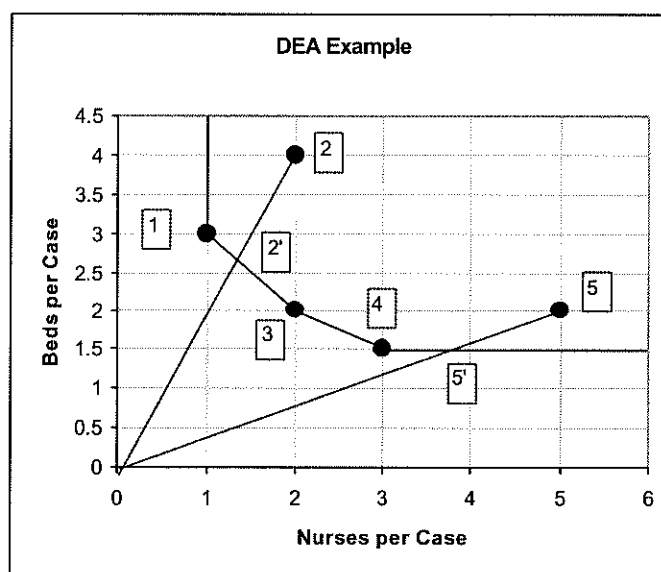


Hospitals 1, 3 and 4 are on the efficient frontier, so are assumed to be operating at best practice. However, hospitals 2 and 5 are north-east of the frontier, so are considered to be less efficient. This is because they appear to be able to reduce their input use and still maintain their output level compared with the performance of the best practice hospitals. For example, hospital 2 could reduce its use of both inputs by one third before it would reach the efficient frontier at point 2'.

Similarly, its technical efficiency score is given by the ratio 02'/02 which is equal to 67 per cent in this case. In terms of actual input levels, hospital 2 would have to reduce its number of nurses from 600 to 400 and its number of beds from 1200 to 800. At the same time, it would have to maintain its output of 300 treated cases before it would match the performance of the hypothetical best practice hospital 2'.

The frontier is reached between hospitals 1 and 3 in this case, so the hypothetical hospital 2' is a combination, or weighted average, of the operations of hospitals 1 and 3. If hospital 2 is looking for other hospitals to use as role models to improve performance, then it should examine the operations of hospitals 1 and 3 because these are the efficient hospitals most similar to itself.

The other less efficient hospital — hospital 5 — is in a different situation. It is north-east of the efficient frontier, but contracting its inputs in equal proportions leads to the hypothetical hospital 5', which still lies to the right of hospital 4 on the segment of the frontier which was extended parallel to the nurses per treated case axis. Thus, the peer group for hospital 5 solely consists of hospital 4 because it is the only one which 'supports' that section of the frontier on which the hypothetical 5' lies. But hospital 5' is not fully efficient because the number of nurses per treated case can be reduced, while the number of beds per treated case is held constant, thus moving from 5' back to 4. That is, to maximise its efficiency given the available data, hospital 5 has to reduce one input more than the other. In this special case, a radial contraction of inputs means that the frontier is reached, but a further

reduction of one of the inputs can be achieved without a reduction in output. This extra input reduction available is known in DEA studies as input 'slack'.

(Extracted from: Steering Committee for the Review of Commonwealth/State Service Provision 1997, *Data Envelopment Analysis: A technique for measuring the efficiency of government service delivery*, AGPS, Canberra.)

### 3.10 Sample DEA Report

Appendix 3 of the Hospital report provides a detailed analysis of Relative Technical Efficiency for the Hospital.

Technical and Scale Efficiency Score (100% max)

Comparative Peer Data. These hospitals are 100% TE

Output raw data

Peer Hospitals

Input raw data

Peer Hospitals

Output target required to achieve 100% TE whilst maintaining current level of Inputs.

Input target required to achieve 100% TE whilst maintaining current level of Outputs.

Partial productivity measures for comparative purposes only

**Appendix 3**

## EFF-64 Relative Technical Efficiency

CABINET IN CONFIDENCE

**A Sample Hospital**

**A Sample Peer Group**

| | | | | Comparative Peer Data | |
| --- | --- | --- | --- | --- | --- |
| | 2002/03 | Peer Group Median | State Median | Peer No. 1 | Peer No. 2 |
| | | | | Hospital A | Hospital B |
| Relative Technical Efficiency | 97.4% | 99.2% | 96.3% | | |
| Scale Efficiency | 89.9% | | | | |

**Output Orientation**

| Outputs | 2002/03 | Radial Movement | Output Target | 2002/03 | 2002/03 |
| --- | --- | --- | --- | --- | --- |
| Weighted Separations | 25,864 | 692 | 26,556 | 25,708 | 12,368 |
| Weighted Outpatient Occ of Service | 6,934 | 186 | 7,120 | 5,980 | 4,286 |
| Weighted Other Care | 513 | 14 | 527 | 2,414 | 811 |
| Returns to Scale | Decreasing | | | | |

| Peer Hospitals | Peer Weight | |
| --- | --- | --- |
| Hospital A | 0.623 | NOTE: A higher Peer Weight indicates a stronger association with the peer facility. |
| Hospital B | 0.251 | |

NOTE: From an output orientation, to achieve a Technical Efficiency score of 100%, Outputs should increase to the Output Target amount whilst maintaining the current level of inputs.

**Input Orientation**

| Inputs | 2002/03 | Radial Movement | Input Target | 2002/03 | 2002/03 |
| --- | --- | --- | --- | --- | --- |
| Ordinary FTE - Worked | 823 | -27 | 795 | 641 | 324 |
| Non Labour Expenditure | $20,702,314 | -$689,287 | $20,013,027 | $17,599,025 | $9,263,069 |
| Gross Asset Value ($M) | $125,035 | -$4,163 | $120,872 | $110,475 | $47,463 |
| Returns to Scale | Decreasing | | | | |

| Peer Hospitals | Peer Weight |
| --- | --- |
| Hospital A | 0.615 |
| Hospital B | 0.272 |

NOTE: From an input orientation, to achieve a Technical Efficiency score of 100%, Inputs should decrease to the Input Target amount whilst maintaining the current level of outputs.

| Partial Productivity Measure | A Sample Hospital | Hospital A | Hospital B |
| --- | --- | --- | --- |
| *for comparative purposes only* | | | |
| Weighted Separations per Ordinary FTE - Worked | 31.44 | 40.12 | 38.18 |
| Weighted Outpatient Occasions of Service per FTE | 8.43 | 9.33 | 13.23 |
| Weighted Other Care per FTE | 0.62 | 3.77 | 2.50 |
| Non Labour Expenditure per FTE | $25,165 | $27,462 | $28,592 |
| Weighted Separations per Gross Asset Value ($M) | 206.85 | 232.70 | 260.58 |
| Total Outputs per FTE | 40.49 | 53.21 | 53.91 |

In the above sample hospital, to be considered 100% Technically Efficiency, the following outputs:
Weighted Separations: increase by 692 (approximately $1,730,000) and;
Weighted Outpatient Occasions of Service: increase by 186 (approximately $465,000) and;
Weighted Other Care: increase by 14 (approximately $35,000)
whilst maintaining the current level of inputs.

Alternatively, the facility could maintain the current level of outputs and decrease the following inputs:
Ordinary FTE – Worked: decrease by 27 FTE and;
Non-labour Expenditue: decrease by $689,287 and;
Gross Asset Value: decrease by $4,163,000.

Note the comparative data, where the peer hospitals are able to generate significantly more Total Outputs per FTE and Weighted Separations per GAV than the Sample Hospital however the Sample Hospital is performing slightly better than the peer hospitals with regards to Non Labour Expenditure per FTE.

# System Integration and Change

## Chapter 4

### 4.1 Overview

The systems and activities that comprise System Integration and Change are many and varied and therefore no report can be wholly comprehensive and include all possible performance indicators. The areas chosen by the Measured Quality Service for performance indicator development were considered to represent current practice and to reflect trends in quality health service delivery.

Today's health care system is facing challenges that have not been faced before. Whilst Australia's health system has provided high quality care for decades, changes in health care delivery, technology and consumer expectations have placed pressure on the future capability and sustainability of the system. Rapid changes in health care delivery, escalating costs associated with advancements in the diagnosis and treatment of disease, serious shortages in health staff in selected areas, combined with the financial restraint imposed on the system compels Queensland Health to review the way services are delivered and to invest in innovation and change.

The System Integration and Change indicators for the 2005 Measured Quality report have been selected following an extensive review of the literature and the experiences in previous phases of the Measured Quality Program.

The following areas were chosen for performance indicator exploration because they:
- map with the National Health Performance Framework (2001) definitions of Continuous (Integration), Capable and Sustainable (Change) and Safety.
- are supported by Queensland Health and the Quality and Safety agenda;
- have been examined in parallel processes in other health services;
- are amenable to sustainable change in the short term.

The areas chosen were accreditation, credentials and clinical privileging of the medical workforce, workforce management, quality of information, availability and use of information, standardised approaches to clinical management, benchmarking, integration with the local community, tele-health and quality and safety of healthcare practices.

#### 4.1.1 Review process

Following the 2004 Measured Quality reporting, a thorough review of the indicators was undertaken. This process invited input from hospitals and corporate office units as to the value and useability of the indicators. This feedback combined with additional literature review generated a list of indicators for the 2005 report which included recommendations for retaining or modifying previous indicators, and suggested new indicators.

Performance indicators were selected based on the following criteria:

- relevant to Queensland Health policy and practice;
- relevant to a significant aspect of hospital function;
- had a whole-of-population application;
- could be used to measure variation in hospital performance;
- were open to action so that a measurable change was attainable over time;
- were practicable in terms of cost and time;
- data available was of acceptable quality.

The final set of indicators for the System Integration and Change quadrant reflects further refinement based on availability and usefulness of the data.

### 4.2 Data Sources

Initially, the data for indicator development was collected from existing data sources within Queensland Health. These data sources included state-wide data collections eg Human Resources Management Information System and Queensland Health Admitted Patient Data Collection, as well as Corporate Office data collections eg the Mental Health Consumer Participation data collection.

The data from these collections only partially met the data needs for indicators in this quadrant.

**Table 4-1 Indicators using data from existing Queensland Health data collections**

| Ind No | Description | Sub Indicators |
|---|---|---|
| SIC01 | Accreditation | Hospital Accreditation |
| SIC02 | Credentials and clinical privileges | Medical staff with current clinical privileges |
| SIC03 | Workforce Management | 1. Retention of Nursing Staff<br>2. Retention of Nursing Staff – LO1.8<br>3. Median Age Nursing Staff<br>4. Retention of Allied Health Staff<br>5. Median Age Allied Health Staff<br>6. Allied Health – PO2.6 to PO3 progression<br>7. Median age Medical staff SMO<br>8. Indigenous workforce compared with indigenous population<br>9. Cost of Training and Study Leave per FTE<br>10. Cost of Education and Conference Courses per FTE<br>11. Staff development – uptake of state-wide training<br>   (1). Management Development Program<br>   (2). Leadership Development Program<br>   (3). Clinician Development Program<br>   (4). Assessment and Training for Operational stream staff<br>12. Sustainability of QIEP programs<br>13. Staff development – uptake of state-wide Cultural Awareness Training |
| SIC04. | Quality of information | 1. Accuracy<br>2a. Timeliness - Number of months on time<br>2b. Timeliness - Number of days late per month |
| SIC08 | Integration with the Local Community | 8. Consumer participation – mental health services<br>  a. Consumer representation on formal committees<br>  b. Other participation by 'primary consumers'<br>  c. participation by 'carers' |
| SIC09 | Telehealth | Videoconferencing usage for staff development and training |
| SIC10 | Quality and safety of health care practices | 4. Staff development –uptake of state-wide training - Human Error and Patient Safety / Risk Management |

A significant aspect to the performance indicators for System Integration and Change relates to processes at a hospital level. Most of this information is not captured in data collections either at hospital, district or state-wide level. The data for these indicators has again been collected via the System Integration and Change Hospital Survey which allows the collection of data from the primary source.

### 4.2.1 Data Collection Instrument

The 2005 System Integration and Change Hospital Survey has built on the previous data collection surveys for indicators in this quadrant. Following the significant redevelopment of this instrument in 2004 (Phase III), the 2005 survey has included most of the questions from the 2004 survey. Feedback from the Measured Quality presentations in all Health Service Districts, and input from Reference Group members has resulted in some minor adjustments to some questions, expansion of the detail of data collection in some areas and the inclusion of a small number of questions relating to new initiatives which have a quality focus. Minor additions to clinical areas included in the survey, were incorporated to potentially allow linking of performance indicators across a number of quadrants. The 2005 Measured Quality report will therefore provide hospitals with comparative data for 2 years in most of the indicators where data is collected through the hospital survey.

The 2005 survey included the following five sections:

1. Use of Information

2. Standardised approaches to clinical management

3. Benchmarking

4. Integration with the local community

5. Quality and safety of health care practices

The hospital survey was forwarded to District Managers with the instruction to distribute each section to the appropriate personnel who would be most familiar with the content in the particular sections. The purpose of this

process was to create ease in completion of the survey, to obtain the most accurate information from hospitals and to decrease the burden on District Managers. Once the appropriate personnel had completed their section/s, they were asked to sign a statement of accuracy and then forward their section/s to their District Manager. The survey instructions then requested District Managers to review all information provided for each of the sections and sign a statement (if satisfied) that all information was accurate. One questionnaire was completed for each hospital during November/December 2004. The state-wide response rate was 100%.

Scoring and weighting of questions within each indicator has attempted to reflect the relative importance of various aspects that have been combined to measure a particular indicator. Advice in relation t o scoring and weighting has been sought from the relevant experts in each of the indicator areas.

### 4.2.2 Data Verification

Data verification for the survey data was undertaken. Once the survey was completed, signed and returned, the responses were data entered into Microsoft Excel. If responses were unclear, wrongly entered as guided by instructions, inconsistent, or no response was given, respondents were telephoned to clarify responses. To ensure there was no data entry errors, the responses to the surveys were entered a second time into a separate workbook and compared to the original workbook. Any discrepancies were investigated and the appropriate workbook updated.

### 4.2.3 Statistical Analysis

Forty-three performance indicators were developed from all the data collected (hospital survey and existing data sources), that encompassed ten broad indicator areas. Table 4.2 provides a summary list of indicators. The types of scores included single scores (days, months, years) and percentage scores (values between 0 and 100). Scoring rules were developed for each indicator where combined responses to one or more questions in the survey generated one measure for each hospital. A detailed description of the scoring rules for each indicator is provided in this document.

### 4.2.4 Performance Allocations

The data generated for each indicator is one 'score' per hospital and therefore does not allow for rigorous statistical analysis. Identifying variation through peer hospital benchmarking allows for level of comparative analysis which can highlight areas for potential improvement and areas of exceptional performance. Peer group reporting was adopted for this report to reflect the different challenges according to size, accessibility and geographical location of hospitals within different peer groups, as not all indicators apply equally across all hospitals. For a number of indicators in this quadrant, scores have been calculated at a Health Service District level. This has occurred for 2 reasons– 1) data availability only at the Health Service District level or 2) to provide a comparison between hospital score and a Health Service District score , where the latter incorporates non-hospital services.
*Refer to Performance Allocation in Efficiency chapter of the Technical Supplement*

### 4.2.5 Data Presentation

The System Integration and Change reports present data for each indicator applicable to the facility. Each year of information is presented from the current year (2003/2004) and two previous years where data is available. The current year Peer Group median and the State median is then presented. The final data item is a marker of the status of the indicator for the Phase 3 reports. A # symbol notes the indicator was a key indicator identified in the 2004 Hospital Report for that particular facility.

**Table 4-2 Summary of System Integration & Change Indicators – 2005**

| Indicator | Indicator_Description | Type of score |
|-----------|----------------------|---------------|
| SIC01 | Hospital accreditation | Percentage % |
| SIC02 | Medical staff reviewed by committee | Percentage % |
| SIC03.01 | Retention of Nursing Staff | Percentage % |
| SIC03.02 | Retention of Nursing Staff - LO1.8 | Percentage % |
| SIC03.03 | Median Age Nursing Staff | Single score – age in years |
| SIC03.04 | Retention of Allied Health Staff | Percentage % |
| SIC03.04D | Retention of Allied Health Staff - District | Percentage % |
| SIC03.05 | Median Age Allied Health Staff | Single score – age in years |
| | | |
| SIC03.06D | Allied Health - PO2.6 to PO3 progression - District | Percentage % |
| SIC03.07a | Median Age Medical staff SMO's | Single score– age in years |
| SIC03.07b | Median Age Medical staff VMO's | Single score– |

| | | age in years |
|---|---|---|
| SIC03.08D | Indigenous workforce / population | Percentage % |
| SIC03.09 | Cost of Training and Study Leave per FTE | Dollars $ |
| SIC03.10D | Cost of Education and Conference Courses per FTE | Dollars $ |
| SIC03.11-1D | Staff development (Management Development Program) | Number |
| SIC03.11-2D | Staff development (Leadership Development Program) | Number |
| SIC03.11-3D | Staff development (Clinician Development Program) | Number |
| SIC03.11-4D | Staff development (Assesment and Training - Operational Staff) | Number |
| SIC03.12D | Sustainability of QIEP programs | Percentage % |
| SIC03.13D | Staff development – Cultural awareness training | Number |
| SIC04.01 | Accuracy | Percentage % |
| SIC04.02a | Timeliness - Number of months on time | Single score – months on time |
| SIC04.02b | Timeliness - Number of days late per month | Single score- days late |
| SIC05.01 | Electronic Clinical Information | Percentage % |
| SIC05.02 | Implementation of Secure e-mail (PKI) | Percentage % |
| SIC05.03 | Management Information | Percentage % |
| SIC05.04 | Staff Development Information | Percentage % |
| SIC05.05 | Measured Quality reports | Percentage % |
| SIC06.01 | Development and use of standardised approaches to clinical mgmt (management) | Percentage % |
| SIC06.02 | Collection and management of data for standardis ed approaches to clinical mgmt | Percentage % |
| SIC06.03 | Standardise approaches including care in the emergency department | Percentage % |
| SIC06.04 | Development and use of QH endorsed clinical pathways | Percentage % |
| SIC06.05 | Selected Surgical Areas standardised approaches to clinical management | Percentage % |
| SIC06.06 | Selected Medical Areas standardised approaches to clinical management | Percentage % |
| SIC06.07 | Selected O & G Areas standardised approaches to clinical management | Percentage % |
| SIC06.08 | Paediatric Areas standardised approaches to clinical management | Percentage % |
| SIC06.09 | Barriers to the development and use of standardised approaches to clinical mgmt | Percentage % |
| SIC07.01 | In selected clinical areas – internal benchmarking | Percentage % |
| SIC07.02 | In selected clinical areas – external benchmarking | Percentage % |
| SIC07.03 | Involvement in collaborative and information sharing with peers | Percentage % |
| SIC08.01 | Consumer participation in health services | Percentage % |
| SIC08.02 | Community partnerships with health services | Percentage % |
| SIC08.03 | Continuity of Care Planning Framework | Percentage % |
| SIC08.04 | Shared care with General Practitioners | Percentage % |
| SIC08.05 | Pre admission clinics | Percentage % |
| SIC08.06 | Referral processes | Percentage % |
| SIC08.07 | Discharge processes | Percentage % |
| SIC08.08 | Patient / carer participation in discharge planning | Percentage % |
| SIC08.09D | Consumer & carer participation - Mental Health | Percentage % |
| SIC08.09aD | Consumer representation on formal committees - Mental Health | Percentage % |
| SIC08.09bD | Other participation by 'primary consumers' - Mental Health | Percentage % |
| SIC08.09cD | Participation by 'carers' - Mental Health | Percentage % |
| SIC08.10 | Environmental management | Percentage % |
| SIC09 | Usage for staff development and training and video conferencing | Percentage % |
| SIC10.01 | Service Capability Framework implementation | Percentage % |
| SIC10.02 a | Patient Safety Culture - internal reporting | Percentage % |
| SIC10.02 b | Patient Safety Culture - external reporting | Percentage % |
| SIC10.03 | Incident management | Percentage % |
| SIC10.04D | Staff development - safety and risk management | Number |
| SIC10.05 | Emergency preparedness and continuity management | Percentage % |

## 4.3 Definition of System Integration and Change

### SIC01 Accreditation

| Identifier | SIC01 |
|---|---|
| Key Question | As at the end of each quarter (31<sup>st</sup> March, 30<sup>th</sup> June, 30<sup>th</sup> September & 31<sup>st</sup> December 2004) was the hospital accredited by an organisation recommended by Queensland Health? |
| Comparability | *In all previous reports, this indicator was reported as a Yes/No response, however 3 years of data with the updated scoring system is presented in the 2005 Report.* |
| Calculation | No of quarters hospital is accredited<br>-------------------------------------------------<br>4 |
| Numerator source | Safety & Quality Quality Strategy Team, Innovation Branch (3234 1365) |
| Denominator source | 4 quarters |
| Type of Score | Percentage (%) |
| Scoring Rule | Hospitals that indicated full accreditation status with either Australian Council on Healthcare Standards (ACHS), Institute for Healthy Communities Australia (IHCA) or equivalent were scored 1 point at the end of each of the 4 quarters of the calendar years 2002 -2004. |
| Definition of Key Data Elements | In Australia, there are three major Quality Systems in use. The Australian Council on Healthcare Standards (ACHS), Quality Improvement Council (QIC) Standards, facilitated in Queensland by the Institute for Healthy Communities Australia (IHCA), and the International Organisation for Standardisation (ISO). For the purpose of this indicator, all in-scope hospitals were required to be accredited at the end of each quarter, by one of the above recognised bodies in order to be counted as accredited. |

### SIC02  Credentials and Clinical Privileges – Medical appointees with current clinical privileges

| Identifier | SIC02 |
|---|---|
| Background and rationale | Given that all hospitals now have a process to review credentials and assign clinical privileges, this indicator seeks to measure the effectiveness of the processes in place. |
| Key Question | What proportion of relevant medical staff in each hospital have current clinical privileges as at 31st January 2005 ? |
| Comparability | *Phase III Indicator, 2004 Report*<br>Care should be taken in comparing to the phase 3 indicator as the numerator & denominator Sources are different to the 2005 Report |
| Calculation | No of medical appointees with current clinical privileges<br>-------------------------------------------------------------------------<br>Total number of relevant medical appointees |
| Numerator Source | Data collected directly from District Manager |
| Denominator Source | Data collected directly from District Manager |
| Type of Score | Percentage (%) |
| Scoring Notes | Medical appointees were deemed to <u>have current privileges</u>:<br>Where hospitals indicated that medical staff were providing outreach services from a larger facility, and where it was clear that all relevant medical staff at the larger facility had current privileges.<br>Medical appointees were deemed <u>not to have current privileges</u>:<br>Where hospitals indicated that privileges previously granted to medical staff had lapsed, and a review process was not underway. |
| Definition of Key Data Elements | Relevant medical appointees to include VMO's, Specialists (including Flying Specialists), GP's, Medical Superintendents, Medical Superintendents with ROPP and SMO's. |

### SIC03.01  Retention of Nursing staff

| Identifier | SIC03.01 |
|---|---|
| Key Question | What percentage of registered nursing staff are retained by each hospital at the end of one year of service, excluding new graduates and 'return to nursing' staff? |
| Comparability | *Phase I Indicator*<br>*Phase II Indicator*<br>*Phase III Indicator, 2004 Report* |
| Calculation | Number of nursing staff retained per hospital after one year of service (excluding new graduates and 'return to nursing staff')<br>-------------------------------------------------------------------------------- |

| | Total number of nursing staff employed per hospital at the beginning of the time period (excluding new graduates and 'return to nursing' staff) |
|---|---|
| *Numerator source* | Queensland Health, Human Resources Management Information System |
| *Denominator source* | Queensland Health, Human Resources Management Information System |
| *Type of Score* | Percentage (%) |
| *Definitions of Key Data Elements* | Items include 30LO and 30NO and does not include AIN, EN or Public Service LVL Nurses, QNC Nursing, Pupil Nurses, Trainee AIN or External Nursing staff. First and last pay period of each financial year. |

### SIC03.02   Retention of Nursing staff at pay point LO1.8

| *Identifier* | **SIC03.02** |
|---|---|
| *Key Question* | What percentage of registered nursing staff at LO or NO1.08 is retained by each hospital at the end of one year of service?. |
| *Comparability* | *Phase II Indicator* *Phase III Indicator, 2004 Report* |
| *Calculation* | Number of nursing staff at LO1.8 still employed after one year of service<br>--------------------------------------------------------------------------------------------------<br>Number of nursing staff at LO1.8 employed at the beginning of the time period |
| *Numerator Source* | Queensland Health, Human Resources Management Information System |
| *Denominator Source* | Queensland Health, Human Resources Management Information System |
| *Type of Score* | Percentage (%) |
| *Definition of Key Data Elements* | Items included LO or NO1.08 employees employed after one year (this picks up any employees who have been promoted after the one year service) First and last pay period of each financial year. Employees are employed at the beginning and end of the year. This does not necessarily denote continuous service. |

### SIC03.03   Median age of registered nursing staff

| *Identifier* | **SIC03.03** |
|---|---|
| *Key Question* | What is the median age of registered nursing staff per hospital following one year of public service? |
| *Comparability* | *Phase I Indicator* *Phase II Indicator* *Phase III indicator, 2004 Report* |
| *Calculation* | Single unit measure - median age in years |
| *Numerator Source* | Queensland Health, Human Resources Management Information System |
| *Denominator Source* | Not Applicable |
| *Type of Score* | Single score - years |
| *Definition of Key Data Elements* | Items include 30LO and 30NO and does not include AIN, EN or Public Service LVL Nurses, QNC Nursing, Pupil Nurses, Trainee AIN or External Nursing staff. Includes employees who have one year of public service (not specifically Queensland Health) Truncated option used for age calculation Last pay period of financial year. |

### SIC03.04   Percentage of allied health staff retained at the end of one year of service Hospital Indicator
### SIC03.04D Percentage of allied health staff retained at the end of one year of service Health Service District Indicator

| *Identifier* | **SIC03.04 , SIC03.04D** |
|---|---|
| *Key Question* | What percentage of allied health staff is retained by each hospital (and the Health Service District) at the end of one year of service (excluding new graduates)? |
| *Comparability* | *Phase I Indicator,        Phase II Indicator,   Phase III Indicator, 2004 Report* |
| *Calculation* | Number of allied health staff retained per hospital at the end of one year of service –<br>--------------------------------------------------------------------------------------------------<br>Total number of allied health staff employed by each hospital at the beginning of the time period |
| *Numerator Source* | Queensland Health, Human Resources Management Information System |
| *Denominator Source* | Queensland Health, Human Resources Management Information System |

| Type of Score | Percentage (%) |
|---|---|
| Definition of Key Data Elements | Allied Health staff includes staff classified as a Professional Officer (PO) and includes audiologists, nutritionists, occupational therapists, orthoptists, podiatrists, physiotherapists, prosthetists and orthotists, psychologists, social workers, speech pathologists, radiographers and pharmacists. This indicator reports data on a predetermined list of Allied Health positions, brought together in consultation with the Allied Health Advisory Unit. |

### SIC03.05   Median age of allied health staff

| Identifier | **SIC03.05** |
|---|---|
| Key Question | What is the median age of allied health staff per hospital, following one year of service? |
| Comparability | *Phase III Indicator, 2004 Report* |
| Calculation | Single unit measure - median age in years |
| Numerator Source | Queensland Health, Human Resources Management Information System |
| Denominator Source | Not Applicable |
| Type of Score | Single score - years |
| Definition of Key Data Elements | Allied Health staff includes staff classified as a Professional Officer (PO) and includes audiologists, nutritionists, occupational therapists, orthoptists, podiatrists, physiotherapists, prosthetists and orthotists, psychologists, social workers, speech pathologists, radiographers and pharmacists. This indicator reports data on a predetermined list of Allied Health positions, brought together in consultation with the Allied Health Advisory Unit. |
|  | Includes employees who have one year of public service (not specifically Queensland Health) |
|  | Truncated option used for age calculation |
|  | Lat pay period of financial year. |

### SIC03.06D   Progression of Allied Health staff from PO2.6 to PO3.   Health Service District Indicator

| Identifier | **SIC03.06D** |
|---|---|
| Key Question | What percentage of allied health staff at PO2.6 level have progressed to PO3 during the time period in each health service district? |
| Comparability | *Phase III Indicator, 2004 Report – Hospitals Indicator* |
| Calculation | Number of allied health staff per hospital who have progressed from PO2.6 to PO3 during the time period |
|  | Total number of allied health staff employed by each hospital at the beginning of the time period at PO2.6 |
| Numerator Source | Queensland Health, Human Resources Management Information System |
| Denominator Source | Queensland Health, Human Resources Management Information System |
| Type of Score | Percentage (%) |
| Definition of Key Data Elements | This indicator reports data on a predetermined list of Allied Health positions, brought together in consultation with the Allied Health Advisory Unit. |
|  | This indicator reports the progression of allied health staff at both the health service district and state level from PO2.6 to PO3 supported by the personal progression process for allied health staff. |

### SIC03.07a   Median age of medical staff – Senior Medical Officers
### SIC03.07b   Median age of medical staff – Visiting Medical Officers

| Identifier | **SIC03.07a, SIC03.07b** |
|---|---|
| Key Question | What is the median age of medical staff (Senior Medical Officers and Visiting Medical Officers) per hospital ? |
| Comparability | *Phase III Indicator, 2004 Report* |
| Calculation | Single unit measure - median age in years |
| Numerator Source | Queensland Health, Human Resources Management Information System |
| Denominator Source | Not Applicable |
| Type of Score | Single score - years |
| Definition of Key Data Elements | This indicator reports the median age of medical staff (Senior Medical Officers –SMOs) and Visiting Medical Officers (VMO's) at both the hospital and state level. |
|  | Truncated option used for age calculation |
|  | Last pay period of financial year. |

**SIC03.08D  Proportion of staff who identify as Aboriginal or Torres Strait Islander, compared with the proportion of the population who identify as Aboriginal or Torres Strait Islander.  Health Service District Indicator**

| Identifier | **SIC03.08D** |
|---|---|
| Key Question | What is the proportion of staff who identify as Aboriginal or Torres Strait Islander, compared with the proportion of the population who identify as Aboriginal or Torres Strait Islander. |
| Comparability | *Phase III Indicator, 2004 Report* |
| | |
| Calculation | % of QH workforce identified as Aboriginal or Torres Strait Islander <hr> % of population aged 15-64 years identified as Aboriginal or Torres Strait Islander |
| Numerator Source | Queensland Health, Human Resources Management Information System |
| Denominator Source | Experimental Estimates of Indigenous Australians by Statistical Local Area, 2001 (Based on Census 2001 counts) <br> Australian Bureau of Statistics catalogue no. 3238.0.55.001 - Data Hub. (Area grouping added by Queensland Health, Health Information Centre) |
| Type of Score | Percentage (%) |
| Definition of Key Data Elements | This indicator reports for each health service district the proportion of staff who identify as Aboriginal or Torres Strait Islander, against the proportion of population (15-64 years) who identify as Aboriginal or Torres Strait Islander. |

**SIC03.09  Cost of Paid training/study leave per FTE**

| Identifier | **SIC03.09** |
|---|---|
| Key Question | What is the cost to the hospital of providing paid training and study leave, per full-time equivalent employee (FTE)? |
| Comparability | *Phase II Indicator* <br> *Phase III Indicator, 2004 Report* |
| Calculation | Total cost to the hospital of paid training and study leave for staff <hr> Number of FTEs |
| Numerator Source | Department of Human Resource Management Information Systems (HRMIS) |
| Denominator Source | Department of Human Resource Management Information Systems (HRMIS) |
| Type of Score | Dollars ($) |
| Definition of Key Data Elements | This indicator examines the median cost per FTE of leave hours that hospitals spend on training and study leave to measure the level of investment in improving staff skills. <br> Scoring is reported as cost per full-time equivalent employee (FTE). <br> Items included are as follows (Lattice pay codes are shown in brackets): <br> • conference leave (130) <br> • examination leave (150) <br> • allied health professional development leave (164) <br> • SARAS leave (205) <br> • study leave (250) <br> • training – external (270) <br> • training – internal (271) <br> • training – external casual (272) <br> • training – internal casual (273) <br> • conference leave – no HDP (355) <br> • SARAS leave – no HDP (364) <br> • study leave – no HDP (371). |

**SIC03.10D  Cost of education courses per FTE.  Health Service District Indicator**

| Identifier | **SIC03.10D** |
|---|---|
| Key Question | What is the cost to the hospital of education courses and conferences, per full-time employee (FTE)? |
| Comparability | *Phase II Indicator* <br> *Phase III Indicator, 2004 Report* |
| Calculation | Total cost to the hospital of education courses and conferences <hr> Number of FTEs |
| Numerator | Finance Unit – Decision Support System (DSS) |

| Source | |
|---|---|
| Denominator Source | Queensland Health, Human Resources Management Information System |
| Type of Score | Dollars ($) |
| Definition of Key Data Elements | This indicator includes items invoiced by health service districts to General Ledger codes 512100 (Conference Courses) and 512105 (SARAS) in all cost centres. |

**SIC03.11    Staff development- proportion of eligible staffparticipating in programs offered statewide.**
**SIC03.11-1D    Management Development Program**
**SIC03.11-2D    Leadership Development Program**
**SIC03.11-3D    Clinician Development Program**
**SIC03.11-4D    Assessment & Training for Operational Stream Staff  Health Service District Indicator**

| Identifier | **SIC03.11-1D, SIC03.11-2D, SIC03.11-3D, SIC03.11-4D** |
|---|---|
| Key Question | How many staff in health service districts have participated in the following training programs offered state-wide? <br> 1.   Management Development Program <br> 2.   Leadership Development Program <br> 3.   Clinician Development Program <br> 4.   Assessment & Training for Operational Stream Staff |
| Comparability | *(1-3)Phase III Indicator, 2004 Report (4) New Indicator 2005 Report* <br> Care should be taken in comparing to the phase 3 indicator as the indicator was reported previously as the proportion of staff who had participated in the programs |
| Calculation | Single unit measure – number of participants |
| Numerator source | Learning Services Unit, Clinicians Development Program |
| Denominator source | Not Applicable |
| Type of Score | Number |
| Definitions of Key Data Elements | Data for these indicators are expressed in number only.  There has been no calculations of the proportion of the workforce, due to the unreliability of the results.  Health Service Districts are encouraged to use these figures to inform on-going training needs. <br> Each of the above program areas have been targetted towards specified groups of the workforce including; <br> 1.   Management Development Program - AO5 – SO1, Nursing Level 2 – 5, PO3 – 6, Medical Director, TO5 – 6, OO5 - 7 <br> 2.   Leadership Development Program - AO2 – 4, EN, Nursing Level 1 – 2. <br> 3.   Clinician Development Program  -Medical Officers, Nursing, Allied Health (Profesional Officers), Indigenous Health Workers. Includes 18 catergories of CDP Programs. <br> 4.   Assessment & Training for Operational Stream Staff – OO2.4 |

**SIC03.12D    Sustainability of Quality Improvement & Enhancement Programs**
**Health Service District Indicator**

| Identifier | **SIC03.12D** |
|---|---|
| Key Question | To what extent have Health Service Districts identified the level of sustainability of 13 of the QIEP funded programs? |
| Comparability | *New Indicator 2005 Report* |
| Calculation | HSD sustainability score <br> -------------------------------------------- <br> Total number of staff |
| Numerator source | Sustainability of QIEP programs report – Clinician Development Program |
| Denominator source | Sustainability of QIEP programs report – Clinician Development Program |
| Type of Score | Percentage (%) |
| Definition of Key Data Elements | This data was taken from a survey conducted across all Health Service Districts by the Clinician Development Program in 2004. |

**SIC03.13D    Staff development- proportion of staff participating in cultural awareness  training.**
**Health Service District Indicator**

| Identifier | **SIC03.13D** |
|---|---|
| Key Question | How many ataff in the HSD have participated in Cultural Awareness training? |
| Comparability | *Phase III Indicator, 2004 Report* |
| Calculation | Single unit measure – number of participants |
| Numerator source | Aboriginal & Torres Strait Islander Health Unit |

| Denominator source | Not Applicable |
|---|---|
| Type of Score | Number |
| Note | Data for this indicator is expressed in number only. There has been no calculation of the proportion of the workforce, due to the unreliability of the results. Health Service Districts are encouraged to use these figures to inform on-going training needs. |

### SIC04.01 Accuracy of data

| Identifier | **SIC04.01** |
|---|---|
| Key Question | What percentage of records submitted from each hospital to the Queensland Hospital Admitted Patient Data Collection (QHAPDC) do not require editing? |
| Comparability | *Phase I Indicator*<br>*Phase II Indicator*<br>*Phase III Indicator, 2004 Report* |
| Calculation | Number of accurate data items submitted to QHAPDC per hospital<br>-----------------------------------------------------------------------------------<br>Total number of data items submitted to QHAPDC per hospital |
| Numerator Source | Queensland Hospitals Admitted Patient Data Collection (QHAPDC) |
| Denominator Source | Queensland Hospitals Admitted Patient Data Collection (QHAPDC) |
| Type of Score | Percentage (%) |
| Definition of Key Data Elements | Records with no *fatal* errors are deemed to be accurate.<br>A *'fatal'* error is an error in the patient record that must be corrected by the hospital before the record can be considered *'correct'*. A *'failed'* episode has at least one fatal error. These records are not accepted until the error has been corrected. |

### SIC04.02a Timeliness of data – Number of months hospital data was submitted on time within a nine month period

| Identifier | **SIC04.02a** |
|---|---|
| Key Question | How often is data submitted by each hospital received on time by the Health Information Centre (HIC)? |
| Comparability | *Phase I Indicator*<br>*Phase II Indicator*<br>*Phase III Indicator, 2004 Report* |
| Calculation | Single Unit – Number of months data was submitted to HIC within the required period. |
| Numerator Source | Queensland Hospitals Admitted Patient Data Collection (QHAPDC) |
| Denominator Source | Not Applicable |
| Type of Score | Single score - months |
| Definition of Key Data Elements | The deadline for submission of data to HIC is five weeks (35 days) after the end of the reference month to which the data refers. All scores are expressed as the number of months which data submitted by hospitals is received on time by HIC in 2003/04.<br>New software is released each year to cater for annual changes. Business Application Services liaises with hospitals to determine when the new software should be deployed. After the software has been up-loaded at sites, hospitals can then provide data to the Data Services Unit (for July extracts onwards).<br>Selected time period for this indicator, October – June (9months) |

### SIC04.02b Timeliness of Data – Number of days data is submitted late per month

| Identifier | **SIC04.02b** |
|---|---|
| Key Question | When data is submitted late to the Health Information Centre (HIC), what is the average number of days per month that hospital data is submitted late? |
| Comparability | *Phase I Indicator*<br>*Phase II Indicator*<br>*Phase III Indicator, 2004 Report* |
| Calculation | Total number of days that data is submitted late to HIC<br>---------------------------------------------------------------------------<br>Total number of months which data is submitted late to HIC |
| Numerator Source | Queensland Hospitals Admitted Patient Data Collection (QHAPDC) |
| Denominator Source | Queensland Hospitals Admitted Patient Data Collection (QHAPDC) |

| Type of Score | Single score - days |
|---|---|
| Definition of Key Data Elements | The deadline for submission of data to HIC is five weeks (35 days) after the end of the reference month to which the data refers. All scores are expressed as the average number of days late per month that hospitals submit data late to HIC in 2003/04. <br> New software is released each year to cater for annual changes. Business Application Services liaises with hospitals to determine when the new software should be deployed. After the software has been up-loaded at sites, hospitals can then provide data to the Data Services Unit (for July extracts onwards). <br> Selected time period for this indicator, October – June (9months) |

### SIC05.01 Electronic Clinical Information

| Identifier | **SIC05.01** | | |
|---|---|---|---|
| Key Question | What is the availability and usage of electronic information that supports good clinical practice for health care workers inside and outside the hospital? | | |
| Comparability | *Phase III Indicator, 2004 Report* (Please note differences below) | | |
| Calculation | Score hospital achieves on availability and use of clinical information <br> ------------------------------------------------------------------------------------------- <br> Total score possible per hospital on availability and use of clinical information | | |
| Numerator Source | System Integration and Change survey, Questions 1 and 2a. | | |
| Denominator Source | System Integration and Change survey, Questions 1 and 2a. | | |
| Type of Score | Percentage (%) | | |
| Scoring Rule | Question 1: Hospitals indicated the extent to which electronic information was available in 8 clinical service areas. <br> *Responses received the following points:-* <br>   *All paper records = 0* <br>   *Electronic records/data partially accessible throughout the hospital = 1* <br>   *Electronic records/data fully accessible throughout the hospital (not outside) = 2* <br>   *Electronic records/data fully accessible throughout & outside hospital = 3* <br>   *The points scored were aggregated.* <br> **Total points possible for this question - 24.** <br><br> Question 2a. Hospitals indicated if discharge or referral information relating to individual patients could be made available electronically (not including fax) to health care providers outside the hospital using current systems <br> *Responses received the following points:-* <br>   *Yes = 1* <br>   *No = 0* <br> **Total points possible for this question – 1** | | |

| Scoring Summary and Weighting | **Question** | **Total possible score** | **Weighting** |
|---|---|---|---|
| | Question 1 | 24 | 80 |
| | Question 2a | 1 | 20 |
| | Total score | 25 | 100 |

| | | 2005 Report | | | 2004 Report | | |
|---|---|---|---|---|---|---|---|
| Differences 2005 and 2004 | Question | Q1g **Standardised** clinical pathways, **guidelines, protocols** | | | Q1g Clinical pathways | | |
| | Question | Q2a **Is discharge or referral** information relating to individual patients made available electronically (not including fax) with any health care providers outside your hospital using current systems? | | | Q2a **Can clinical** information relating to individual patients be made available electronically (not including fax) to any health care providers outside your hospital using current systems? | | |
| | Weighting | Question | Total Possible | Weighting | Question | Total Possible | Weighting |
| | | Q1 | 24 | 80 | Q1 | 24 | 60 |
| | | Q2a | 1 | 20 | Q2a | 1 | 20 |
| | | Total score | 25 | 100 | Q2b | 1 | 20 |
| | | | | | Total score | 26 | 100 |

## SIC05.02 Implementation of Secure E-mail (Public Key Infrastructure PKI)

| Identifier | **SIC05.02** | |
|---|---|---|
| Key Question | What is the status of hospitals usage of Secure E-mail through the PKI project? | |
| Comparability | *New Indicator 2005 Report* | |
| Calculation | Score hospital achieves on usage of secure E-mail<br>------------------------------------------------------------<br>Total score possible per hospital on usage of secure E-mail | |
| Numerator Source | System Integration and Change survey, questions 2b, 2c and 2d | |
| Denominator Source | System Integration and Change survey, questions 2b, 2c and 2d | |
| Type of Score | Percentage (%) | |
| Scoring Rule | Question 2b. Hospitals indicated their status in using Secure E-mail (through the Public Key Infrastructure (PKI) project.<br><br>Responses received the following points:-<br>    Currently using Secure E-mail through PKI = 4<br>    In process of developing Secure E-mail with the PKI project = 2<br>    Planning to use Secure E-mail with the PKI project = 1<br>    Not planning to use Secure E-mail in the future = 0<br>**Total points possible for this question - 4.**<br>Question 2c. Hospitals indicated which health partners they would be exchanging information with. (This applies only to hospitals who scored 1 or more on Question 2a)<br><br>Responses received the following points:-<br>    general practitioners = 4<br>    aged care facilities = 3<br>    1 point if one of the following identified or 2 points if 2 or more identified<br>    domiciliary nursing services, community based allied health services, private specialists,<br>    pharmacists, dentists, private pathology services, private radiology services, private<br>    hospitals.<br>**Total points possible for this question – 9**<br>Question 2d. Hospitals indicated what documents they would expect to be exchanging using PKI.<br><br>Responses received the following points:-<br>    *discharge summaries = 3*<br>    *outpatient/ clinic letters = 2*<br>    *referrals / patient history = 2*<br>    *radiology reports = 1*<br>    *pathology reports = 1*<br>**Total points possible for this question - 9** | |
| Note | The "other" category was not used in calculating the scores, but was used to gather additional information for possible use in future surveys. | |

| Scoring Summary and Weighting | **Question** | **Total possible score** | **Weighting** |
|---|---|---|---|
| | Question 2b | 4 | 60 |
| | Question 2c | 9 | 25 |
| | Question 2d | 9 | 15 |
| | Total score | 22 | 100 |

## SIC05.03 Management Information

| Identifier | **SIC05.03** | | |
|---|---|---|---|
| *Key Question* | What is the availability and usage of electronic information that supports good practice for hospital and health care managers? | | |
| *Comparability* | *Phase III Indicator, 2004 Report* (Please note differences below). | | |
| *Calculation* | Score hospital achieves on availability and use of management information ------------------------------------------------------------------------------------- Total score possible per hospital on availability and use of management information | | |
| *Numerator Source* | System Integration and Change survey, questions 3 and 4 | | |
| *Denominator Source* | System Integration and Change survey, questions 3 and 4 | | |
| *Type of Score* | Percentage (%) | | |
| *Scoring Rule* | Question 3. From a list of 14 reporting systems, hospitals indicated if these were accessible, and if so, were they used on a regular basis and was there a process that monitored the frequency of use by staff who had access. For each of the accessible systems, responses received the following points:- Used on a regular basis = 1 Monitors the frequency of use = 1 **Total points possible for this question - 28** To avoid penalising hospitals that did not have access to some *information systems*, the calculation of the indicator only included **information systems accessible** at each hospital. Question 4 Hospitals indicated if they had formal processes in place whereby 5 groups of report users could identify useful reports, monitor the use of available reports and add or delete reports based on user feedback. Responses received the following points:- *Identify useful reports = 1* *Monitor use of reports =1* *Add/delete reports = 1* **Total points possible for this question - 15** | | |
| *Note* | The "other" category was not used in calculating the scores, but was used to gather additional information for possible use in future surveys. From the 'other 'information provided by hospitals in the Phase III survey, the additional category of Cost Centre Managers was included. Hospitals scores have been checked for comparability with the Phase III results. | | |

| *Scoring Summary and Weighting* | **Question** | **Total possible score** | **Weighting** |
|---|---|---|---|
| | Question 3 | 28 | 50 |
| | Question 4 | | |
| | Total score | | |

*Calculations exclude systems that are not accessible

| | | 2005 Report | | | 2004 Report | | |
|---|---|---|---|---|---|---|---|
| *Differences 2005 and 2004* | Question | Q4 Cost Centre Managers – Category Added | | | Q4 Cost Centre Managers – Category did not exist | | |
| | Weighting | Question | Total Possible | Weighting | Question | Total Possible | Weighting |
| | | Q1 | 28 | 50 | Q3 | 28 | 50 |
| | | Q2a | 15 | 50 | Q4 | 12 | 50 |
| | | Total score | 43 | 100 | Total score | 40 | 100 |

## SIC05.04 Staff Development Information

| Identifier | **SIC05.04** |
|---|---|
| *Key Question* | What is the availability and usage of information that supports good practice for staff development? |
| *Comparability* | *Phase III Indicator, 2004 Report* |
| *Calculation* | Score hospital achieves on availability and use of staff development information ----------------------------------------------------------------------------------------- Total score possible per hospital on availability and use of staff development information |
| *Numerator Source* | System Integration and Change survey, questions 5, 6, 7 and 8 |

| Denominator Source | System Integration and Change survey, questions 5, 6, 7 and 8 |
|---|---|
| Type of Score | Percentage (%) |
| Scoring Rule | Question 5. Hospitals indicated if they had a formal process in place to identify educational and professional development needs of staff.<br><br>Responses received the following points:-<br>    Yes = 1<br>    *No = 0*<br>**Total points possible for this question - 1**<br><br>Question 6. Hospitals indicated if they had a definition of and a fomal process for performances appraisal, whether written feedback was provided to staff and if there was data collection for performance appraisal.<br><br>Responses received the following points:-<br>    Yes = 1<br>    *No = 0*<br>**Total points possible for this question -4**<br><br>Question 7 Hospitals indicated the extent to which Performance Appraisal and Development for clinical and non-clinical staff was implemented.<br><br>Responses received the following points:-<br>    **No** performance appraisal =         0<br>    Performance appraisal in **some** departments =1<br>    Performance appraisal in **most** departments = 2<br>    Performance appraisal in **all** departments =   3<br>**Total points possible for this question - 6**<br><br>Question 8 Hospital indicated the extent to which selected electronic staff development resources were available on- line.<br><br>Responses received the following points:-<br>    All paper resources     =         0<br>    Electronic resources **partially** accessible =   1<br>    Electronic resources **fully** accessible =     2<br>**Total points possible for this question -4** |

| Scoring Summary and Weighting | Question | Total possible score | Weighting |
|---|---|---|---|
| | Question 5 | 1 | 20 |
| | Question 6 | 4 | 30 |
| | Question 7 | 6 | 30 |
| | Question 8 | 4 | 20 |
| | Total score | 15 | 100 |

### SIC05.05    Measured Quality Reports

| Identifier | **SIC05.05** |
|---|---|
| Key Question | To what extent has the information contained in the Measured Quality Hospital Reports 2004 been disseminated and managed in hospitals and Health Service Districts? |
| Comparability | Can not compare |
| Calculation | Score hospital achieved on availability and use of information in Measured Quality Report<br>--------------------------------------------------------------------------------------------------------------------<br>Total score possible for that hospital on availability and use of information in Measured Quality Report. |
| Numerator Source | System Integration and Change survey, questions 9, 10 and 11. |
| Denominator Source | System Integration and Change survey, questions 9, 10 and 11. |
| Type of Score | Percentage (%) |
| Scoring Rule | Question 9. Hospitals indicated how the information in the ***Hospital Reports 2004*** for Measured Quality was disseminated to staff<br>*Responses received the following points for each of the 7 staff groups:-*<br>    *Hospital did not disseminate the information to this group = 0*<br>    *Attended Measured Quality team presentation and/or*<br>    *Presented in an existing district or hospital forum =  1*<br>    *Specific meeting for Measured Quality report =  1*<br>**Total points possible for this question - 14** |

| | Question 10. Hospitals indicated whether they had nominated a unit or position for dissemination of information in Measured Quality Reports – public and individual hospital. *Responses received the following points:-* *Yes = 1* *No = 0* **Total points possible for this question -1** Question 11. Hospitals indicated whether they had brought together a working party or project to investigate outliers in the Individual Hospital Report. Responses received the following points:- Yes = 1 No = 0 **Total points possible for this question - 1** |
|---|---|
| *Note* | In 2004, no Measured Quality public report was published. These questions have been removed from the 2005 survey. |

## SIC06.01 Development and use of standardised approaches to clinical management

| *Identifier* | **SIC06.01** |
|---|---|
| *Key Question* | To what extent is each hospital developing and using standardised approaches to clinical management? |
| *Comparability* | *Phase III Indicator, 2004 Report* (Please note differences below.) |
| *Calculation* | Sum of scores achieved in extent of development and use, of standardised clinical management in selected clinical areas <br>----------------------------------------------------------------------------------------------<br> Total score possible for that hospital in extent of development and use of standardised clinical management in selected clinical areas |
| *Numerator Source* | System Integration and Change survey, Questions 12 and 15 |
| *Denominator Source* | System Integration and Change survey, Questions 12 and 15 |
| *Type of Score* | Percentage (%) |
| *Scoring Rule* | Question 12. Hospitals indicated the extent to which standardised protocols, guidelines or pathways were used in each of 23 selected clinical conditions: *Responses received the following points:* *Clinical condition not treated in the hospital = N/A* *Clinical treatment offered in this area but no standardised clinical approaches currently exist = 0* *Standardised clinical approaches are currently being developed but not yet in use = 1* *Standardised clinical approaches are developed and some eligible patients cared for using these guidelines / pathways = 2* *Standardised clinical approaches are developed and all eligible patients are cared for using these guidelines / pathways = 3* **Total points possible for this question -69** Question 15. Hospitals indicated the existence and extent of use of an audit process relating to standardised approaches to clinical management. *Responses received the following points:* *No audit process in place = 0* *An audit process applies to some protocol /pathway use = 1* *An audit process applies to most protocol /pathway use = 2* *An audit process applies to all protocol /pathway use = 3* **Total points possible for this question - 3** |
| *Note* | The "other" category has been removed from this question after review of the responses in the 2004 survey. An additional clinical condition – transurethral prostatectomy – has been added for consistency with the clinical quadrant of the report. |

| | Total score | | 72 | | | 100 |
|---|---|---|---|---|---|---|

\*Calculations exclude **clinical condition/s not treated**

| | | *2005 Report* | | | *2004 Report* | | |
|---|---|---|---|---|---|---|---|
| *Differences 2005 and 2004* | Question | Q12 Transurethral prostatectomy - category included | | | Q15 Transurethral prostatectomy - category did not exist | | |

| | Weighting | Question | Total possible score | Weighting | Question | Total possible score | Weighting |
|---|---|---|---|---|---|---|---|
| | | Q12 | 69 | 80 | Q15 | 66 | 80 |
| | | Q15 | 3 | 20 | Q18 | 3 | 20 |
| | | Total score | 72 | 100 | Total score | 69 | 100 |

## SIC06.02  Collection and management of data for standardised approaches to clinical management

| *Identifier* | **SIC06.02** |
|---|---|
| *Key Question* | To what extent has each hospital developed and used processes to collect and manage data in relation to standardised clinical protocols/ guidelines/ pathways in selected clinical areas? |
| *Comparability* | *Phase III Indicator, 2004 Report* |
| *Calculation* | Sum of points achieved on collection and management of data in selected clinical areas<br>--------------------------------------------------------------------------------------------------------<br>Total score possible for that hospital on collection and management of data in selected clinical areas |
| *Numerator Source* | System Integration and Change survey, Questions 13.(i) (ii) (iii) and (v) |
| *Denominator Source* | System Integration and Change survey, Questions 13 (i) (ii) (iii) and (v) |
| *Type of Score* | Percentage (%) |
| *Scoring Rule* | Question 13. Hospitals indicated the extent to which data was collected and managed in each of the 23 selected clinical areas:<br><br>*Responses received the following points:*<br>*(i) Process for collecting variance data  = 1*<br>*(ii) Process for reviewing and responding to this data = 1*<br>*(iii) Use of standardised approaches has reduced other documentation = 1*<br>*(iv) Standardised approaches to clinical management include care outside the hospital = 1*<br>**Total points possible for this question - 92** |
| *Note* | The "other" category has been removed from this question after review of the responses in the 2004 survey. An additional clinical condition – transurethral prostatectomy – has been added for consistency with the clinical quadrant of the report. |

| *Scoring Summary and Weighting* | **Question** | **Total possible score** | **Weighting** |
|---|---|---|---|
| | Question 13 (i) (ii) (iii) & (v) | 92 | 100 |
| | Total score | 92 | 100 |

\* Individual hospitals may have a smaller denominator as calculations exclude **clinical condition/s not treated**

| | | *2005 Report* | | | *2004 Report* | | |
|---|---|---|---|---|---|---|---|
| *Differences 2005 and 2004* | Question | Q13 Transurethral prostatectomy - category included | | | Q16 Transurethral prostatectomy - category did not exist | | |

| | Weighting | Question | Total possible score | Weighting | Question | Total possible score | Weighting |
|---|---|---|---|---|---|---|---|
| | | Q13i,ii,iii,v | 92 | 100 | Q16 | 88 | 100 |
| | | Total score | 92 | 100 | Total score | 88 | 100 |

**SIC06.03   Standardised approaches to clinical management including care in the Emergency Department**

| Identifier | SIC06.03 |
|---|---|
| Key Question | To what extent do standardised clinical protocols/ guidelines/ pathways in use in hospitals, include care in the Emergency Department? |
| Comparability | *New Indicator 2005 Report* |
| Calculation | Sum of scores achieved on standardised clinical management that includes care in ED ------------------------------------------------------------------------------------------------------------- Total score possible for that hospital on standardised clinical management in use |
| Numerator Source | System Integration and Change survey, Questions 13 (iv). |
| Denominator Source | System Integration and Change survey, Questions 12 (iv) or (v). |
| Type of Score | Percentage (%) |
| Scoring Rule | Question 13 (iv). For each of the clinical conditions where hospitals indicated that standardised clinical management is currently in use - Question 12 (iv) or (v), hospitals now indicated if these approaches included care in the Emergency Department: *Responses received the following points:* *(iv) includes care in the emergency department = 1* **Total points possible for this question - 23** |

| Scoring Summary and Weighting | Question | Total possible score | Weighting |
|---|---|---|---|
| | Question 13 (iv) | 23 | 100 |
| | Total score | 23 | 100 |
| | *Calculations exclude **clinical condition/s not treated** | | |

**SIC06.04   Development and use of standardised approaches to clinical management in the 10 clinical areas where Queensland Health has endorsed clinical pathways**

| Identifier | SIC06.04 |
|---|---|
| Key Question | To what extent is each hospital developing and using standardised approaches to clinical in the 10 clinical areas where Queensland Health has endorsed clinical pathways? |
| Comparability | *Phase III Indicator, 2004 Report* |
| Calculation | Sum of scores achieved on extent of development and use, of standard clinical management in 10 selected clinical areas ------------------------------------------------------------------------------------------------------------- Total score possible for that hospital in extent of development and use, of standard clinical management in 10 selected clinical areas |
| Numerator Source | System Integration and Change survey, Questions 12 a, b, c, d, e, f, h, j, l, m. |
| Denominator Source | System Integration and Change survey, Questions 12 a, b, c, d, e, f, h, j, l, m. |
| Type of Score | Percentage (%) |
| Scoring Rule | Question 12 Hospitals indicated the extent to which standardised protocols, guidelines or pathways were used in the 10 clinical areas when Queensland Health has endorsed clinical pathways: *Responses received the following points:* *Clinical area not treated in the hospital = N/A* *Clinical treatment offered in this area but no standardised clinical approaches currently exist = 0* *Standardised clinical approaches are currently being developed but not yet in use = 1* *Standardised clinical approaches are developed and some eligible patients cared for using these guidelines / pathways = 2* *Standardised clinical approaches are developed and all eligible patients are cared for using these guidelines / pathways = 3* **Total points possible for this question - 30** |

| Scoring Summary and Weighting | Question | Total possible score | Weighting |
|---|---|---|---|
| | Question 12 a b c d e f h j l m | 30 | 100 |
| | Total score | 30 | 100 |
| | *Calculations exclude **clinical condition/s not treated** | | |

**SIC06.05    Standardised approaches to clinical management - selected surgical areas**

| Identifier | SIC06.05 | | | | | | |
|---|---|---|---|---|---|---|---|
| Key Question | To what extent is each hospital developing and using standardised approaches to clinical management in selected surgical areas? | | | | | | |
| Comparability | *Phase III Indicator, 2004 Report* (Please note differences below). | | | | | | |
| Calculation | Sum of points achieved on extent of development and use, of standard clinical management in selected surgical areas<br>------------------------------------------------------------------------<br>Total score possible for that hospital in extent of development and use, of standard clinical management in selected surgical areas | | | | | | |
| Numerator Source | System Integration and Change survey, Questions 12 a, b, c, d, e, f, g, h, i. | | | | | | |
| Denominator Source | System Integration and Change survey, Questions 12 a, b, c, d, e, f, g, h, i. | | | | | | |
| Type of Score | Percentage (%) | | | | | | |
| Scoring Rule | Question 12 Hospitals indicated the extent to which standardised protocols, guidelines or pathways were used in 9 selected surgical areas:<br>*Responses received the following points:*<br>  *Clinical area not treated in the hospital = N/A*<br>  *Clinical treatment offered in this area but no standardised clinical approaches currently exist=0*<br>  *Standardised clinical approaches are currently being developed but not yet in use = 1*<br>  *Standardised clinical approaches are developed and some eligible patients cared for using these guidelines / pathways = 2*<br>  *Standardised clinical approaches are developed and all eligible patients are cared for using these guidelines / pathways = 3*<br>**Total points possible for this question – 27** | | | | | | |

| Scoring Summary and Weighting | **Question** | **Total possible score** | | **Weighting** | | | |
|---|---|---|---|---|---|---|---|
| | Question 12 a b c d e f g h, i | | 27 | | | 100 | |
| | Total score | | 27 | | | 100 | |
| | *Calculations exclude **clinical condition/s not treated** | | | | | | |

| | | | *2005 Report* | | | *2004 Report* | | |
|---|---|---|---|---|---|---|---|---|
| Differences 2005 and 2004 | Question | Q12 Transurethral prostatectomy - category included | | | Q15 Transurethral prostatectomy – category did not exist | | | |
| | Weighting | Question | Total possible score | Weighting | Question | Total possible score | Weighting |
| | | Question 12 a b c d e f g h, i | 27 | 100 | Question 15 a b c d e f g h | 24 | 100 |
| | | Total score | 27 | 100 | Total score | 24 | 100 |

**SIC06.06    Standardised approaches to clinical management - selected medical areas**

| Identifier | SIC06.06 |
|---|---|
| Key Question | To what extent is each hospital developing and using standardised approaches to clinical management in selected medical areas? |
| Comparability | *Phase III Indicator, 2004 Report* |
| Calculation | Sum of scores achieved on extent of development and use, of standard clinical management in selected medical areas<br>------------------------------------------------------------------------<br>Total score possible for that hospital in extent of development and use, of standard clinical management in selected medical areas |
| Numerator Source | System Integration and Change survey, Questions 12 o, p, q, r, s.... |
| Denominator Source | System Integration and Change survey, Questions 12 o, p, q, r, s |
| Type of Score | Percentage (%) |
| Scoring Rule | Question 12 Hospitals indicated the extent to which standardised protocols, guidelines or pathways were used in 5 selected medical areas:<br>  *Responses received the following points:*<br>  *Clinical area not treated in the hospital = N/A* |

| | Clinical treatment offered in this area but no standardised clinical approaches currently exist=0<br>Standardised clinical approaches are currently being developed but not yet in use = 1<br>Standardised clinical approaches are developed and some eligible patients cared for using these guidelines / pathways = 2<br>Standardised clinical approaches are developed and all eligible patients are cared for using these guidelines / pathways = 3<br>**Total points possible for this question - 15** | | |
|---|---|---|---|
| *Scoring Summary and Weighting* | **Question** | **Total possible score** | **Weighting** |
| | Question 12 o p q r s | 15 | 100 |
| | Total score | 15 | 100 |
| | *Calculations exclude **clinical condition/s not treated** | | |

### SIC06.07 Standardised approaches to clinical management - selected obstetric and gynaecology areas

| *Identifier* | **SIC06.07** |
|---|---|
| *Key Question* | To what extent is each hospital developing and using standardised approaches to clinical management in selected obstetric and gynaecology areas? |
| *Comparability* | *Phase III Indicator, 2004 Report* |
| *Calculation* | Sum of scores achieved on extent of development and use, of standard clinical management in selected obstetric and gynaecology areas<br>------------------------------------------------------------------------<br>Total score possible for that hospital in extent of development and use, of standard clinical management in selected obstetric and gynaecology areas |
| *Numerator Source* | System Integration and Change survey, Questions 12 j, k, l, m, n. |
| *Denominator Source* | System Integration and Change survey, Questions 12 j, k, l, m, n. |
| *Type of Score* | Percentage (%) |
| *Scoring Rule* | <u>Question 12</u> Hospitals indicated the extent to which standardised protocols, guidelines or pathways were used in 5 selected obstetric and gynaecology areas<br>*Responses received the following points:*<br>*Clinical area not treated in the hospital = N/A*<br>*Clinical treatment offered in this area but no standardised clinical approaches currently exist = 0*<br>*Standardised clinical approaches are currently being developed but not yet in use = 1*<br>*Standardised clinical approaches are developed and some eligible patients cared for using these guidelines / pathways = 2*<br>*Standardised clinical approaches are developed and all eligible patients are cared for using these guidelines / pathways = 3*<br>**Total points possible for this question -15** |
| *Scoring Summary and Weighting* | **Question**    **Total possible score**    **Weighting** |

| *Scoring Summary and Weighting* | **Question** | **Total possible score** | **Weighting** |
|---|---|---|---|
| | Question 12 j k l m n | 15 | 100 |
| | Total score | 15 | 100 |
| | *Calculations exclude **clinical condition/s not treated** | | |

### SIC06.08 Standardised approaches to clinical management - selected paediatric areas

| *Identifier* | **SIC06.08** |
|---|---|
| *Key Question* | To what extent is each hospital developing and using standardised approaches to clinical management in selected paediatric areas? |
| *Comparability* | *Phase III Indicator, 2004 Report* |
| *Calculation* | Sum of scores achieved on extent of development and use, of standard clinical management in selected paediatric areas<br>------------------------------------------------------------------------<br>Total score possible for that hospital in extent of development and use, of standard clinical management in selected paediatric areas |
| *Numerator Source* | System Integration and Change survey, Questions 12 t, u, v, w. |
| *Denominator Source* | System Integration and Change survey, Questions 12 t, u, v, w. |
| *Type of Score* | Percentage (%) |
| *Scoring Rule* | <u>Question 12</u> Hospitals indicated the extent to which standardised protocols, guidelines or pathways were used in 4 selected paediatric areas<br>Responses received the following points: |

| | Clinical area not treated in the hospital = N/A |
|---|---|
| | *Clinical treatment offered in this area but no standardised clinical approaches currently exist = 0* |
| | *Standardised clinical approaches are currently being developed but not yet in use = 1* |
| | *Standardised clinical approaches are developed and some eligible patients cared for using these guidelines / pathways = 2* |
| | *Standardised clinical approaches are developed and all eligible patients are cared for using these guidelines / pathways = 3* |
| | **Total points possible for this question - 12** |

<table>
<tr><td rowspan="3">*Scoring Summary and Weighting*</td><td>**Question**</td><td>**Total possible score**</td><td>**Weighting**</td></tr>
<tr><td>Question 12 t u v w</td><td align="right">12</td><td align="right">100</td></tr>
<tr><td>Total score</td><td align="right">12</td><td align="right">100</td></tr>
</table>

| | *Calculations exclude **clinical area/s not treated** |
|---|---|

## SIC06.09    Barriers to the development and use of standardised clinical management

| Identifier | **SIC06.09** |
|---|---|
| *Key Question* | To what extent have hospitals identified barriers to the development and use of standardised approaches to clinical management. |
| *Comparability* | *Phase III Indicator, 2004 Report* (Please note differences below). |
| *Calculation* | Total score – hospital score for barriers to the development and use of standardised approaches to clinical management<br><br>--------------------------------------------------------------------------------------------------<br><br>Total score possible for that hospital in extent of barriers to the development and use of standardised approaches to clinical management |
| *Numerator Source* | System Integration and Change survey Question 14 |
| *Denominator Source* | System Integration and Change survey Question 14 |
| *Type of Score* | Percentage (%) |
| *Scoring Rule* | Question 14 Hospitals indicated barriers to the development and use of standardised approaches to clinical management which their hospital faced in 2004.<br>*From the 10 identified barriers to development and the 7 identified barriers to use, responses were combined into a single score. This was deducted from the maximum score possible (17)*<br>**Total points possible for this question - 17.** |
| *Note* | The "other" category was not used in calculating the scores, but was used to gather additional information for possible use in future surveys. |

<table>
<tr><td rowspan="3">*Scoring Summary and Weighting*</td><td>**Question**</td><td>**Total possible score**</td><td>**Weighting**</td></tr>
<tr><td>Question 14</td><td align="right">17</td><td align="right">100</td></tr>
<tr><td>Total score</td><td align="right">17</td><td align="right">100</td></tr>
</table>

<table>
<tr><td rowspan="4">*Differences 2005 and 2004*</td><td></td><td colspan="3" align="center">*2005 Report*</td><td colspan="3" align="center">*2004 Report*</td></tr>
<tr><td>Question</td><td colspan="3">Q14ii Insufficient clinician time – added to Barriers to the USE of standardised approaches to clinical management</td><td colspan="3">Q17ii Insufficient clinician time – did not exist in Barriers to the USE of standardised approaches to clinical management</td></tr>
<tr><td>Weighting</td><td>Question</td><td>Total possible score</td><td>Weighting</td><td>Question</td><td>Total possible score</td><td>Weighting</td></tr>
<tr><td></td><td>Question 14</td><td align="right">17</td><td align="right">100</td><td>Question 17</td><td align="right">16</td><td align="right">100</td></tr>
<tr><td></td><td>Total score</td><td align="right">17</td><td align="right">100</td><td>Total score</td><td align="right">16</td><td align="right">100</td></tr>
</table>

## SIC07    Benchmarking

| *Background and Rationale.* | The components of these indicators have been adjusted to correspond with the clinical areas identified and used in the Clinical Utilisation & Outcomes quadrant. |
|---|---|

**SIC07.01   Internal benchmarking in selected clinical areas**

| Identifier | SIC07.01 |
|---|---|
| Key Question | To what extent does the hospital engage in internal benchmarking activities in selected clinical areas? |
| Comparability | *Phase III Indicator, 2004 Report* (Please note difference below). |
| Calculation | Score hospital achieved in internal benchmarking activities in selected clinical areas<br>---------------------------------------------------------------------------------------------------------------<br>Total score possible for internal benchmarking for that hospital |
| Numerator Source | System Integration and Change survey, Questions 16 column (ii). |
| Denominator Source | System Integration and Change survey, Questions 16 column (i). |
| Type of Score | Percentage (%) |
| Scoring Rule | Question 16 Hospitals identified involvement in benchmarking for selected clinical areas<br>(i) clinical area available<br>(ii) internal benchmarking.<br>*Responses received the following points:-*<br>　*1 point was given for each clinical areas where internal benchmarking was in place*<br>**Total points possible for this question - 23** |
| Note | The "other" category has been removed from this question after review of the responses in the 2004 survey. An additional clinical condition – transurethral prostatectomy – has been added for consistency with the clinical quadrant of the report. |

| Scoring Summary and Weighting | **Question** | **Total possible score** | | **Weighting** | |
|---|---|---|---|---|---|
| | Question 16 (ii) | 23 | | 100 | |
| | Total score | 23 | | 100 | |

*Calculations exclude **clinical area/s not treated**

| | | 2005 Report | | | 2004 Report | | |
|---|---|---|---|---|---|---|---|
| **Differences**<br><br>**2005 and 2004** | Question | Q16 Clinical condition treated – slight wording change | | | Q16 Clinical area available | | |
| | | Q16 Transurethral prostatectomy – category included | | | Q16 Transurethral prostatectomy – category did not exist | | |
| | Weighting | Question | Total possible score | Weighting | Question | Total possible score | Weighting |
| | | Question 16(ii) | 23 | 100 | Question 19(ii) | 22 | 100 |
| | | Total score | 23 | 100 | Total score | 22 | 100 |

**SIC07.02   External benchmarking in selected clinical areas**

| Identifier | SIC07.02 |
|---|---|
| Key Question | To what extent does the hospital engage in external benchmarking activities in selected clinical areas? |
| Comparability | *Phase III Indicator, 2004 Report* (Please note differences below) |
| Calculation | Score hospital achieved in external benchmarking activities in selected clinical areas<br>---------------------------------------------------------------------------------------------------------------<br>Total score possible for external benchmarking for that hospital |
| Numerator Source | System Integration and Change survey, Questions 16 column (iii). |
| Denominator Source | System Integration and Change survey, Questions 16 column (i). |
| Type of Score | Percentage (%) |
| Scoring Rule | Question 16 Hospitals identified involvement in benchmarking for selected clinical areas<br>(i) clinical areas available<br>(iii) external benchmarking<br>*Responses received the following points:-*<br>　*1 point was given for each clinical areas where external benchmarking was in place*<br>**Total points possible for this question - 23** |
| Note | The "other" category has been removed from this question after review of the responses in the 2004 survey. An additional clinical condition – transurethral prostatectomy – has been added for consistency with the clinical quadrant of the report. |

| Scoring Summary and Weighting | Question | Total possible score | | Weighting | |
|---|---|---|---|---|---|
| | Question 16 (iii) | 23 | | | 100 |
| | Total score | 23 | | | 100 |
| | *Calculations exclude **clinical area/s not treated** | | | | |
| | | *2005 Report* | | *2004 Report* | |
| | Question | Q16 Clinical condition treated – slight wording changes | | Q16 Clinical area available | |
| Differences 2005 and 2004 | Question | Q16 Transurethral prostatectomy – category is included | | Q19 Transurethral prostatectomy – category did not exist | |

| | Weighting | Question | Total possible score | Weighting | Question | Total possible score | Weighting |
|---|---|---|---|---|---|---|---|
| | | Question 16 (iii) | 23 | 100 | Question 19 (iii) | 22 | 100 |
| | | Total score | 23 | 100 | Total score | 22 | 100 |

### SIC07.03   Involvement in collaboratives and information sharing with peers

| | |
|---|---|
| *Identifier* | **SIC07.03** |
| *Key Question* | To what extent does the hospital engage in collaboratives and selected clinical benchmarking activities? |
| *Comparability* | No comparison |
| *Calculation* | Score hospital achieved in engagement in benchmarking initiatives<br>--------------------------------------------------------------<br>Total score engagement in benchmarking initiatives for that hospital |
| *Numerator Source* | System Integration and Change survey, Question 17 and Collaboratives for Healthcare Improvement (CHI). |
| *Denominator Source* | System Integration and Change survey, Question 17 and Collaboratives for Healthcare Improvement (CHI). |
| *Type of Score* | Percentage (%) |
| *Scoring Rule* | Question 17 Hospitals indicated involvement in collaboratives for healthcare improvement and clinical benchmarking activities.<br>*Responses received the following points:-*<br>    *Yes =   1*<br>    *No =   0*<br>Data from the Collaboratives for Healthcare Improvement (CHI) identified hospitals who were members of collaboratives = 1 point for any collabortive membership.<br>**Total points possible for this question - 7** |
| *Note* | The "other" category was not used in calculating the scores, but was used to gather additional information for possible use in future surveys. |

| Scoring Summary and Weighting | Question | Total possible score | Weighting |
|---|---|---|---|
| | Question 17 | 6 | 85.7 |
| | CHI collaboratives | 1 | 14.3 |
| | Total score | 7 | 100 |

### SIC08   Integration with the Local Community

| | |
|---|---|
| *Background and rationale* | This indicator has again been broadened in the 2005 report to include a number of additional sub-indicators measuring integration of hospital and health service activities with the local community. |

### SIC08.01   Consumer participation in health services

| | |
|---|---|
| *Identifier* | **SIC08.01** |
| *Key Question* | Does the hospital have processes whereby local carer and consumer groups participate with hospital and health servicein discussion, planning and local initiatives? |
| *Comparability* | *Phase III Indicator, 2004 Report (* |
| *Calculation* | Score hospital achieves on consumer participation<br>--------------------------------------------------------------<br>Total score possible for that hospital on consumer participation |
| *Numerator Source* | System Integration and Change survey Question 18 and 19. |
| *Denominator* | System Integration and Change survey Question 18 and 19. |

| Source | |
|---|---|
| Type of Score | Percentage (%) |
| Scoring Rule | Question 18 Hospitals indicated the extent of carer and consumer participation for 8 selectd groups:

Responses received the following points:-
   *Regular meetings/ discussions = 1*
   *Documentationeg plans, written agreements = 1*
   *Joint initiatives involving shared resources = 1*
**Total points possible for this question - 24.**

Question 19 Hospitals indicated whether there is a formal process to monitor and review the effectiveness of consumer participation.

Responses rceived the following points:-
   Yes = 1
   No = 0
**Total points possible for this question - 1.** |
| Note | The "other" category was not used in calculating the scores, but was used to gather additional information for possible use in future surveys. |

| Scoring Summary and Weighting | Question | Total possible score | Weighting |
|---|---|---|---|
| | Question 18 | 24 | 70 |
| | Question 19 | 1 | 30 |
| | Total score | 25 | 100 |
| | | *2005 Report* | *2004 Report* |
| Differences 2005 and 2004 | Question | Q18g "**Child and** Youth Health" | "Q18g "Youth Health" |

## SIC08.02  Community partnerships with health services

| Identifier | **SIC08.02** |
|---|---|
| Key Question | Does the hospital have processes that develop partnerships with general practice and other health care providers in the local community? |
| Comparability | *Phase III Indicator, 2004 Report* |
| Calculation | Score hospital achieves on community partnerships<br>-----------------------------------------------------------------------------------------<br>Total score possible for that hospital on community partnerships |
| Numerator Source | System Integration and Change survey Question 20 and 21. |
| Denominator Source | System Integration and Change survey Question 20 and 21. |
| Type of Score | Percentage (%) |
| Scoring Rule | Question 20 Hospitals indicated the extent of involvement with 6 of community partner groups:
*Responses received the following points:-*
   *Regular meetings/ discussions = 1*
   *Documentationeg plans, written agreements = 1*
   *Joint initiatives involving shared resources = 1*
**Total points possible for this question - 18.**

Question 21 Hospitals indicated whether there is a formal process to monitor and review the effectiveness of community partnerships.

Responses rceived the following points:-
   Yes = 1
   No = 0
**Total points possible for this question - 1.** |
| Note | The "other" category was not used in calculating the scores, but was used to gather additional information for possible use in future surveys. |

| Scoring Summary and Weighting | Question | Total possible score | Weighting |
|---|---|---|---|
| | Question 20 | 18 | 70 |
| | Question 21 | 1 | 30 |
| | Total score | 16 | 100 |
| | | *2005 Report* | *2004 Report* |

| Differences 2005 and 2004 | Question | Q20 Non-government agencies – category included | | | Q23 Non-government agencies – category does not exist | | |
|---|---|---|---|---|---|---|---|
| | Weighting | Question | Total possible score | Weighting | Question | Total possible score | Weighting |
| | | Q20 | 18 | 70 | Q23 | 15 | 70 |
| | | Q21 | 1 | 30 | Q24 | 1 | 30 |
| | | Total score | 16 | 100 | Total score | 16 | 100 |

## SIC08.03   Continuity of Care Planning Framework

| | |
|---|---|
| *Identifier* | **SIC08.03** |
| *Key Question* | To what extent is the hospital engaged in the implementation of the General Practice Advisory Council (GPAC) Continuity of Care Planning Framework |
| *Comparability* | *Phase III Indicator, 2004 Report* (Please note differences below) |
| *Calculation* | Score achieved in hospital's commitment to implementation of the GPAC Continuity of Care Planning Framework. <br><br> ---------------------------------------------------------------------- <br><br> Total possible score for that hospital |
| *Numerator Source* | System Integration and Change survey Questions 22, 23 and 24. |
| *Denominator Source* | System Integration and Change survey Questions 22, 23 and 24. |
| *Type of Score* | Percentage (%) |
| *Scoring Rule* | Question 22 Hospitals indicated if they were providing activities or had plans to provide activities for the GPAC Continuity of Care Planning Framework <br> *Responses received the following points:-* <br>     *Yes, activities already provided = 2* <br>     *Yes, activities planned but not yet provided = 1* <br>     *No activities planned = 0* <br> **Total points possible for this question - 2.** <br> Question 23 Hospitals indicated the ways in which the GPAC Continuity of Care Planning Framework had been promoted <br> *Responses received the following points:-* <br>     *a. Written notification (eg newsletter, e-mail bulletin)* <br>     *b. Staff meetings* <br>     *c. Framework distributed to new staff* <br>     *d. Hyper-linked on QHEPS to District QHEPS site* <br>     *For a positive response to any or all of the above (a,b,c,d)  = 1* <br>     *e. Training sessions* <br>     *f. Collaborative processes with Divisions of General Practice (please specify)* <br>     *g. Collaborative processes with community sector (please specify)* <br>     *For a positive response to any or all of the above (e,f,g) = 2* <br><br>     *A bonus point if both parts (a,b,c,d) and (e,f,g) are answered positively = 1* <br> **Total points possible for this question - 4.** <br> Question 24 Hospitals indicated where copies of the GPAC Continuity of Care Planning Framework were available in the hospital. <br> *Responses received 1 points for each of the following items:-* <br>     *Pre-admission clinics* <br>     *Emergency departments* <br>     *Wards* <br>     *Day clinics* <br>     *Offices of clinical managers* <br>     *Outpatient department* <br>     *Community Health / Primary Health Services* <br> **Total points possible for this question - 7** |
| *Note* | The "other" category has been removed from this question after review of the responses in the 2004 survey. Two additional response choices have been added to this question. <br> *Offices of clinical managers and Community Health / Primary Health Services* |

| *Scoring Summary and Weighting* | **Question** | **Total possible score** | **Weighting** |
|---|---|---|---|
| | Question 22 | 2 | 30 |
| | Question 23 | 4 | 30 |

| | | | |
|---|---|---|---|
| | Question 24 | 7 | 40 |
| | Total score | 13 | 100 |

| | | | |
|---|---|---|---|
| *Differences 2005 and 2004* | Question or Weighting | *2005 Report* | *2004 Report* |
| | Question | Q22, 23 & 24 – Inclusion of health service district | Q31, 32 & 33 – Only referred to hospital |
| | Question | Q23 indicate ways GPAC has been promoted | Q32 ways promoted **or is planning** to be promoted |
| | Question | Q23 only refers to those places where training is already provided | Q32 refers to those places where training **is planned to be promoted** or is already provided |
| | Question | Q23 Framework distributed to new staff – category added | Q32 Framework distributed to new staff – category did not exist |
| | Question | Q23 Categories of "Collaborative processes with Divisions of General Practice" and "Collaborative processes with community sector" are separate | Q32 One category "collaborative processes with divisions of general practice and/or community sector" |
| | Question | Q24 "Offices of Clinical Managers / Heads of Departments" and "Community Health/ Primary Health Services" – categories added | Categories of "Offices of Clinical Managers / Heads of Departments" and "Community Health/ Primary Health Services" – categories did not exist |

| | Weighting | Question | Total possible score | Weighting | Question | Total possible score | Weighting |
|---|---|---|---|---|---|---|---|
| | | Q22 | 2 | 30 | Q31 | 2 | 30 |
| | | Q23 | 4 | 30 | Q32 | 4 | 30 |
| | | Q24 | 7 | 40 | Q33 | 5 | 40 |
| | | Total score | 13 | 100 | Total score | 11 | 100 |

## SIC08.04  Shared Care with General Practitioners

| | |
|---|---|
| *Identifier* | **SIC08.04** |
| *Key Question* | How well does each hospital facilitate shared care arrangements with General Practitioners? |
| *Comparability* | *New Indicator 2005 Report* |
| *Calculation* | Score hospital achieves on facilitating shared care with GPs<br>-------------------------------------------------------------------------------------<br>Total score possible for that hospital on facilitating shared care with GPs |
| *Numerator Source* | System Integration and Change survey Questions 25 and 26 |
| *Denominator Source* | System Integration and Change survey Questions 25 and 26 |
| *Type of Score* | Percentage (%) |
| *Scoring Rule* | Question 25 For 6 selected clinical conditions, hospitals indicated the extent to which they participated in shared care arrangements with local General Practitioners.<br><br>Responses received the following points:<br>    Clinical condition not treated = not included in scoring<br>    No shared care and no formal policy = 0<br>    Shared care but no formal policy   = 1<br>    Shared care and formal policy = 2<br><br>*Total points possible for this question - 12.*<br><br>Question 26 Where hospital identified participation in shared care arrangements in Question 25 (iii) or (iv), they indicated if there was a process to monitor and review the effective use of these shared care arrangements.<br><br>Responses received the following points:-<br>    Yes = 1<br>    No = 0<br>**Total points possible for this question - 6.** |

| *Scoring Summary* | **Question** | **Total possible score** | **Weighting** |
|---|---|---|---|
| | Question 25 | 12 | 70 |

| and Weighting | Question 26 | 6 | 30 |
|---|---|---|---|
| | Total score | 18 | 100 |
| | *Calculations exclude **clinical condition/s not treated** | | |

## SIC08.05   Pre admission clinics

| Identifier | **SIC08.05** |
|---|---|
| Key Question | How well does each hospital facilitate continuity of care through preparing patients for elective surgery at pre-admission clinics . |
| Comparability | *New Indicator 2005 Report* |
| Calculation | Score hospital achieves on pre admission clinics<br>-------------------------------------------------------------------------------<br>Total score possible for that hospital on pre admission clinics |
| Numerator Source | System Integration and Change survey Questions 27 and 28. |
| Denominator Source | System Integration and Change survey Questions 27 and 28. |
| Type of Score | Percentage (%) |
| Scoring Rule | Question 27 Hospitals indicated if there was a process available to prepare patients for elective surgery procedures prior to their admission, such as pre-admission clinics, outpatient clinics or clinics in other facilities?<br><br>Responses received the following points:<br>     Yes = 1<br>     No = 0<br>     No elective surgery = N/A<br>**Total points possible for this question - 1.**<br><br>Question 28 Hospitals indicated if there was a process to monitor and review the effective use of this service (only answered if the hospital scored yes to question 27).<br><br>Responses received the following points:-<br>     Yes = 1<br>     No = 0<br>**Total points possible for this question - 1.** |

| Scoring Summary and Weighting | **Question** | **Total possible score** | **Weighting** |
|---|---|---|---|
| | Question 27 | 1 | 70 |
| | Question 28 | 1 | 30 |
| | Total score | 2 | 100 |
| | *Calculations exclude facilities with no elective surgery | | |

## SIC08.06   Referral processes

| Identifier | **SIC08.06** |
|---|---|
| Key Question | How well does each hospital facilitate continuity of care through referral processes |
| Comparability | *New Indicator 2005 Report* |
| Calculation | Score hospital achieves on referral processes<br>-------------------------------------------------------------------------------<br>Total score possible for that hospital on referral processes |
| Numerator Source | System Integration and Change survey Questions 29 and 30. |
| Denominator Source | System Integration and Change survey Questions 29 and 30. |
| Type of Score | Percentage (%) |
| Scoring Rule | Question 29 Hospitals indicated the ways in which they encouraged or facilitated the provision of appropriate information on patient referrals<br><br>Responses received the following points:<br>     Hospital has standard referral form for use = 4<br>     or hospital is developing standard referral form = 2<br>     Hospital has regular meetings with referring agencies = 3<br>     Hospital uses GPAC Continuity of Care Planning Framework as a guide  = 3<br>     Regular chart audit of referrals with issues identified = 3<br>     No standard referral in place = 0<br>**Total points possible for this question - 13.**<br><br>Question 30 Where hospitals are using or developing standard referral form, they indicated if 5 |

| | elements of key information was included on the standard form<br><br>Responses received the following points:-<br>    Yes = 1<br>    No = 0<br>**Total points possible for this question - 5.** | | |

<table>
<tr><td rowspan="4">*Scoring Summary and Weighting*</td><td>**Question**</td><td>**Total possible score**</td><td colspan="2">**Weighting**</td></tr>
<tr><td>Question 29</td><td align="right">13</td><td colspan="2" align="right">50</td></tr>
<tr><td>Question 30</td><td align="right">5</td><td colspan="2" align="right">50</td></tr>
<tr><td>Total score</td><td align="right">18</td><td colspan="2" align="right">100</td></tr>
</table>

### SIC08.07  Discharge processes

| *Identifier* | **SIC08.07** |
|---|---|
| *Key Question* | How well does each hospital facilitate continuity of care through discharge processes. |
| *Comparability* | *New Indicator 2005 Report* |
| *Calculation* | <div align="center">Score hospital achieves on discharge processes</div><div align="center">Total score possible for that hospital on discharge processes</div> |
| *Numerator Source* | System Integration and Change survey Questions 31 - 37 |
| *Denominator Source* | System Integration and Change survey Questions 31 - 37 |
| *Type of Score* | Percentage (%) |
| *Scoring Rule* | Question 31 Hospitals indicated if general practitioners were included in discharge planning meetings (face to face, telephone link, video conference).<br><br>Responses received the following points:-<br>    *All of the time = 3*<br>    *Most of the time = 2*<br>    *Some of the time = 1*<br>    *Never = 0*<br>    *No general practitioners in the community = question not included in scoring*<br>**Total points possible for this question - 3.**<br><br>Question 32 Hospitals indicated if there was a hospital policy for discharge information to be provided to patient's general practitioners.<br><br>Responses received the following points:-<br>    *Yes, a formal policy exists = 2*<br>    *No, but a policy is being developed = 1*<br>    *No formal policy exists= 0*<br>**Total points possible for this question - 2.**<br><br>Question 33 Hospitals indicated if there was a formal process to monitor and review the effective implementation of this policy. (This question was answered only for hospitals where Question 32 has a yes response)<br><br>Responses received the following points:-<br>    *Yes = 1*<br>    *No = 0*<br>**Total points possible for this question - 1.**<br><br>Question 34 Given 4 ways of providing discharge summaries to general practitioners, hospitals were asked how often they used each of these ways.<br><br>Responses received the following points:-<br>    *By fax, all of the time =5*<br>    *By secure e mail all of the time =5*<br>    *By fax, most of the time = 4*<br>    *By secure e mail, most of the time = 4*<br>    *By mail, all of the time = 2*<br>    *Given to patient to hand on, all of the time = 2*<br>    *By fax, some of the time = 3*<br>    *By secure e mail, some of the time = 3*<br>    *By mail, most of the time = 2*<br>    *Given to patient to hand on, most of the time = 2*<br>    *By mail, some of the time = 1*<br>    *Given to patient to hand on, some of the time = 1*<br>**Total points possible for this question - 5.** |

| | Question 35 Hospitals indicated the current practice for the provision of the **majority** of discharge summaries. |
|---|---|
| | Responses received the following points :-<br>    Hand written discharge summaries = 1<br>    Typed / electronic discharge summaries = 2<br>    Discharge summaries not provided = 0<br>**Total points possible for this question - 2.** |
| | Question 36 Hospitals indicated how often discharge summaries were provided within 24 hours to general practitioners<br>Responses received the following points:-<br>    *Never = 0*<br>    *Some of the time = 1*<br>    *Most of the time = 2*<br>    *All of the time = 3*<br>**Total points possible for this question - 3.** |
| | Question 37 Where discharge summaries are provided, hospitals indicated how often seven (7) elements of key information is provided.<br><br>Responses received the following points:<br>    Always included = 2<br>    Sometimes included = 1<br>    Never included = 0<br>**Total points possible for this question - 14.** |

| *Scoring Summary and Weighting* | Question | Total possible score | Weighting |
|---|---|---|---|
| | Question 31 | 3 | 10 |
| | Question 32 | 2 | 15 |
| | Question 33 | 1 | 5 |
| | Question 34 | 5 | 10 |
| | Question 35 | 2 | 10 |
| | Question 36 | 3 | 25 |
| | Question 37 | 14 | 25 |
| | Total score | 30 | 100 |

### SIC08.08 Patient/carer participation in discharge planning

| *Identifier* | **SIC08.08** |
|---|---|
| *Key Question* | How well does each hospital involve patients and carers in discharge planning processes.. |
| *Comparability* | *New Indicator 2005 Report* |
| *Calculation* | Score hospital achieves on patient and carer participation in the discharge process<br>Total score possible for that hospital on patient and carer participation in the discharge process |
| *Numerator Source* | System Integration and Change survey Question 38 |
| *Denominator Source* | System Integration and Change survey Questions 38 |
| *Type of Score* | Percentage (%) |
| *Scoring Rule* | Question 38 For six selected clinical conditions, hospitals indicated the ways in which they involved patients and carers in discharge processes.<br>Responses received the following points:<br>    *Face to face information = 1*<br>    *Written home care information = 1*<br>    *Written medication information = 1*<br>    *Written community care information = 1*<br><br>**Total points possible for this question - 24.** |

| *Scoring Summary and Weighting* | Question | Total possible score | Weighting |
|---|---|---|---|
| | Question 38 | 24 | 100 |
| | Total score | 24 | 100 |

### SIC08.09aD Consumer representation on formal committees – mental health services
### Health Service District Indicator

| *Identifier* | **SIC08.09aD** |
|---|---|
| *Key Question* | How well does each health service district involve mental health consumers on formal committees |
| *Comparability* | *New Indicator 2005 Report* |

| Calculation | Score hospital achieves on consunmer participation – mental health services |
|---|---|
| | Total score possible for that hospital on consunmer participation mental health services |
| Numerator Source | Consumer and Carer participation survey – Queensland Health Mental Health Unit |
| Denominator Source | Consumer and Carer participation survey – Queensland Health Mental Health Unit |
| Type of Score | Percentage (%) |
| Scoring Rule | Section 1 – District indicated the statement which best described the type of formal committee mechanisms within your District for ensuring participation by mental health service consumers ("primary consumers" and "carers") in the planning and evaluation of services<br>Responses received the following points:-<br>*Formal position(s) for mental health consumers exist on the District's management committee for the appointment of person(s) to represent the interests of consumers = 5*<br>*Specific consumer advisory committee(s) exist to advise on all mental health services managed by the District = 4*<br>*Specific consumer advisory committee(s) exists to advise on some but not all mental health services managed by the District = 3*<br>*Mental Health consumers participate on a broadly advisory committee which includes a mixture of organisations and groups representing a wide range of interests = 2*<br>*Mental Health consumers are not represented on any advisory committee = 1*<br>*No specific arrangements exist for mental health consumer participation in planning and evaluation services = 0*<br>**Total points possible for this question - 5.** |

| Scoring Summary and Weighting | Question | Total possible score | Weighting |
|---|---|---|---|
| | Section 1 | 5 | 100 |
| | Total score | 5 | 100 |

**SIC08.09bD  Other participation by primary consumers– mental health services**
**Health Service District Indicator**

| Identifier | **SIC08.09bD** |
|---|---|
| Key Question | How well does each health service district promote participation by primary consumers |
| Comparability | *New Indicator 2005 Report* |
| Calculation | Score hospital achieves on primary consunmer participation – mental health services |
| | Total score possible for that hospital on primary consunmer participation mental health services |
| Numerator Source | Consumer and Carer participation survey – Queensland Health Mental Health Unit |
| Denominator Source | Consumer and Carer participation survey – Queensland Health Mental Health Unit |
| Type of Score | Percentage (%) |
| Scoring Rule | Section 2 – District indicated which statements accurately described the situation within their District during the last financial year<br>Responses received the following points:-<br>*Consumer Consultants are engaged on a paid basis as an employee or regular contractor, to represent the interests of primary consumers and advocate for their needs = 1*<br>*The District holds regular discussion groups to seek the views of primary consumers about the mental health services provided by the District = 1*<br>*The District has developed a formal (documented) policy on participation by primary consumers = 1*<br>*The District periodically conducts consumer satisfaction surveys = 1*<br>*The District has a formal internal complaints mechanism in which complaints made by primary consumers are regularly reviewed by a committee that includes primary consumers =1*<br>**Total points possible for this question - 5.** |

| Scoring Summary and Weighting | Question | Total possible score | Weighting |
|---|---|---|---|
| | Section 2 | 5 | 100 |
| | Total score | 5 | 100 |

**SIC08.09cD  Participation by carers– mental health services. Health Service District Indicator**

| Identifier | **SIC08.09cD** |
|---|---|
| Key Question | How well does each health service district promote participation by carers |
| Comparability | *New Indicator 2005 Report* |
| Calculation | Score hospital achieves on carer participation – mental health services |
| | Total score possible for that hospital on carer participation mental health services |

| Numerator Source | Consumer and Carer participation survey – Queensland Health Mental Health Unit |
|---|---|
| Denominator Source | Consumer and Carer participation survey – Queensland Health Mental Health Unit |
| Type of Score | Percentage (%) |
| Scoring Rule | <u>Section 3</u> – District identified one or more of the options that accurately described the situation with their District during the last financial year<br>Responses received the following points:-<br>*Carer Consultants are engaged on a paid basis as an employee or regular contractor, to represent the interests of carers and advocate for their needs = 1*<br>*The District holds regular discussion groups to seek the views of carers about the mental health services provided by the District = 1*<br>*The District has developed a formal (documented) policy on carer participation = 1*<br>*The District periodically conducts carer satisfaction surveys = 1*<br>*The District has a formal internal complaints mechanism in which complaints made by carers are regularly reviewed by a committee that includes carers =1*<br>**Total points possible for this question - 5.** |

| Scoring Summary and Weighting | Question | Total possible score | Weighting |
|---|---|---|---|
| | Section 3 | 5 | 100 |
| | Total score | 5 | 100 |

**SIC08.09D    Consumer and carer participation – mental health services**
**Health Service District Indicator**

| Identifier | **SIC08.09D** |
|---|---|
| Key Question | How well does each health service district involved mental health consumers and carers |
| Comparability | *New Indicator 2005 Report* |
| Calculation | Score hospital achieves on consunmer and carer participation – mental health services<br>Total score possible for that hospital on consunmer & carer participation -mental health services |
| Numerator Source | Consumer and Carer participation survey – Queensland Health Mental Health Unit |
| Denominator Source | Consumer and Carer participation survey – Queensland Health Mental Health Unit |
| Type of Score | Percentage (%) |
| Scoring Rule | Combination of indicators SIC08.09AD, SIC08.09BD and SIC08.09CD |

| Scoring Summary and Weighting | Question | Total possible score | Weighting |
|---|---|---|---|
| | SIC08.09AD | 5 | 33.33 |
| | SIC08.09BD | 5 | 33.33 |
| | SIC08.09CD | 5 | 33.33 |
| | Total score | 15 | 100 |

**SIC08.10    Environmental management**

| Identifier | **SIC08.10** |
|---|---|
| Key Question | What environmental management strategies are currently in place in hospitals., including staff development activities. |
| Comparability | *Phase III Indicator, 2004 Report* (Please note differences below). |
| Calculation | Score achieved in hospital's commitment to eco-efficiency.<br>-------------------------------------------------------------------<br>Total possible score for that hospital |
| Numerator Source | System Integration and Change survey questions 39, 40 and 41. |
| Denominator Source | System Integration and Change survey questions 39, 40 and 41. |
| Type of Score | Percentage (%) |
| Scoring Rule | <u>Question 39</u> Hospitals indicated what strategies were in place for environmental management in each of five eco elements (electricity, gas, water, waste and CO2 emmission)-.<br>Responses received the following points:-<br>*Documentation (eg plans, contracts, written agreements) = 1*<br>*Educational, training material, brochures = 1*<br>*Saving initiatives or projects = 1*<br>*A process to measure, monitor and review = 1*<br>**Total points possible for this question - 20.**<br><br>Question 40 Hospitals indicated if there were staff awareness training modules on eco-friendly |

|  |  |  |  |  |
|---|---|---|---|---|
|  | behaviour and / or eco-efficiency<br>Responses received the following points:-<br>    *Yes = 1*<br>    *No = 0*<br>**Total points possible for this question - 1**<br><br><u>Question 41</u> Hospitals indicated their intention in participating in the Queensland Health Energy Efficiency Program.<br>*Responses received the following points:-*<br>    *Hospital has a written agreement to participate = 5*<br>    *Hospital is planning to participate but has no formal agreement = 2*<br>    *Hospital is not planning to participate= 0*<br>    *Hospital has not been approached = not included in scoring*<br>**Total points possible for this question - 5** |  |  |  |

| *Scoring Summary and Weighting* | **Question** | **Total possible score** |  | **Weighting** |  |
|---|---|---|---|---|---|
|  | Question 39 | 20 |  | 60 |  |
|  | Question 40 | 1 |  | 10 |  |
|  | Question 41 | 5 |  | 30 |  |
|  | Total score | 26 |  | 100 |  |

| *Differences 2005 and 2004* | Question or Weighting | *2005 Report* |  |  | *2004 Report* |  |  |
|---|---|---|---|---|---|---|---|
|  | Question | Question 39 "CO2 Emission" – category added |  |  | Q43 "CO2 Emission" – category did not exist |  |  |
|  | Question | Question 41 was added |  |  | Similar question did not exist |  |  |
|  | Weighting (note Q39=Q43, Q40=Q44) | Question | Total possible score | Weighting | Question | Total possible score | Weighting |
|  |  | Q39 | 20 | 60 | Q43 | 16 | 90 |
|  |  | Q40 | 1 | 10 | Q44 | 1 | 10 |
|  |  | Q41 | 5 | 30 |  |  |  |
|  |  | Total score | 26 | 100 | Total score | 17 | 100 |

## SIC09    Video-conference usage for staff development and training

| *Identifier* | **SIC09** |
|---|---|
| *Key Question* | How many sessions have hospital staff participated in staff development delivered via videoconferencing technology. |
| *Comparability* | *Phase III Indicator, 2004 Report* |
| *Calculation* | No of multi-point telehealth sessions<br>-------------------------------------------------<br>No of hospital beds |
| *Numerator source* | Statewide Telehealth Services – Videoconference and Broadcast Report Centre Reports |
| *Denominator source* | Data Services Unit |
| *Type of Score* | Percentage (%) |

## SIC10.01    Service Capability Framework (SCF) implementations.

| *Identifier* | **SIC10.01** |
|---|---|
| *Key Question* | To what extent are hospitals progressing with the implementation of the *Service Capability Framework* (SCF)? |
| *Comparability* | *New Indicator 2005 Report* |
| *Calculation* | Score achieved in hospital's implementation of the SCF<br>----------------------------------------------------------------<br>Total possible score for that hospital |
| *Numerator Source* | System Integration and Change hospital survey Questions 42 and 43. |
| *Denominator Source* | System Integration and Change hospital survey Questions 42 and 43. |
| *Type of Score* | Percentage (%) |
| *Scoring Rule* | <u>Question 42</u> Hospitals indicated all the ways in which they are using the SCF.<br>Responses received 1 point each:-<br>    *Assessing current services against the framework* |

| | | | |
|---|---|---|---|
| | *Identifying gaps in service delivery* | | |
| | *Profiling services* | | |
| | *Planning health services* | | |
| | *Using the framework as a clinical risk management tool* | | |
| | *Benchmarking activities* | | |
| | *Determining types of patients to refer/transfer to other facilities* | | |
| | *Preparing business cases* | | |
| | *Networking with other hospitals* | | |
| | *Framework has not been used = 0* | | |
| | **Total points possible for this question - 9.** | | |
| | Question 43 Hospitals indicated the barriers faced in their facility in using the SCF. Responses received the following points:- *From the 5 identified barriers in using the SCF, responses were deducted from the maximum score possible (5)* **Total points possible for this question - 5..** | | |

| | **Question** | **Total possible score** | **Weighting** |
|---|---|---|---|
| *Scoring Summary and Weighting* | Question 42 | 9 | 80 |
| | Question 43 | 5 | 20 |
| | Total score | 14 | 100 |

## SIC10.02   Patient safety culture

| | |
|---|---|
| *Identifier* | **SIC10.02a** Internal reporting<br>**SIC10.02b** External reporting |
| *Key Questions* | In relation to selected patient safety matters, what level of reporting is in place:<br>    a)  within the hospital and health service district<br>    b)  external to the hospital and health service district |
| *Comparability* | *New Indicator 2005 Report* |
| *Calculation* | Score achieved in hospital's patient safety culture<br>-------------------------------------------------------------------<br>Total possible score for that hospital |
| *Numerator Source* | a.  System Integration and Change hospital survey Questions 44a & 44b<br>b.  System Integration and Change hospital survey Questions 44c & 44d |
| *Denominator Source* | a.  System Integration and Change hospital survey Questions 44a & 44b<br>b.  System Integration and Change hospital survey Questions 44c & 44d |
| *Type of Score* | Percentage (%) |
| *Scoring Rule* | Question 44a Hospitals indicated how often reports that are meaningful at a local level, relating to patient safety matters, are <u>received</u> by senior hospital or district management from clinical and non-clinical staff.<br>*Responses received the following points:-*<br>    *All matters reported = 3*<br>    *Most matters reported = 2*<br>    *Some matters reported = 1*<br>    *No matters reported = 0*<br>**Total points possible for this question - 6**<br><br>Question 44b Hospitals indicated how often reports that are meaningful at a local level, relating to patient safety matters, are <u>distributed</u> by senior hospital or district management to clinical and non-clinical staff.<br><br>Responses received the following points:-<br>    *All matters distributed = 3*<br>    *Most matters distributed = 2*<br>    *Some matters distributed = 1*<br>    *No matters distributed = 0*<br>**Total points possible for this question - 6**<br><br>Question 44c Hospitals indicated how often they <u>received</u> relevant and meaningful information relating to patient safety matters, from other hospitals, Queensland Health business units and regulatory bodies.<br><br>Responses received the following points:-<br>    *Distributes all information = 3*<br>    *Distributes most information = 2*<br>    *Distributes some information = 1* |

|  | *Do not distribute any information = 0*<br>**Total points possible for this question - 9.** |
|---|---|
|  | Question 44d. Hospitals indicated how often senior hospital or district management distribute relevant and meaningful information relating to patient safety matters, to other hospitals, Queensland Health business units and regulatory bodies.<br><br>Responses received the following points:-<br>    *All matters reported = 3*<br>    *Most matters reported = 2*<br>    *Some matters reported = 1*<br>    *No matters reported = 0*<br>**Total points possible for this question - 9.** |
| *Note* | The survey requested this question (44 a-d) be completed by the senior clinical manager (nursing or medical) at the hospital. |

| *Scoring Summary and Weighting* | **Question** | **Total possible score** | **Weighting** |
|---|---|---|---|
|  | Question 44a | 6 | 50 |
|  | Question 44b | 6 | 50 |
|  | Total score 10.02a | 12 | 100 |
|  | Question 44c | 9 | 50 |
|  | Question 44d | 9 | 50 |
|  | Total score 10.02b | 18 | 100 |

## SIC10.03    Incident management

| *Identifier* | **SIC10.03** | | |
|---|---|---|---|
| *Key Question* | What policies and processes are in place for incident management? | | |
| *Comparability* | *Phase III, 2004 Report* (Please note differences below). | | |
| *Calculation* | Score achieved in hospital's commitment to incident management.<br>-----------------------------------------------------------------------------------------<br>Total possible score for that hospital | | |
| *Numerator Source* | System Integration and Change hospital survey Questions 45. | | |
| *Denominator Source* | System Integration and Change hospital survey Questions 45. | | |
| *Type of Score* | Percentage (%) | | |
| *Scoring Rule* | Question 45 Hospitals indicated if there were policies and processes, in place for the management of 9 categories of incidents.<br><br>Responses received the following points:-<br>    *Facility has a documented policy = 1*<br>    *Policy includes a written definition = 1*<br>    *Hospital has formal processes to identify incidents = 1*<br>    *Hospital has formal processes to report incidents = 1*<br>    *Hospital has formal processes to take action re incidents = 1*<br>**Total points possible for this question - 45..** | | |

| *Scoring Summary and Weighting* | **Question** | **Total possible score** | **Weighting** | |
|---|---|---|---|---|
|  | Question 45 | 45 | 100 | |
|  | Total score | 45 | 100 | |

| | Question or Weighting | *2005 Report* | | *2004 Report* | |
|---|---|---|---|---|---|
| *Differences 2005 and 2004* | Question | Security incidents (eg access, bomb threats and information) – category wording change | | Bomb threats – category wording change | |
|  | Question | Environment incident – category addition | | Environment incident - category did not exist | |

| | | Question | Total possible score | Weighting | Question | Total possible score | Weighting |
|---|---|---|---|---|---|---|---|
|  |  | Q45 | 45 | 100 | Q45 | 40 | 100 |
|  |  | Total score | 45 | 100 | Total score | 40 | 100 |

**SIC10.04D   Staff development – safety and risk management       Health Service District Indicator**

| Identifier | **SIC10.04 D** |
|---|---|
| Key Question | How many staff in health service districts have participated in the following state-wide training programs which focus particularly on safety and risk management.<br>1.   Human Error and Patient Safety<br>2.   Integrated Risk Management programs |
| Comparability | *Phase III, 2004 Report* |
| Calculation | Single unit measure – number of participants |
| Numerator source | 1 Organisational Improvement Unit<br>2 Integrated Risk Management Program |
| Denominator source | Not Applicable |
| Type of Score | Number |
| Note | Data for this indicator is expressed in number only.  There has been no calculation of the proportion of the workforce, due to the unreliability of the results.  Health Service Districts are encouraged to use these figures to inform on-going training needs. |

**SIC10.05   Emergency preparedness and continuity management**

| Identifier | **SIC10.05** |
|---|---|
| Key Question | What   hospitals arrangements are in place in relation to emergency response and business continuity management? |
| Comparability | *New Indicator 2005 Report* |
| Calculation | Score achieved in hospital's emergency response and business continuity management.<br>-------------------------------------------------------------------------------------<br>Total possible score for that hospital |
| Numerator Source | System Integration and Change hospital survey Questions 46. |
| Denominator Source | System Integration and Change hospital survey Questions 46. |
| Type of Score | Percentage (%) |
| Scoring Rule | Question 46 Hospitals indicated if there were policies and processes, in place to respond to 8 categories of emergency, including business continuity management.<br><br>Responses received the following points:-<br>   *Facility has a documented policy/procedure = 1*<br>   *Policy includes a written definition = 1*<br>   *Hospital has formal processes to identify emergencies = 1*<br>   *Hospital has formal processes to report emergenciess = 1*<br>   *Hospital has formal processes to take action re emergencies = 1*<br>   *Hospital has formal processes for testing = 1*<br>   **Total points possible for this question - 36..** |

| Scoring Summary and Weighting | Question | Total possible score | Weighting |
|---|---|---|---|
| | Question 46 | 36 | 100 |
| | Total score | 36 | 100 |

# Patient Satisfaction

## Chapter 5

### 5.1 Overview

There is currently no additional data on patient satisfaction available for inclusion in the 2005 hospital reports. Implementation of a further state-wide survey is underway and reports on current data should be available to Hospitals by November 2005.

The survey is a mail out, self-completion survey with similar content to the questionnaire utilised for the pilot survey, conducted on behalf of Queensland Health during September and October 2001. The random sample will include day and overnight patients accessing Medical, Surgical and Maternity related care that were discharged from 75 public Hospitals during the six month period December 04 – May 05. The data collection phase is currently underway and is scheduled to conclude in mid September 2005. Data collation, analysis and preparation of Hospital Reports are expected to be completed by November 2005.

As in the pilot survey, the survey responses will inform the calculation of scores for seven indicators, encompassing the different aspects of patient care across the continuum of their hospital experience. The survey data will also include a range of demographic information on respondents, some qualitative data gathered from responses to two open questions and additional information related to the areas of discharge planning and informed decision making.

For further information on the state-wide survey please contact Cathy Renkin or Mayra Christiansen on 07 3247 4927 or 07 3234 0035.

# Your Feedback

## Chapter 6

Your feedback is appreciated as to the usefulness of the information provided and suggestions on indicators, analysis and presentation.  Please direct your comments to:

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## Chapter 7

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# Glossary of Terms

## Chapter 8

| Term | Definition | Source of Definition |
|------|-----------|---------------------|
| Accreditation (hospital) | The formal process of surveying a hospital against predetermined criteria and standards to determine whether or not it complies with applicable standards; such standards are believed to be related to the hospital's ability to provide services of acceptable quality. | Quality and Outcomes Indicators for Acute Healthcare Services |
| Acute | A short and relatively severe course of illness. | Fourth National Report on Health Sector Performance Indicators |
| Admitted Patient | A patient who has undergone a hospital's formal admission process. | Fourth National Report on Health Sector Performance Indicators |
| Admitted Patient - Overnight | Patients who are admitted and then separated on a subsequent date. | |
| Admitted Patient - Same day | Patients who are admitted and separated on the same date. | |
| Balanced Scorecard | The Balanced Scorecard developed by Kaplan and Norton (1992) is an approach to organisational performance measurement. The Balanced Scorecard translates an organisation's strategy into an integrated set of financial and non-financial measures, which provide a framework for a strategic measurement and management system. It allows organisations to examine and communicate objectives and measures across four perspectives: Financial; Customer; Internal Business/Process; and Innovation and Learning. The key feature of the Balanced Scorecard is that it considers a "balance between financial and non-financial aspects, external and internal measures, leading (early) and lagging (late) performance indicators and objective vs subjective outcomes" (Rimar & Garstka, 1999) | |
| Benchmark | A level of care set as a goal to be attained. Internal benchmarks are derived from similar processes or services within your own organisation; competitive benchmarks are comparisons with the best external competitors in your field and generic benchmarks are drawn from the performance of similar processes in other industries | Quality and Outcomes Indicators for Acute Healthcare Services |
| Benchmarking | The ongoing systematic process to search for and introduce best practice into an organisation. | First National Report on Health Sector Performance Indicators (1996) [QHOID] |
| Case Weights | The relative costliness of a particular Australian National Diagnostic Related Group (AN-DRG), determined so that the average case weight for all AN-DRGs is 1.00 | Fourth National Report on Health Sector Performance Indicators |
| Casemix | A classification of patients into categories reflecting differences in type of illness and/or resource consumption. In Australia, casemix is described using the AN-DRG classifications system. | Quality and Outcome Indicators for Acute Healthcare Services / Fourth National Report on Health Sector |

| Term | Definition | Source of Definition |
|---|---|---|
| | | Performance Indicators |
| Casemix adjusted separations | The number of separations for a hospital or group of hospitals multiplied by the average case weight. This product is often termed the Units of Care. | Fourth National Report on Health Sector Performance Indicators |
| Casemix groups | Hospitals across Queensland are categorised into groups to represent principal referral hospitals (Group A), major referral hospitals (Group B), maternity hospitals (Group N), paediatric hospitals (Group P), and district / regional hospitals (Group T). Hospitals attached to these groups will vary from year to year and some groups may not apply across all years. | |
| Clinical Indicators | A measure of the clinical management and outcome of care. It is an objective measure of patient care in quantitative terms. | ACHS, 1999 |
| Clinical Pathways | Clinical pathways are standardised, evidence-based multi-disciplinary management plans, which identifies an appropriate sequence of clinical interventions, timeframes, milestones and expected outcomes for a homogenous patient group. | Clinical Pathways Program Area, QIEP, Queensland Health 2001 |
| Clinician | Doctors, Nurses and Allied Health prefessionals | NSW Health |
| Cohort | The component of the population born during a particular period and identified by period of birth so that its characteristics (eg. Causes of death and numbers still living) can be ascertained as it enters successive time and age periods. | A Dictionary of Epidemiology |
| Comorbidity | Disease(s) that coexist(s) in a study participant in addition to the index condition that is the subject of study. | A Dictionary of Epidemiology |
| Complication | An adverse patient event related to medical intervention, especially an event that is an expected consequence of, or that sometimes occurs in relation to, the patient's disease or its treatment. | Quality and Outcomes Indicators for Acute Healthcare Services |
| Confidence Interval | A range of values for a variable of interest, eg. a rate constructed so that this range has a specified probability of including the true value of the variable. | A Dictionary of Epidemiology |
| Confidence Limit | The end points of the confidence interval | A Dictionary of Epidemiology |
| Cost Effectiveness | The relationship between resources consumed and the outputs. Cost-effectiveness measures can highlight how well the costs of interventions are translated into outputs. | NAO 2001 |
| Credentialling | Credentialling is a process by which a service provider, such as a hospital, determines what it will permit a particular practitioner to do in terms of the role of that hospital. Credentialling is usually based on evidence of educational qualifications and further specific training and practice. | Final Report of the Taskforce on Quality in Australian Health Care, 1996 |
| Data - data collection tool | A paper or electronic 'device' for retrieving information in a standard way from a data source. Examples include: medical record abstracting forms, surveys, software for retrieving information from automated data files and software for transmitting data to remote sites. There may be multiple data sources and data collection tools involved in a multi-step process from first existence of a data element to its inclusion in a performance measure. | Quality and Outcomes Indicators for Acute Healthcare Services |
| Data - data element | The most basic 'raw material' used to build performance measures. Data elements typically describe some aspect of a medical encounter, a patient or a provider. Examples include: diagnostic code(s) and definitions of key terms eg: length of stay and weighted separations. | Quality and Outcomes Indicators for Acute Healthcare Services |

| Term | Definition | Source of Definition |
|---|---|---|
| Diagnosis | The process of categorising a patient or deciding the nature of a disease based on the patient's characteristics, symptoms, signs and signals. | Quality and Outcomes Indicators for Acute Healthcare Services |
| Diagnostic Related Groups (DRGs) | Groupings of diagnoses (or procedures) in a hospital that have the same propensity to consume resources. | Quality and Outcomes Indicators for Acute Healthcare Services |
| Australian National Diagnostic Related Group (AN-DRG) | AN-DRG's represents a class of patients with similar clinical conditions requiring similar hospital services. The full set of AN-DRGs comprises a casemix classification system for use in Australian hospitals. | Fourth National Report on Health Sector Performance Indicators |
| Discharge Planning | A process that facilitates each patient's continuity of care following an episode of hospitalisation. It involves a multi-disciplinary approach to assessing and providing for patient needs in conjunction with the patient, carer, hospital and community service provider. | Guidelines for Pre-admission Processes, Discharge Planning and Transitional Care |
| Efficiency | Producing the maximum output for any given set of inputs. Alternatively, using the minimum inputs for the required service. | AC 2000 |
| Efficiency – Allocative | How to achieve the optimal mix of healthcare treatments or services to maximise total benefits (outcomes) from available resources. | Quality and Outcomes Indicators for Acute Healthcare Services |
| Efficiency – Technical | The least cost combination of resource inputs necessary for the production of a particular service. | Quality and Outcomes Indicators for Acute Healthcare Services |
| Episode of Care | A phase of treatment. There may be more than one episode of care within the one hospital stay. An episode of care ends when the principal clinical intent changes or when the patient is formally separated from the facility. | Queensland Health Data Dictionary (1997) [QHOID] |
| Exclusion criteria | Characteristics or conditions that make patients ineligible for review with a specific performance measure or a specific criterion within a performance measure. | Quality and Outcomes Indicators for Acute Healthcare Services |
| Hospital | A health care facility established under Commonwealth, State or Territory legislation as a hospital or a free-standing day procedure unit and authorised to provide treatment and/or care to patients. | Queensland Health Data Dictionary |
| Inpatient Fraction (IFRAC) | An expression of the ratio of inpatient costs to total hospital costs. | Fourth National Report on Health Sector Performance Indicators |
| Length of Stay | The length of stay of a patient is calculated by subtracting the date the patient is admitted from the date of separation. All leave days, including the day the patient went on leave, are excluded from the calculation. A same-day patient should be allocated a length of stay of one day. | Queensland Health Data Dictionary |
| Long Stays | The high trim point was chosen as the day closest to the 90th percentile of all length of stays within the cohort, excluding cases of in-hospital mortality which were not included in the analysis of long stays. | |
| Mean (average) | A measure of central tendency which is commonly referred to as the average. It is calculated by the sum of the observations divided by the number of observations. | A Dictionary of Epidemiology |
| Median | A measure of central tendency. The simplest division of a set of | A Dictionary of |

| Term | Definition | Source of Definition |
|---|---|---|
| | measurements is in two parts – the lower and the upper half. The point on the scale that divides the group in this way is called the "median". | Epidemiology |
| Morbidity | Any departure, subjective or objective, from a state of physiological or psychological well-being. | A Dictionary of Epidemiology |
| National Health Performance Framework Dimensions | Effective, Appropriate, Efficient, Responsive, Accessible, Safe, Continuous, Capable, Sustainable. | |
| Nursing Home Separations | Patients who are discharged to a nursing home for the first time ie. the nursing home is not where they lived prior to being admitted to hospital. | |
| Observed Rate | This is the rate at which the event that is being measured actually occurs during the study period. | |
| Outcome Indicators | Reports on the overall effectiveness of a program's outputs. Provides an indication of the extent to which the desired outcomes are being achieved (effectiveness) and the cost (efficiency). | Performance Reporting Guidelines (1997) [QHOID] |
| Outcomes | Measures of the value changes caused by the process of care.<br><br>Impacts or effects on the community as a result of producing outputs.<br><br>The results of production processes which precede them in space or time, acting on inputs in a given environment. In healthcare, the term "outcome" usually refers to post-intervention results or measurements – the observed outcomes of an intervention – whether or not one can confidently attribute those results to the preceding intervention (process). | Fourth National Report on Health Sector Performance Indicators<br><br>State Social Development Strategy (draft 1997) [QHOID]<br><br>Quality and Outcome Indicators for Acute Healthcare Services |
| Outputs | The goods and services produced or delivered.<br><br>The immediate result of professional or institutional health care activities usually expressed as units of service, eg. Patient hospital days, laboratory tests performed.<br><br>The service provided to the public; Contributes to the measurement of efficiency and program-effectiveness. | State Social Development Strategy (draft 1997) [QHOID]<br><br>Last (1995) [QHOID]<br><br>(AC2000) |
| Patient Satisfaction | The subjective sense of quality, particularly regarding the interpersonal aspect of care that patients experience after one or more health care interventions or encounters. | Quality and Outcomes Indicators for Acute Healthcare Services |

| Term | Definition | Source of Definition |
|---|---|---|
| Peer Grouping | The way in which hospitals are categorised has important implications for the validity of benchmarking data. A number of factors affect the outcomes of services provided by hospitals. For instance, there is a significant body of evidence which shows a correlation between the number of certain procedures conducted by clinicians, their skill in performing the procedure and associated outcomes for patients. Similarly, the size of a hospital and its location (eg. provincial city, capital city) will affect the types of services that are provided by a hospital, the range of clinicians employed and their level of skill. By categorising hospitals into groups of hospitals which are a similar size, provide similar types and volumes of services and which are located in similar areas, the influence of these factors on patient outcomes is reduced. This allows for the services provided across the hospitals in a group to be compared in terms of quality and outcomes in the fairest possible manner. | |
| Performance Indicator | A measure that quantifies the level of performance for a particular aspect of (health) service provision and allows comparison between service providers, modes of service provision or both.<br><br>Provides a specific measurable way of assessing progress towards goals. The selection of a measure or indicator to assess a health outcome is dependent on why the information is being collected and who it is to be used by (eg. service providers, service funders). | Fourth National Report on Health Sector Performance Indicators<br><br>Better Health Outcomes for Australians (1994) [QHOID] |
| Performance Indicator – Denominator | The lower portion of a fraction used to calculate a rate or ratio. | A Dictionary of Epidemiology |
| Performance Indicator – Numerator | The upper portion of a fraction used to calculate a rate or a ratio. | A Dictionary of Epidemiology |
| Performance Measure | The process of producing a set of one or more performance indicators. As such, it encompasses a range of activities and sub-processes. These include the determination of a framework of performance indicators of interest, the establishment of appropriate information requirements (incorporating scope, standards and definitions) and the collection, collation or both of data according to these requirements. Note that comparison of performance indicators across providers or modalities of provision is not a part of performance measurement per se. Rather this is a step beyond simply measuring performance and leads towards the concept of benchmarks for assessment of measured performance.<br><br>Quantifiable units of measurement used to determine and assess the delivery of outputs. They establish how performance will be judged for each output by translating it into a measured value of quantity, quality, cost, timeliness and, where appropriate, location.<br><br>The quantitative representation of some dimension or component of a Health Maintenance Organisation performance. Measures are generally expressed as rates, but for certain purposes may be expressed as proportions, averages, ranges, or other legitimate mathematical expressions. | Fourth National Report on Health Sector Performance Indicators<br><br>Managing for Outcomes – (1997) [QHOID]<br><br>Quality and Outcome Indicators for Acute Healthcare Services |
| Private Patient | An eligible person who elects to be treated as a private patient and elects to be responsible for paying fees. | Fourth National Report on Health Sector Performance Indicators |

| Term | Definition | Source of Definition |
|------|-----------|---------------------|
| Procedure | Any medical or healthcare intervention, especially one that involves manipulation or a series of steps to accomplish. | Quality and Outcomes Indicators for Acute Healthcare Services |
| Public Patient | An eligible person who receives or elects to receive public hospital service free of charge. | Fourth National Report on Health Sector Performance Indicators |
| Quality | The totality of a product's or service's characteristics that bear on its ability to satisfy customers' desires. | Quality and Outcomes Indicators for Acute Healthcare Services |
| Quality of Care | The degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge. | Lohr and Shroeder, 1990 |
| Quartiles | The division of a set of observations into four equal, ordered parts. | A Dictionary of Epidemiology |
| Rates | A way of expressing performance in a quantitative form. A rate contains a numerator and a denominator. | Quality and Outcomes Indicators for Acute Healthcare Services |
| Re-admission | This occurs when a person is readmitted to the same hospital within 30 days of separation for that hospital stay. | |
| Reliability | A measure of the consistency with which a measurement procedure will produce the same result on different occasions. | de Vaus (1995) |
| Risk | The chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood. | Risk Management (AS/NZS 4360) [QHOID] |
| Risk Adjustment | A statistical procedure that "adjusts" for the association between one or more risk factors and a performance measure. | Quality and Outcomes Indicators for Acute Healthcare Services |
| Sample | A relatively small set of observations or individuals drawn from a larger universe of potential observations or individuals. The sample is usually assumed to have all the essential characteristics of the larger population from which it is drawn, but this does not always happen in practice. Samples are used when the costs of data collection and analysis for an entire population are high. | Quality and Outcomes Indicators for Acute Healthcare Services |
| Sampling method | A set of logical and mathematical techniques for identifying a small set of individuals or events from among a larger pool for inclusion in data collection, analysis and calculation of performance measures. | Quality and Outcomes Indicators for Acute Healthcare Services |
| Separation | The process by which an admitted patient completes an episode of care. In general, a separation is synonymous with discharge. The number of separations is a measure of hospital activity. | Fourth National Report on Health Sector Performance Indicators |
| Telehealth | Telehealth is the name given to a health delivery system that provides health-related activities at a distance between two or more locations using technology-assisted communications. Currently, this is most commonly done using videoconferencing technology. | Centre for Online Health, The University of Queensland |
| Transfers Out | The number of records where separation mode is "02" (transfer to other hospital, non-contract) | |
| Validity | Whether an indicator measures the concept that it is suppose to measure. | De Vaus (1995) |