# NSW Data Assets and Their Uses
## Overview of Current State and Future Directions

Presented by:

Dr Zoran Bolevich
*Director*
*Health System Information & Performance Reporting*
*System Purchasing and Performance Division*
*NSW Ministry of Health*

27 February 2014

# Overview

- Data in NSW Health

- Uses of health data

- Examples

- Notes on data linkage

- Future directions

NSW GOVERNMENT | Health

# Healthcare Data

- Clinical data
  - Patient level transactions
  - Clinical observations

- Administrative data
  - Financial data
  - Workforce data
  - Capacity data (facilities)

- Population data
  - Demographic and socio-economic data
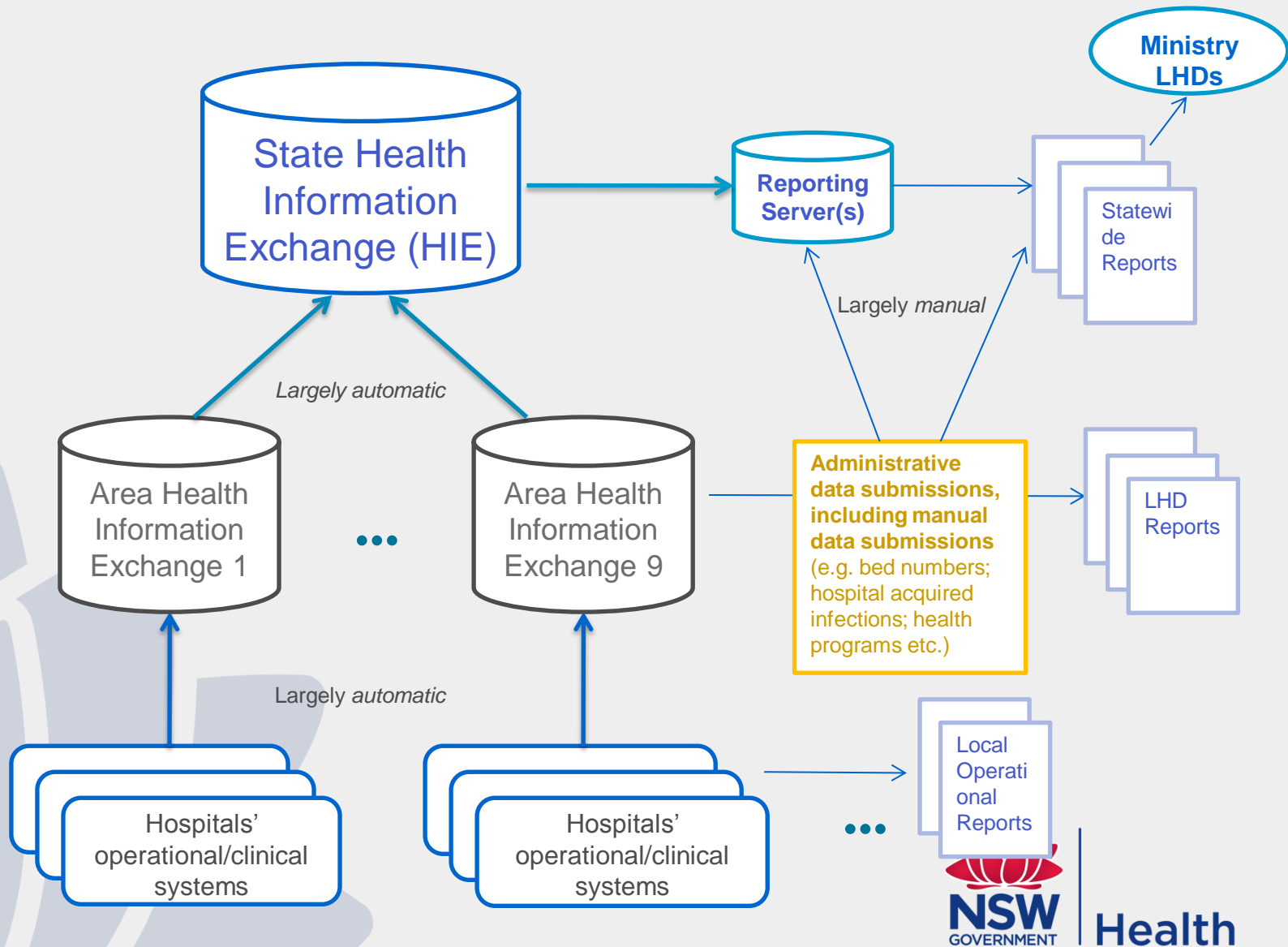  - Population health surveys

# Data Collections

- Routine data collections (collected as by-product of routine operational activities of health services providers)

- Special data collections (collected in addition to or in parallel with routine operational processes)

- Most analysis and reporting (cca 80%) is based on routine data collections, i.e. data is obtained 'automatically' but
  - relies on thousands of clinicians and support staff entering the data
  - has a stringent legal framework around it and requires careful management of privacy and other risks
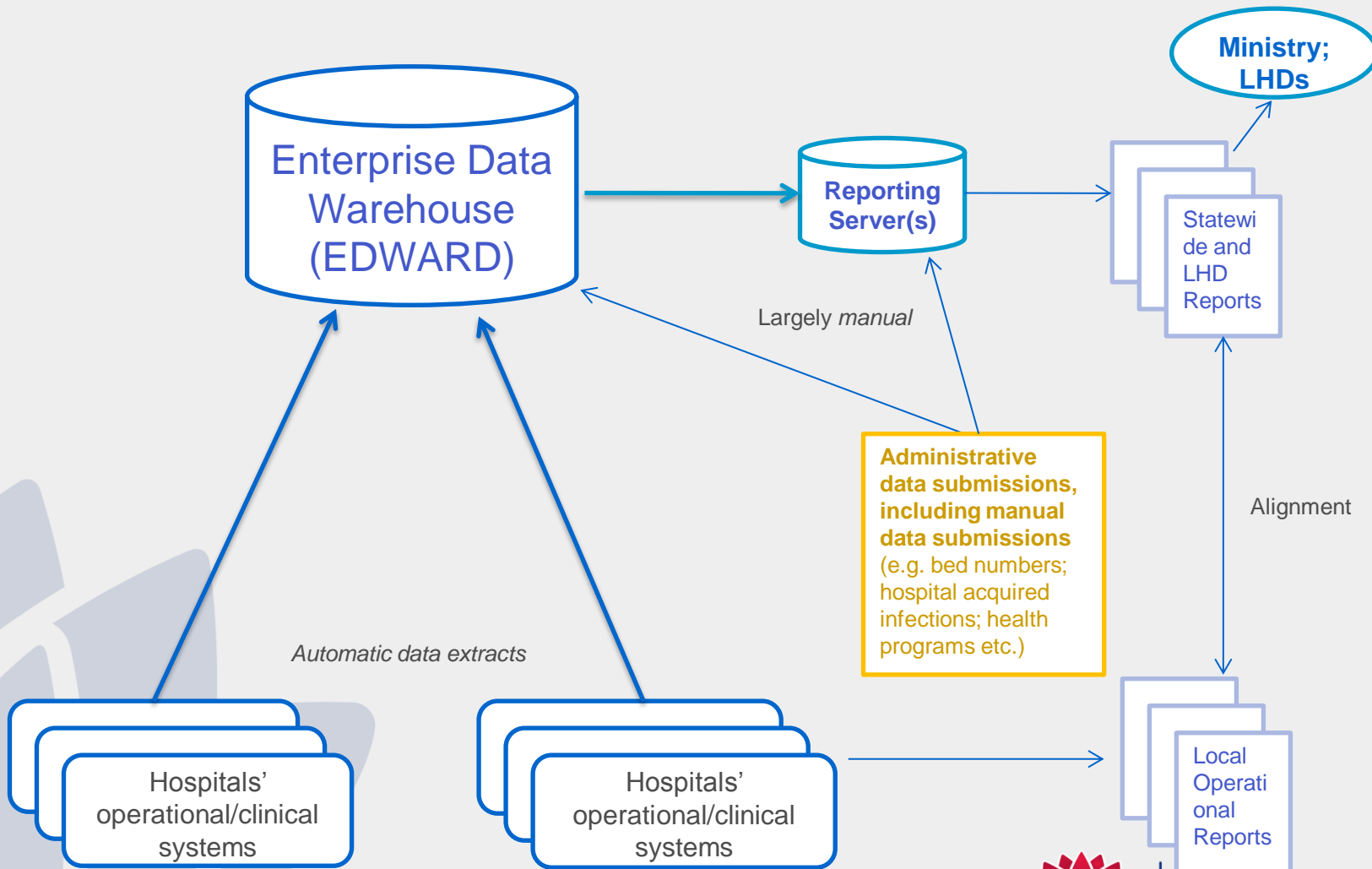  - may suffer from various data quality issues

# Key State-wide Data Collections

- Admitted Patient Data Collection

- Emergency Department Data Collection

- Waiting Times Data Collection

- Non-Admitted Patient Data Collection

- Sub and Non-Acute Patients (SNAP) Data Collection

- Perinatal Data Collection

- Home and Community Care (HACC) Data Collection

- Aged Care Assessment Program (ACAP) Data Collection

- Health Establishment Registration (HERO)

- Human Resource Data Collection

NSW GOVERNMENT | Health

# NSW Health's Information Management Architecture (Current)

# NSW Health's Information Management Architecture (New)



Enterprise Data Warehouse (EDWARD)

Reporting Server(s)

Ministry; LHDs

Statewide and LHD Reports

Largely *manual*

**Administrative data submissions, including manual data submissions** (e.g. bed numbers; hospital acquired infections; health programs etc.)

*Automatic data extracts*

Hospitals' operational/clinical systems

Hospitals' operational/clinical systems

Local Operational Reports

Alignment

NSW GOVERNMENT | Health

# Uses of Health Data

- Primary use
  - Provision of clinical care to patients and families

- Secondary uses
  - Research
  - Public health surveillance
  - Service management / improvement
  - Service planning / policy development
  - Allocation of funds
  - Performance monitoring
  - Public accountability

**NSW** GOVERNMENT | **Health**

# Performance Indicators

- Operate at different levels – National, State, Local Health Districts/Networks, individual facility, clinical unit
  - Ideally, should be aligned (but that is often not the case)

- Types of indicators:
  - **Input** indicators (e.g. Beds, FTEs, dollars)
  - **Process** indicators (e.g. Transfer of Care, NEAT, NEST)
  - **Output** indicators (e.g. Volumes of activity, $ per NWAU)
  - **Quality** indicators (e.g. Adverse events, Hospital Acquired Infections, Preventable admissions)
  - **Outcome** indicators (e.g. Mortality, Cancer survival rates, MH functional improvement measures)

**NSW GOVERNMENT | Health**

# Uses of Performance Data

- MOH and LHD level service planning (where to direct resources)

- MOH and LHD level performance monitoring and management (identify and address performance issues)

- Public performance reporting
  - National agencies (AIHW, NHPA, COAG Reform Council, Productivity Commission)
  - State agencies (BHI, CEC, MOH)

- Statistical reporting
  - Health Statistics NSW
  - Australian Bureau of Statistics

**NSW GOVERNMENT** | **Health**

# Examples – useful web sites

- Health Statistics NSW
  - http://www.healthstats.nsw.gov.au/

- Australian Institute of Health and Welfare
  - http://www.aihw.gov.au/data/

- National Health Performance Authority
  - http://www.nhpa.gov.au

- Cancer Institute NSW
  - http://www.cancerinstitute.org.au/data-and-statistics/cancer-statistics/online-statistics-module

- Bureau of Health Information
  - http://www.bhi.nsw.gov.au/

- Clinical Excellence Commission
  - http://www.cec.health.nsw.gov.au/publications

NSW GOVERNMENT | Health

# Examples – Ministry perspective

- Performance monitoring (internal to the system)
    - Mainly focussed on KPIs and service measures contained in LHD/SHN Service Agreements

## 2   Service Access and Patient Flow
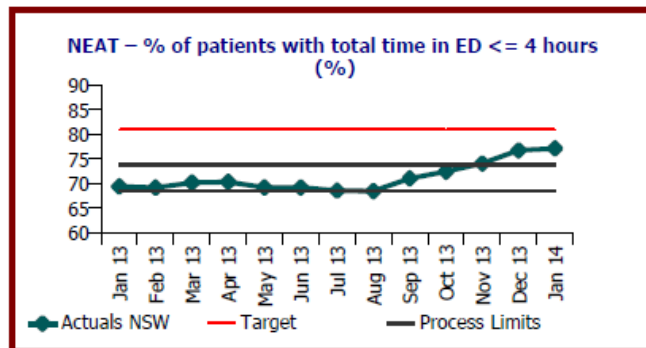
### 9B1   Transfer of Care (< 30 minutes) (%)

| YTD Result Jan 2014 | Target/ Benchmark | Variance | % Variance |
|---|---|---|---|
| 82.8% | >=90% | -7.2 | -8.0 |
| | Same Period LY | Variance | % Variance |
| | 77.3% | 5.5 | 7.1 |

Note: There was a scheduled Ambulance CAD Outage between 22:00 19/12/2013 and 05:00 20/12/2013. During this time there was no data captured on Ambulance presentations to Hospital ED's
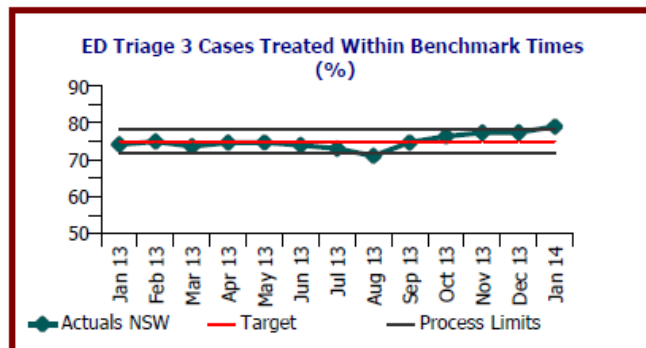
**Transfer of Care (< 30 minutes) (%)**

Actuals NSW    — Target    — Process Limits
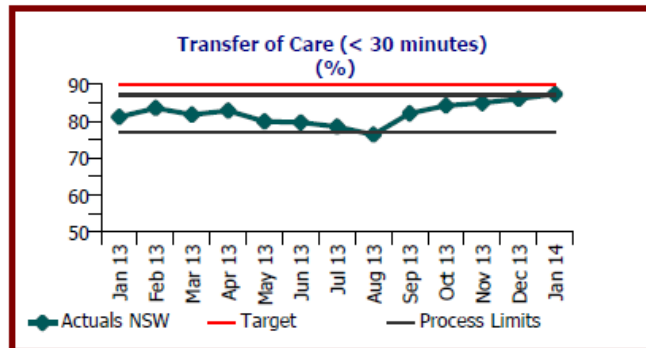
### 9B3   NEAT – % of patients with total time in ED <= 4 hours (%)

| CAL YTD Result Jan 2014 | Target/ Benchmark | Variance | % Variance |
|---|---|---|---|
| 77.1% | >= 81% | -3.9 | -4.8 |
| | Same Period LY | Variance | % Variance |
| | 64.9% | 12.2 | 18.8 |

**NEAT – % of patients with total time in ED <= 4 hours (%)**

Actuals NSW    — Target    — Process Limits

### 9B2   ED Triage 3 Cases Treated Within Benchmark Times (%)

| YTD Result Jan 2014 | Target/ Benchmark | Variance | % Variance |
|---|---|---|---|
| 75.5% | >=75% | 0.5 | 0.7 |
| | Same Period LY | Variance | % Variance |
| | 71.2% | 4.3 | 6.1 |

**ED Triage 3 Cases Treated Within Benchmark Times (%)**

Actuals NSW    — Target    — Process Limits
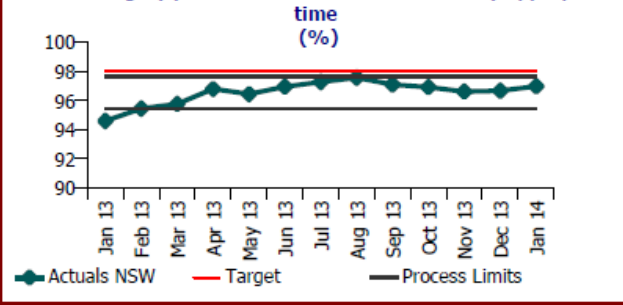
**Health**

**Elective surgery patients admitted within clinically appropriate time (%)**

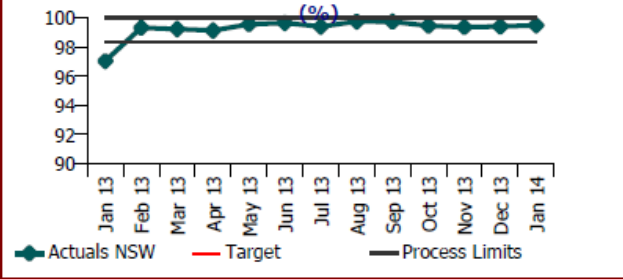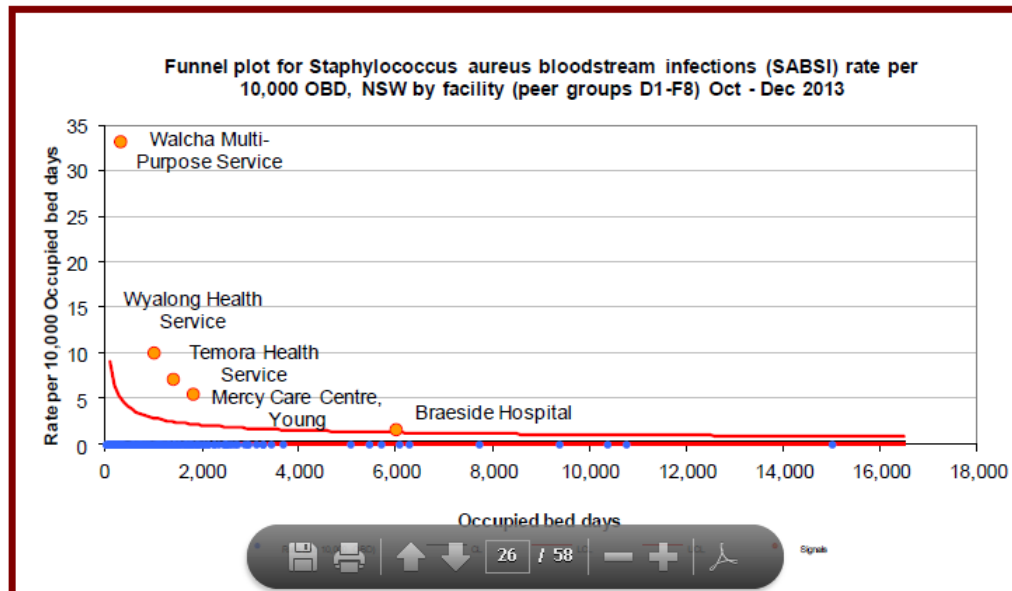| CAL YTD Result Jan 2014 | Target/ Benchmark | Variance | % Variance |
|---|---|---|---|
| | 98 | -1.0 | -1.1 |
| 97% | Same Period LY | Variance | % Variance |
| | 94.6% | 2.4 | 2.5 |

Note: .



Elective surgery patients admitted within clinically appropriate time (%)
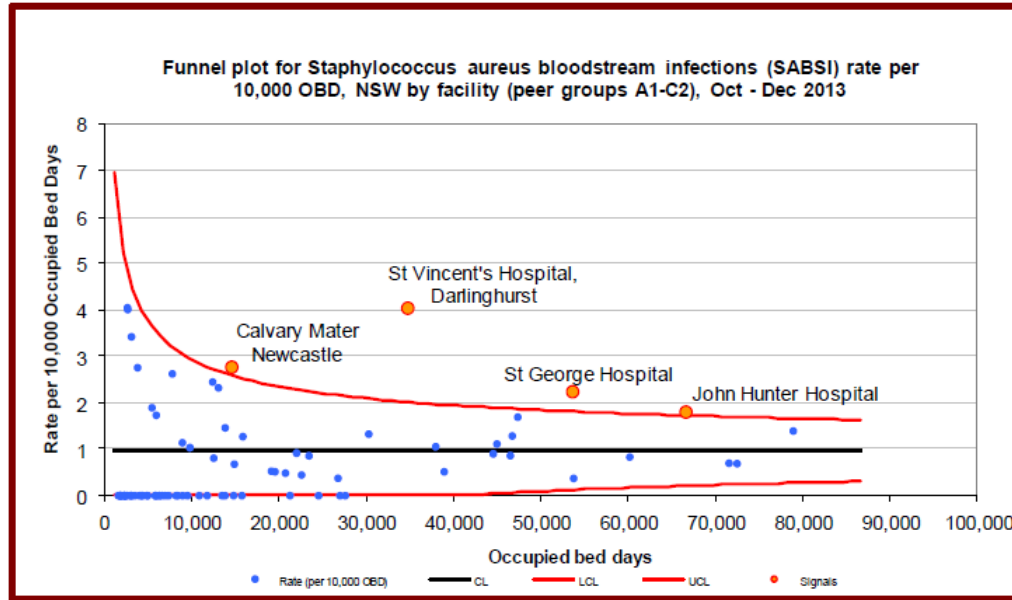
**Category 1 elective surgery patients admitted within clinically appropriate time (%)**

| CAL YTD Result Jan 2014 | Target/ Benchmark | Variance | % Variance |
|---|---|---|---|
| | 100 | -0.5 | -0.5 |
| 99.5% | Same Period LY | Variance | % Variance |
| | 97.0% | 2.4 | 2.5 |



Category 1 elective surgery patients admitted within clinically appropriate time (%)

**Category 2 elective surgery patients admitted within clinically appropriate time (%)**

| CAL YTD Result Jan 2014 | Target/ Benchmark | Variance | % Variance |
|---|---|---|---|
| | 97 | 0.1 | 0.1 |
| 97.1% | Same Period LY | Variance | % Variance |
| | 94.1% | 3.0 | 3.2 |



Category 2 elective surgery patients admitted within clinically appropriate time (%)
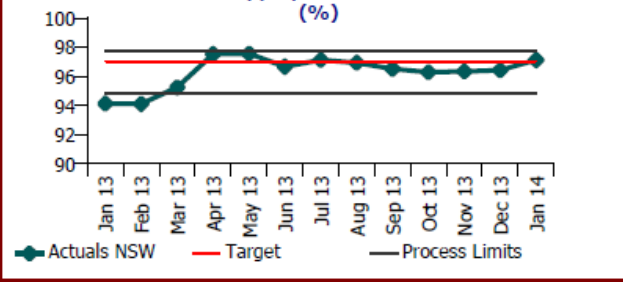
Health

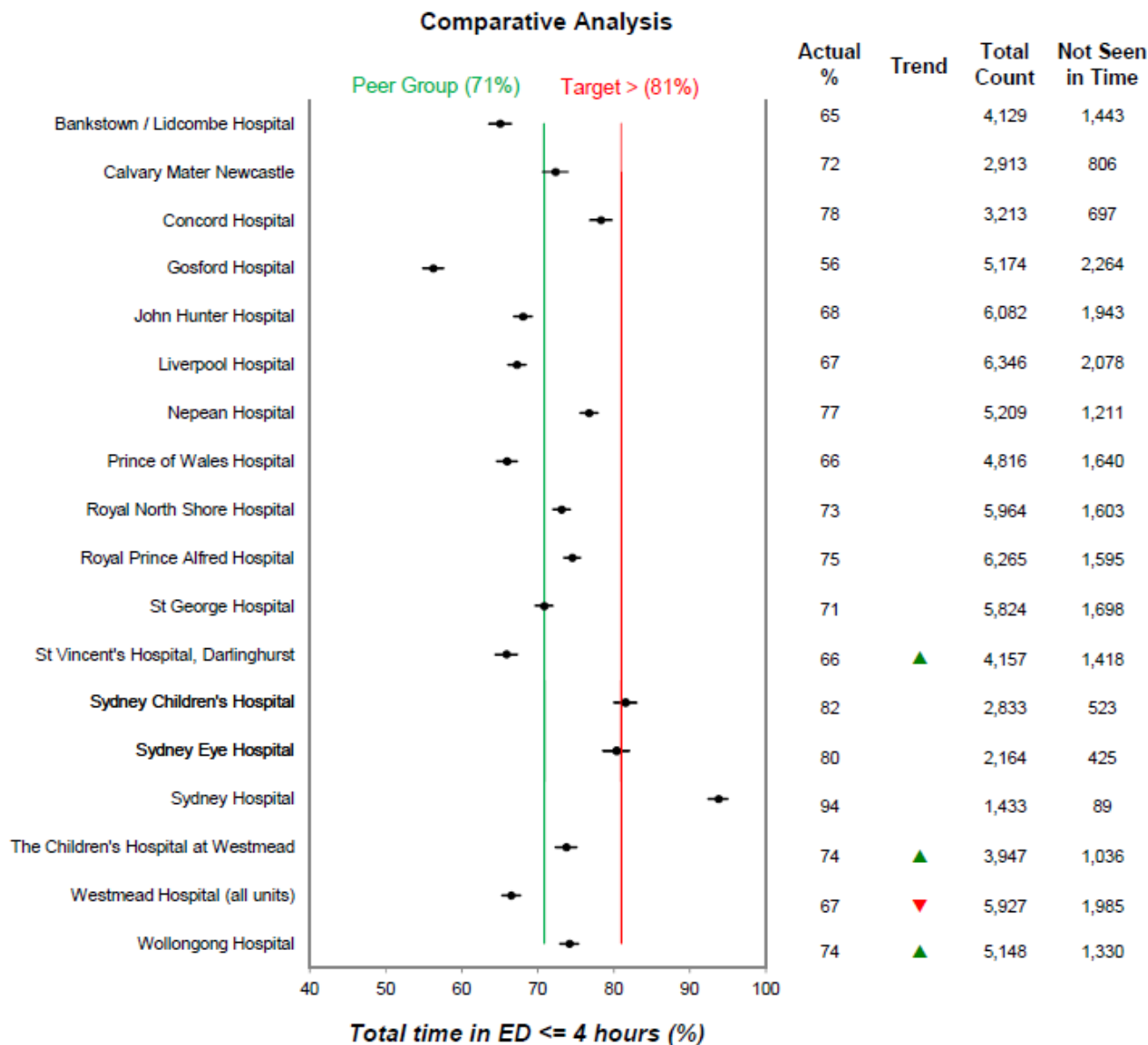### 9A15 Staphylococcus Aureus Bloodstream Infections (SABSI) Rate Per 10,000 OBD



Funnel plot for Staphylococcus aureus bloodstream infections (SABSI) rate per 10,000 OBD, NSW by facility (peer groups A1-C2), Oct - Dec 2013



Funnel plot for Staphylococcus aureus bloodstream infections (SABSI) rate per 10,000 OBD, NSW by facility (peer groups D1-F8) Oct - Dec 2013

# Examples – Ministry perspective

- **Performance monitoring (internal to the system)**
  - Mainly focussed on KPIs and service measures contained in LHD/SHN Service Agreements

- **Benchmarking**
  - Comparative analysis of performance by peer group

**2    Service Access and Patient Flow**

## NEAT – % of patients with total time in ED <= 4 hours - Peer Group A

### Comparative Analysis

Peer Group (71%)    Target > (81%)

| Hospital | Actual % | Trend | Total Count | Not Seen in Time |
|---|---|---|---|---|
| Bankstown / Lidcombe Hospital | 65 | | 4,129 | 1,443 |
| Calvary Mater Newcastle | 72 | | 2,913 | 806 |
| Concord Hospital | 78 | | 3,213 | 697 |
| Gosford Hospital | 56 | | 5,174 | 2,264 |
| John Hunter Hospital | 68 | | 6,082 | 1,943 |
| Liverpool Hospital | 67 | | 6,346 | 2,078 |
| Nepean Hospital | 77 | | 5,209 | 1,211 |
| Prince of Wales Hospital | 66 | | 4,816 | 1,640 |
| Royal North Shore Hospital | 73 | | 5,964 | 1,603 |
| Royal Prince Alfred Hospital | 75 | | 6,265 | 1,595 |
| St George Hospital | 71 | | 5,824 | 1,698 |
| St Vincent's Hospital, Darlinghurst | 66 | ▲ | 4,157 | 1,418 |
| Sydney Children's Hospital | 82 | | 2,833 | 523 |
| Sydney Eye Hospital | 80 | | 2,164 | 425 |
| Sydney Hospital | 94 | | 1,433 | 89 |
| The Children's Hospital at Westmead | 74 | ▲ | 3,947 | 1,036 |
| Westmead Hospital (all units) | 67 | ▼ | 5,927 | 1,985 |
| Wollongong Hospital | 74 | ▲ | 5,148 | 1,330 |

*Total time in ED <= 4 hours (%)*

Health

# ED Benchmarking Data on the MOH Intranet:

http://internal.health.nsw.gov.au/data/mtec/index.html

| DNW | Total Times | T1 Times | T2 Times | T3 Times | T4 Times | T5 Times | Representations |

**Time spent in ED**

**Liverpool Hospital (D209)**

Definitions:

**Total time in ED -** The total time from triage to departure from the ED

**Admitted -** Admitted to ward/inpatient unit, critical care ward (including HDU/CCU/NICU) or operating suite
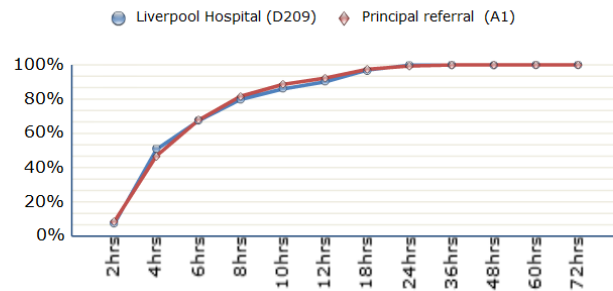
**Not Admitted -** All other modes of separation

**Cohort -** Persons that departed from an Emergency Department having received treatment within the specified time period

*Refer to ED data points pathway at http://www.ecinsw.com.au/NEAT-the-basics*

| Time (Hrs) | Adm | % Adm | Not Adm | % Not Adm | D209 Total | % D209 | % A1 Peer |
|---|---|---|---|---|---|---|---|
| <= 4 hrs | 1,288 | 50.6% | 3,078 | 77.4% | 4,366 | 66.9% | 66.6% |
| <= 6 hrs | 1,714 | 67.3% | 3,656 | 92.0% | 5,370 | 82.3% | 82.9% |
| <= 8 hrs | 2,031 | 79.7% | 3,852 | 96.9% | 5,883 | 90.2% | 91.0% |
| <= 12 hrs | 2,295 | 90.1% | 3,940 | 99.1% | 6,235 | 95.6% | 96.4% |
| <=24 hrs | 2,542 | 99.8% | 3,974 | 100.0% | 6,516 | 99.9% | 99.7% |
| <=72 hrs | 2,546 | 100.0% | 3,975 | 100.0% | 6,521 | 100.0% | 100.0% |
| Total | 2,547 | | 3,975 | | 6,522 | | |
| % of ED Adms | | 39.1% | | | | | |
| Hrs within 4hrs | 3,891 | | 7,195 | | 11,086 | | |
| Hrs over 4hrs | 11,196 | | 5,533 | | 16,729 | | |

Hospital list (left panel):
- Hornsby and Ku-Ring-Gai Hospi
- Inverell District Hospital
- Jerilderie Multi-Purpose Service
- John Hunter Hospital
- Junee Multi-Pupose Service
- Kempsey Hospital
- Kurri Kurri District Hospital
- Kyogle Multi-Purpose Service
- Lake Cargelligo Multi-Purpose S
- Leeton Health Service
- Lismore Base Hospital
- Lithgow Health Service
- Liverpool Hospital
- Lockhart Multi-Purpose Service
- Macksville District Hospital
- Maclean District Hospital
- Maitland Hospital
- Manilla Multi-Purpose Service
- Manly District Hospital
- Manning Base Hospital
- Merriwa Multi-Purpose Service
- Milton and Ulladulla Hospital
- Mona Vale and District Hospital
- Moree District Hospital

**Patients admitted to a ward/ICU/theatre from ED**

Liverpool Hospital (D209) — Principal referral (A1)

**Patients not admitted to an Inpatient Unit from ED**

Liverpool Hospital (D209) — Principal referral (A1)

# ED Benchmarking Data on the MOH Intranet:

http://internal.health.nsw.gov.au/data/mtec/index.html
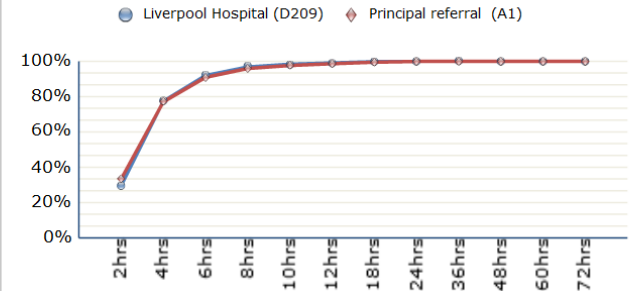
NSW Emergency Department - Admissions from ED - Peer Groups A to C    Reporting period: 01-July-2013    to    30-September-2013

**Definitions:**    Emergency Department Status - A patient who has during an episode been treated within an Emergency Department as well as within a ward within the same hospital ('2' ED role delineation 3 or above, '5' ED role delineation 1 or 2)

Care Type - '1' Acute Care or '5' Newborn

*Liverpool Hospital*

| Seps | Days |

| Days consumed by admissions fro... | Facility ALOS vs Peer ALOS | Projections |

- Gosford Hospital
- Goulburn Base Hospital
- Grafton Base Hospital
- Griffith Base Hospital
- Gunnedah District Hospital
- Hornsby and Ku-Ring-Gai Hospital
- Inverell District Hospital
- John Hunter Hospital
- Kempsey Hospital
- Lismore Base Hospital
- Lithgow Health Service
- Liverpool Hospital
- Macksville District Hospital
- Maclean District Hospital
- Maitland Hospital
- Manly District Hospital
- Manning Base Hospital
- Milton and Ulladulla Hospital
- Mona Vale and District Hospital
- Moree District Hospital
- Moruya District Hospital
- Mount Druitt Hospital
- Mudgee District Hospital

**Top 10 DRGs V6.0 by Days for patients Admitted from ED - Peer Comparison**
Principal referral

Schizophrenia Disorders (U61Z)
Major Affective Disorders (U63Z)
Trach W Vent >95 hours W/O Cat CC or Trach/Vent >95 hours W Cat CC (A06B)
Injuries W/O Catastrophic or Severe CC (X60B)
Septicaemia W Catastrophic CC (T60A)
Respiratory Infections/Inflammations W Catastrophic CC (E62A)
Other Digestive System Diagnoses W/O Catastrophic or Severe CC (G70B)
Chronic Obstructive Airways Disease W/O Catastrophic CC (E65B)
Dementia and Other Chronic Disturbances of Cerebral Function (B63Z)
Heart Failure and Shock W/O Catastrophic CC (F62B)

0.0    20.0    40.0    60.0    80.0    100.0    120.0    140.0

Days

Key:    Facility ALOS    Peer ALOS    Upper confidence level

Report generated:    29th January, 2014

NSW GOVERNMENT | Health

# ABF Benchmarking – 2011-2012 Average Cost per NWAU (13) By Facility
## For Acute, ED encounters and Principal Referral Hospital

# Top 10 DRG Report
## Order by Average Cost per NWAU (13)

# Top 10 URG Report
## Order by Average Cost per NWAU (13)

# Examples – Ministry perspective

- Performance monitoring (internal to the system)
  - Mainly focussed on KPIs and service measures contained in LHD/SHN Service Agreements

- Benchmarking
  - Comparative analysis of performance by peer group

- Service planning
  - Activity trend analysis (important in the Activity Based Funding environment)

- Public health surveillance
  - Emergency Department and Ambulance Surveillance System

# Emergency Department & Ambulance Surveillance System



Figure 4. Total weekly counts of Emergency Department presentations for any respiratory illness, for 2014 (black line), compared with each of the 5 previous years (coloured lines), *persons of all ages*, for 59 NSW hospitals.
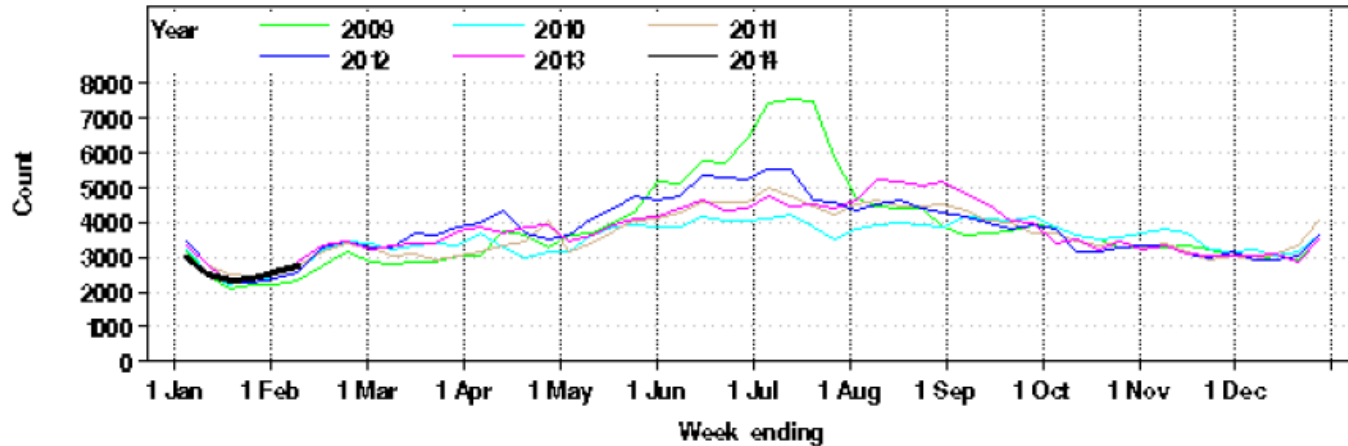
Figure 5. Total weekly counts of Emergency Department presentations for influenza-like illness, for 2014 (black line), compared with each of the five previous years (coloured lines) excluding 2009, *persons of all ages*, for 59 NSW hospitals.
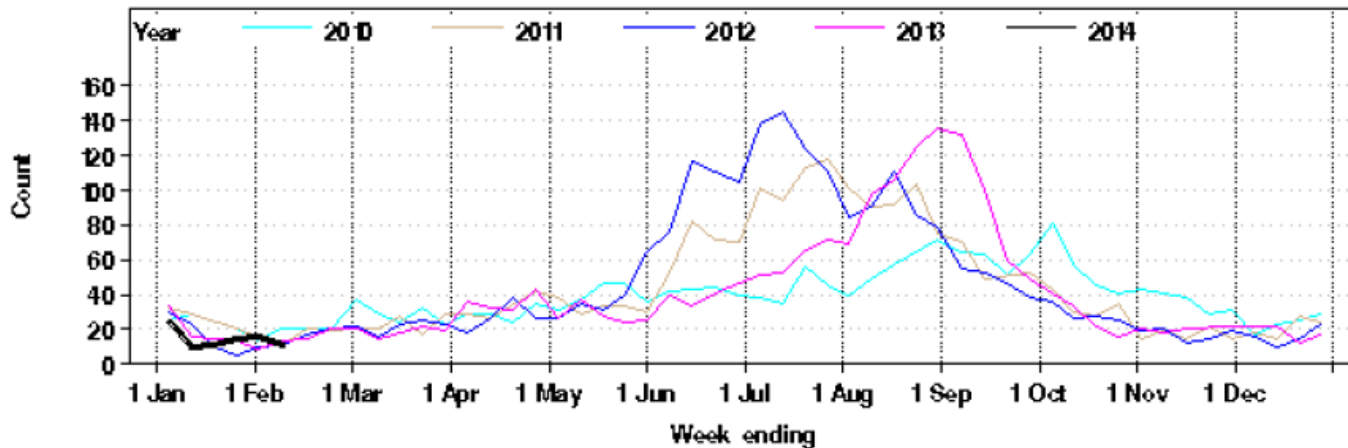
Health

# Examples – Ministry perspective

- **Performance monitoring (internal to the system)**
  - Mainly focussed on KPIs and service measures contained in LHD/SHN Service Agreements

- **Benchmarking**
  - Comparative analysis of performance by peer group

- **Service planning**
  - Trend analysis (important in the Activity Based Funding environment)

- **Public health surveillance**
  - Emergency Department and Ambulance Surveillance System

- **(Near) Real time analytics**
  - Patient Flow Portal
  - EDWARD reporting

# Patient Flow Portal* Predictive Tool

**Demand and Capacity: Prediction Mode (Sutherland Hospital)**  Last Refreshed: 07-11-2012 13:29

| *Prediction data only applies to ED accessible wards* | Wed 07/11/12 | Thu 08/11/12 | Fri 09/11/12 | Sat 10/11/12 | Sun 11/11/12 | Mon 12/11/12 | Tue 13/11/12 | Wed 14/11/12 | Thu 15/11/12 | Fri 16/11/12 | Sat 17/11/12 | Sun 18/11/12 | Mon 19/11/12 | Tue 20/11/12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Predicted total beds AVAILABLE | 50 | 40 | 47 | 16 | 12 | 39 | 40 | 39 | 40 | 47 | 16 | 12 | 39 | 40 |
| Predicted total beds REQUIRED | 41 | 43 | 34 | 28 | 30 | 43 | 40 | 37 | 33 | 31 | 28 | 29 | 39 | 43 |
| **BED DEMAND STATUS** | 9 | -3 | 13 | -12 | -18 | -4 | 0 | 2 | 7 | 16 | -12 | -17 | 0 | -3 |
| Total ED accessible beds | 224 | 224 | 224 | 224 | 224 | 224 | 224 | 224 | 224 | 224 | 224 | 224 | 224 | 224 |
| | Notes | Notes | Notes | Notes | Notes | Notes | Notes | Notes | Notes | Notes | Notes | Notes | Notes | Notes |
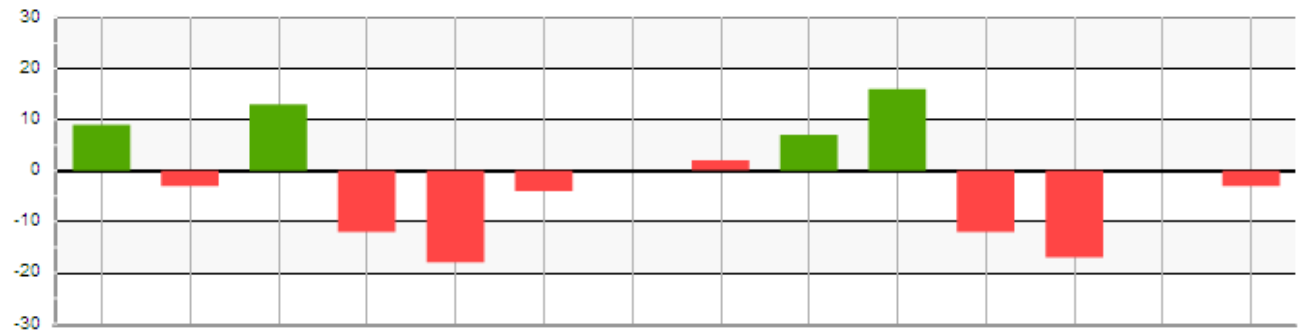


\* Request access to the PFP via:  pfp.healthtech.nswhealth.net

NSW GOVERNMENT | Health

# EDWARD – Operating Theatre – Scorecard

**ORGANISATION PERSPECTIVE**

## Service Agreement Measures

**NSW GOVERNMENT | Health**

ABC Local Health District — Infonatio

Source System Extract Date 25/09/13 | Provisioning refresh date 26/09/13      ✓ On or Above   ✗ Below   Oct 2013

**Scorecard** | Supporting Metrics

| | Date Actual | Date Target | This Week Actual | This Week Target | Month to Date Actual | Month to Date Target | Year to Date Actual | Year to Date Target | YTD Trend |
|---|---|---|---|---|---|---|---|---|---|
| **WAIT LIST FOR ELECTIVE SURGERY** Trends | | | | | | | | | |
| All Patients on List Not Ready for Care | | | | | | | 2% | 10% | |
| Deferred Patients on List Not Ready for Care | | | | | | | 1% | 5% | |
| Elective Surgery Activity | | | -7% | 0% | -7% ✗ | 0% | -7% ✗ | 0% | |
| Overdue Patients on List Cat 1 | | | | | | | 3 | 0 | |
| Overdue Patients on List Cat 2 | | | | | | | 7 | 0 | |
| Overdue Patients on List Cat 3 | | | | | | | 5 | 0 | |
| Patients Admitted Within Clinically Appropriate Time Cat 1 | 17% | 100% | 17% | 100% | 17% ✗ | 100% | 17% ✗ | 100% | |
| Patients Admitted Within Clinically Appropriate Time Cat 2 | 17% | 93% | 17% | 93% | 17% ✗ | 93% | 17% ✗ | 93% | |
| Patients Admitted Within Clinically Appropriate Time Cat 3 | 19% | 95% | 19% | 95% | 19% ✗ | 95% | 19% ✗ | 95% | |
| Wait List Turnover Ratio | | | 16% | 100% | 16% ✗ | 100% | 15% ✗ | 100% | |
| **EMERGENCY DEPARTMENT** Trends | | | | | | | | | |
| Emergency Admission Performance within 8 hours | 56% | 80% | 79% | 80% | 79% | 80% | 82% | 80% | |
| Mental Health Presentations Staying in ED > 24 hours | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Presentations Admitted to Ward/ICU/Operating Theatre | 70% | 0% | 89% | 0% | 89% ✓ | 0% | 91% ✓ | 0% | |
| Presentations Admitted, Referred or Discharged within 4 hours | 77% | 76% | 90% | 76% | 90% ✓ | 76% | 90% ✓ | 76% | |
| Presentations Staying in ED > 24 hours | 0 | 0 | 2 | 0 | 2 ✓ | 0 | 12 ✓ | 0 | |
| Presentations Triage 1 treated within benchmark | 6% | 100% | 94% | 100% | 94% | 100% | 94% | 100% | |
| Presentations Triage 2 treated within benchmark | 35% | 80% | 87% | 80% | 87% | 80% | 87% | 80% | |
| Presentations Triage 3 | | | | | 75% | 87% ✓ | 75% | 86% ✓ | 75% | |
| Presentations Triage 4 | | | | | 70% | 89% ✓ | 70% | 89% ✓ | 70% | |
| Presentations Triage 5 | | | | | 70% | 97% ✓ | 70% | 97% ✓ | 70% | |
| Unplanned and emergency re-presentations to | | | | | 0% | 5% ✓ | 0% | 5% ✓ | 0% | |
| **OPERATING THEATRE** Trends | | | | | | | | | |
| Elective Surgery Cancellations on Day of Surgery | 56% | 80% | 79% | 80% | 79% | 80% | 82% | 80% | |
| Elective Surgery Day of Surgery Admissions | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Elective Theatre Sessions Theatre Utilisation | 70% | 0% | 89% | 0% | 89% ✓ | 0% | 91% ✓ | 0% | |
| Emergency Surgery Access Priority Cat 1 | 77% | 76% | 90% | 76% | 90% ✓ | 76% | 90% ✓ | 76% | |
| Emergency Surgery Access Priority Cat 2 | 0 | 0 | 2 | 0 | 2 ✓ | 0 | 12 ✓ | 0 | |
| Emergency Surgery Access Priority Cat 3 | 6% | 100% | 94% | 100% | 94% | 100% | 94% | 100% | |
| Emergency Surgery Access Priority Cat 4 | 35% | 80% | 87% | 80% | 87% | 80% | 87% | 80% | |
| Emergency Surgery Access Priority Cat 5 | 55% | 75% | 87% | 75% | 87% ✓ | 75% | 86% ✓ | 75% | |
| Emergency Surgery Access Priority Cat 6 | 72% | 70% | 89% | 70% | 89% ✓ | 70% | 89% ✓ | 70% | |
| First Case on Time Theatre Performance (Elective) | 70% | 70% | 97% | 70% | 97% ✓ | 70% | 97% ✓ | 70% | |
| Number of Theatre Attendances | 3% | 0% | 5% | 0% | 5% ✓ | 0% | 5% ✓ | 0% | |

**OT KPI Scorecard**

Produced by Infonatio Reporting ©2013  |  Send any comments or questions regarding this report to infonatio Support

# WARD – Operating Theatre – Summary Dashboard

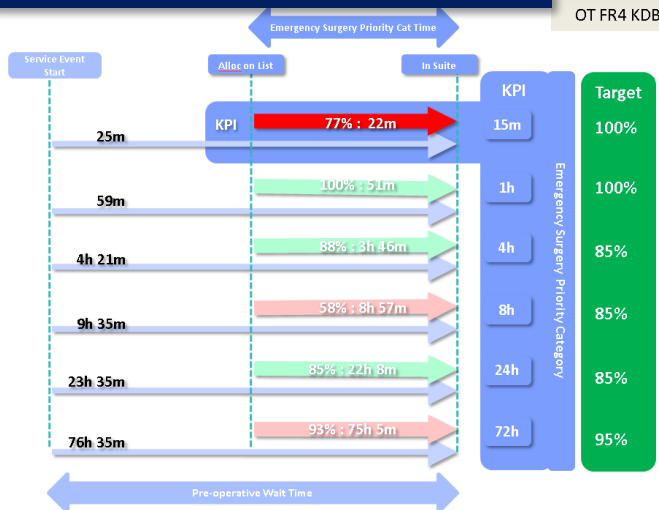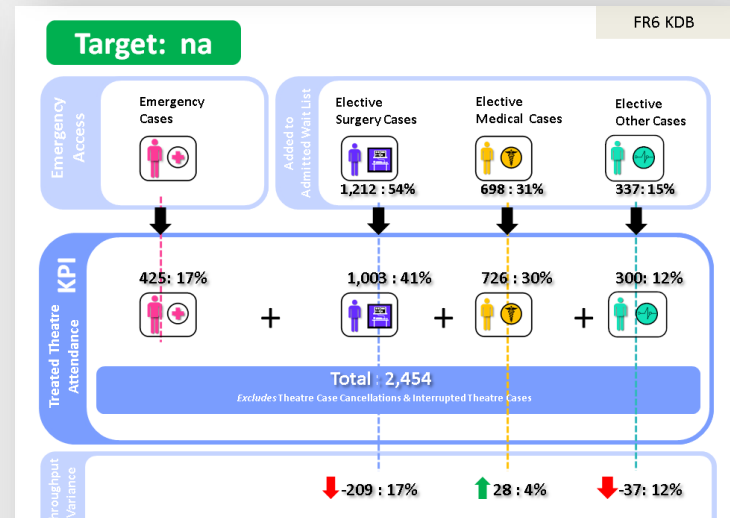**Elective Surgery Cancellations on Day of Surgery**



**Elective Theatre Sessions Theatre Utilisation**



**Emergency Surgery Access Priority 1 - 6**



**Number of Theatre Attendances**

EBI Program

# Health Record Linkage

- The bringing together, from two or more different sources, of health-related data that relate to the same individual, family, place or event

- Designed to overcome the limitations of traditional data collection silos

- Offers opportunity to link with non-health data sets

- Provides an integrated view of 'patient's journey'

- Enables analysis of outcomes

# Centre for Health Record Linkage

- Established in 2006

  – to create and sustain a record linkage infrastructure for the health and human services sector, and provide access to these resources to bona fide researchers and health planners and policy makers.

- Established by:

  – NSW Department of Health and the Cancer Institute NSW

  – ACT Health, NSW Clinical Excellence Commission, The Sax Institute, University of Newcastle, University of NSW, University of Sydney, and the University of Western Sydney.

- www.cherel.org.au

# The CHeReL does:

with data custodian and ethical approval:

- create a *master linkage key*, consisting of 'pointers' to records for specific people in health-related data sets
  - does not contain health information about individuals
- provide a mechanism for accessing linked data for:
  - research
  - planning of health services
  - evaluation of health services

… for the public benefit

# The CHeReL does not:

- hold health information other than that required for the record linkage

- have a "repository" of linked health data

- carry out data analysis or research on linked health data
  (**…** it does carry out research on methodological aspects of record linkage)

## CHeReL Master Linkage Key

**45.4 million** records
**9.3 million** people
**4.9** average links per person
**6,211,698** people with multiple records

## NSW

**Admitted Patient Data Collection**
July 2000 – June 2011
25,159,796 records

**Emergency Department Data Collection**
Jan 2005 – June 2011
12,663,863 records

**Perinatal Data Collection**
Jan 1994 – Dec 2010
1,524,048 records

**45 and Up Study**

267,174 records

**Central Cancer Registry**
Jan 1994 – Dec 2008
504,894 records

**RDBM Death Registrations**
Jan 1985 – Jun 2012
1,243,387 records

**RDBM Birth Registrations**
Jan 1994 – Dec 2010
1,522,948 records

**Notable Conditions Information System**
Jan 1993 – Dec 2008
421,870 records

**Perinatal Death Reviews**
Jan 2000 – Dec 2009
7,160 records

**ABS Mortality Data**
Jan 1985 – Dec 2007
1,020,798 records

ABS Perinatal Deaths
Jan 1994 – Dec 2005
9,445 recrods

## ACT

**Admitted Patient Collection (Canberra Hospital)**
July 2004 – June 2009
299,807 records

**Cancer Registry**
Jan 1994 – Dec 2008
17,723 records

**Emergency Department Information System (Canberra Hospital)**
July 2004 – June 2009
258,771 records

**ACT Perinatal Data Collection**
Jan 1997 – Dec 2008
24,246 records

NSW GOVERNMENT | Health

# Secure Unified Research Environment (SURE)

- Australia's first high-performance "virtual computing environment"

- Designed specifically for health researchers to:

  - securely access, store and rapidly analyse anonymised health information brought together from sources such as hospitals, cancer registries, clinical trials, general practice, and research studies.

- Funded by the DIISRTE, NSW Health and the (then) NSW Office for Science and Medical Research.

- Hosted by The Sax Institute

- For more information see www.sure.org.au

SURE

Secure Unified
Research Environment

# Future Directions

- **Analytics and reporting from EMR systems**
  - Near real-time
  - Down to clinical unit, patient group, treatment type

- **Further developments and deployment of EDWARD**
  - Improved reporting consistency (Facility LHD – State) and availability
  - Greater range of data sets, with ability for 'blended' analysis (eg. activity vs. cost vs. workforce vs. capacity)
  - 'Patient journey' analysis

- **Greater (and routine) use of linked data sets**
  - Outcomes measurement; predictive algorithms
  - Applicability to bioinformatics and genomic research

- **Advanced analytics and modelling**
  - Demand models, predictive capacity planning, process optimisation
  - Machine learning

- **Focus on data quality**
  - Data profiling and proactive management of data quality