

Inpatient Data and Reporting

MoH Examples and Areas of Development

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Health System Information and Performance Reporting Branch

- NSW Health is able to deliver best health outcomes and most advanced medical research outputs when it operates together as a 'whole of system'
- That is when all parts of the system and all organisations within it are able to work together, learn together and continuously improve what they do
- Our contribution to this is through:
 - Managing high quality state-wide data collections
 - Producing state-wide comparative performance reports
 - Adding value through statistical analysis of performance data

Inpatient Data

- Well developed, mature data collection (Admitted Patient Data Collection)
- Based on event-level data collected from hospitals' patient administration systems through automatic data extracts
- Stored in LHD and statewide data warehouses (Health Information Exchange, Enterprise Data Warehouse, SAPHARI)
- Widely used for planning, funding, performance reporting, research, public health surveillance etc.
- Useful public access resources:
 - <http://www.cherel.org.au/data-dictionaries>
 - <http://www.health.nsw.gov.au/hsnsw/>

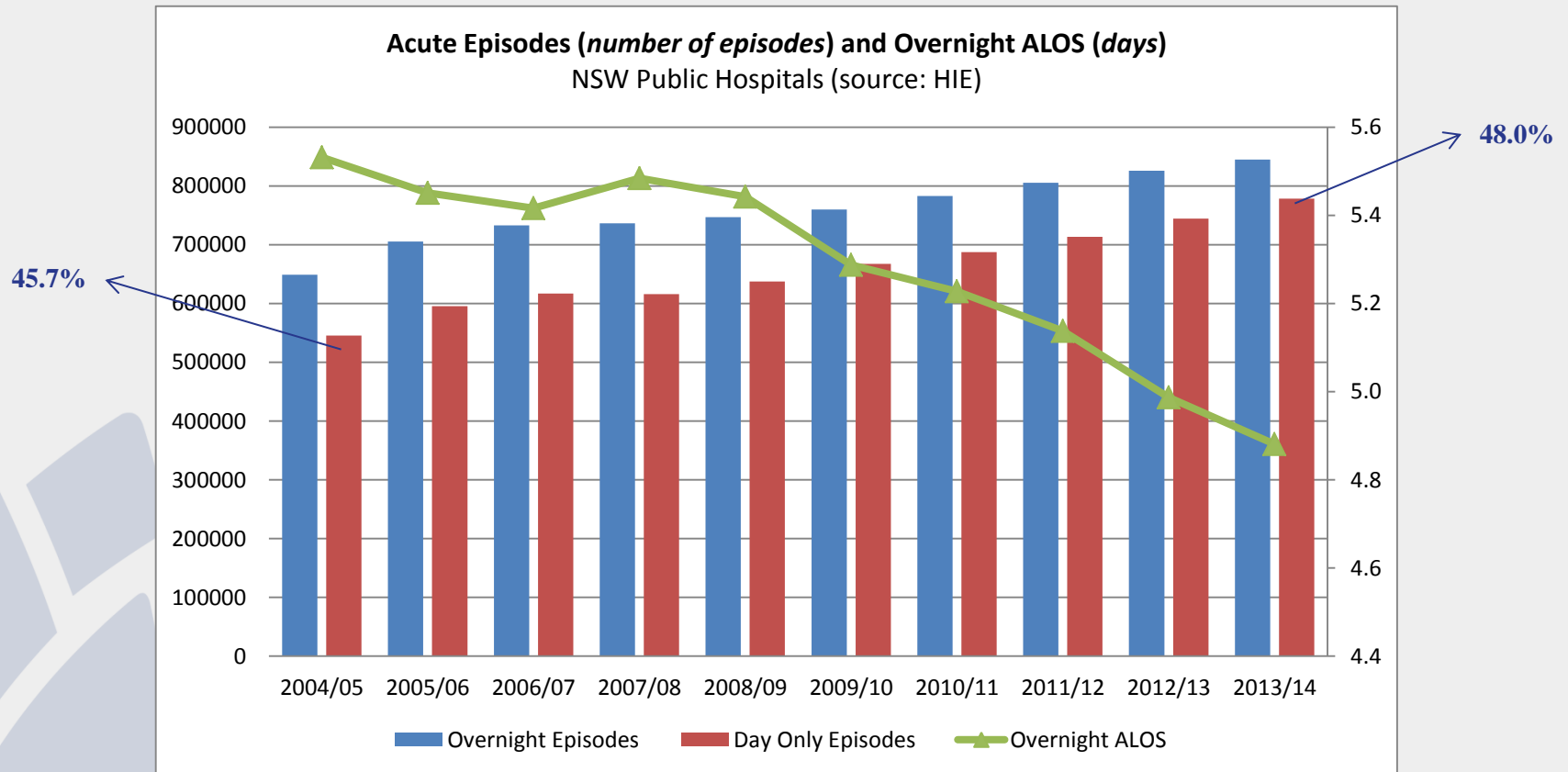
Inpatient Data (cont.)

- Usually analysed separately for:
 - Acute inpatients (excluding MH)
 - Subacute inpatients
 - Mental Health patients
- Four focus areas for HSIPR (Acute Inpatients):
 - Length of stay in hospitals
 - Unplanned readmissions to hospital
 - In-hospital mortality
 - High users of health services

Length of Stay

- 'Classic' performance indicator for inpatient services
- Widely used across the system
- Most common reporting methods:
 - Unadjusted ALOS by peer group, facility, specialty, DRG...
 - Adjusted for 'uncontrollable' factors to enable more meaningful comparison across hospitals

Length of Stay – Ten Year Trend



Length of Stay Reporting – Example 1

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

Features:

- Unadjusted average length of stay
- Compared to peer group average
- Focus on 'top 10 DRGs' admitted through EDs
- Updated quarterly
- Contact: Julie.Lieknins@doh.health.nsw.gov.au

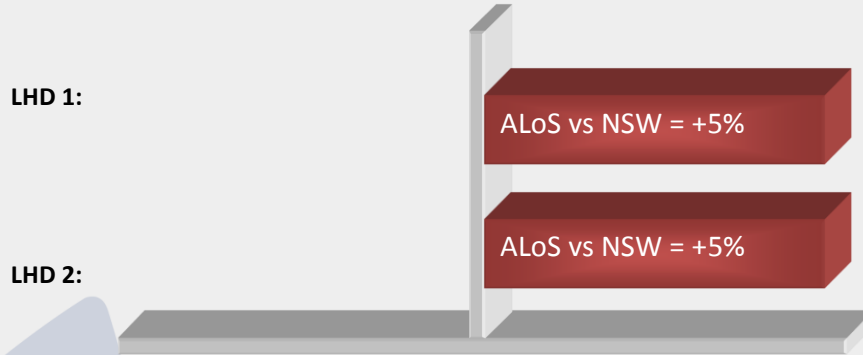
Length of Stay Reporting – Example 2

- Relative Stay Index – what is it?
 - Used in National reporting to compare length-of-stay performance
 - Methodology refined over more than 10 years
 - Adjusts length-of-stay results to remove the impact of patient characteristics which are largely ‘uncontrollable’
 - Adapted here for use in clinical environments

Adjusting for Uncontrollable Factors

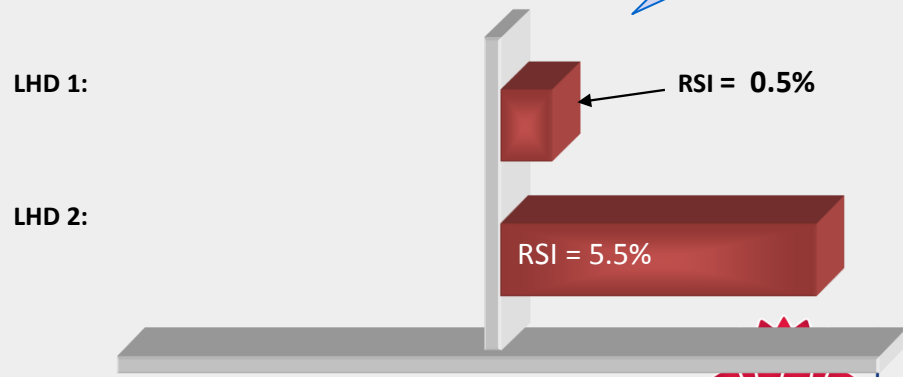
Hospital peer groups; DRG; Age groups; Admission urgency

Unadjusted Average Length of Stay – LHD



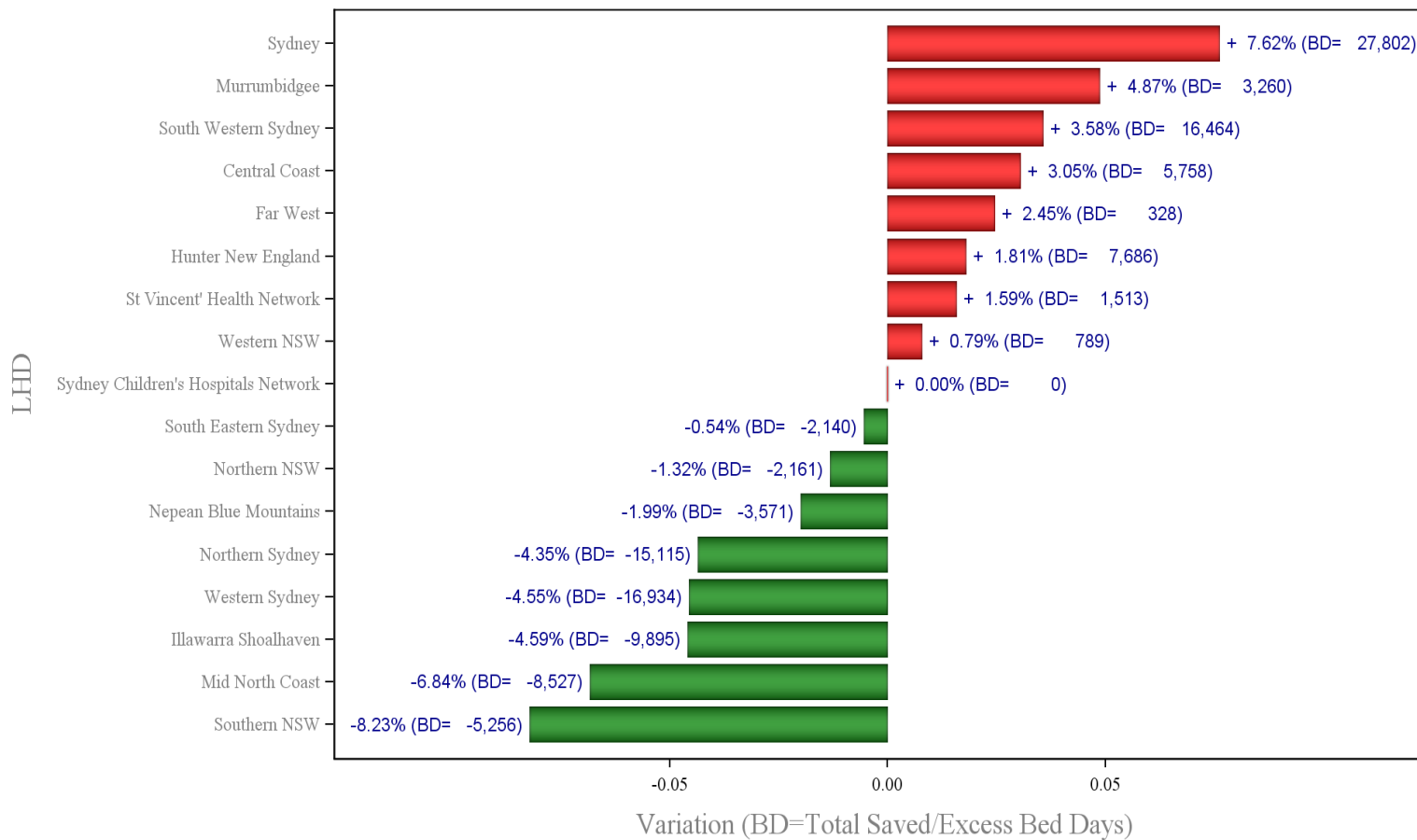
LHD 1 serves older patients

Adjusted Average Length of Stay

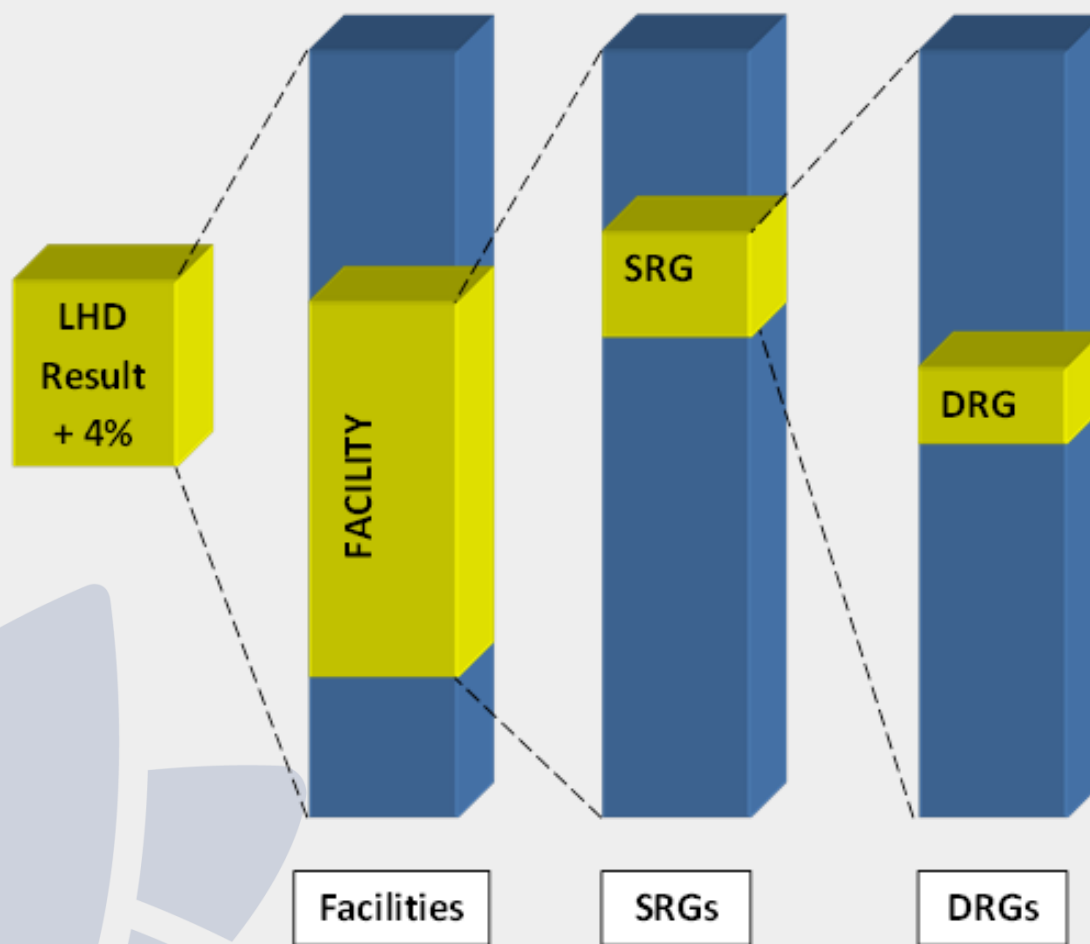


LHD Level Results

Average Length of Stay Variance
By LHD, 12 Months to March 2014



Report Structure – Drill Down

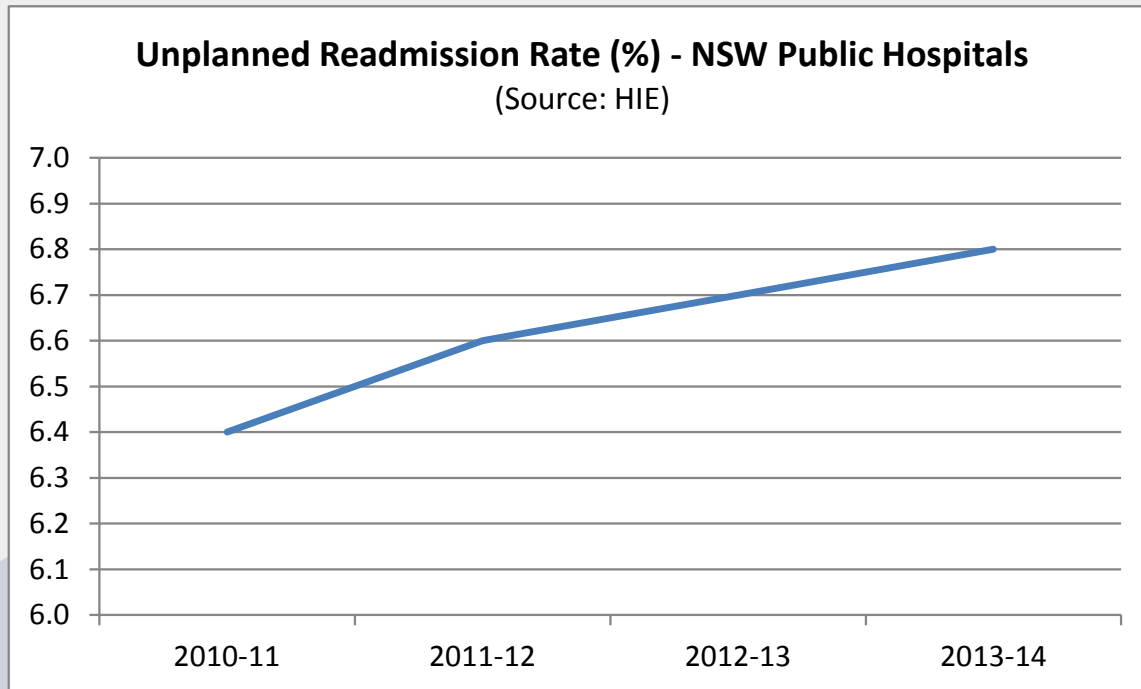


Relative Stay Index report

Features:

- Adjusted average length of stay
- Compared to state average
- Enables drill-down to facilities, SRGs and DRGs
- Updated quarterly (rolling 12-month periods)
- Distributed to LHDs via CE
- Contact: Ben.Smith@doh.health.nsw.gov.au

Unplanned Readmissions (within 28 days)

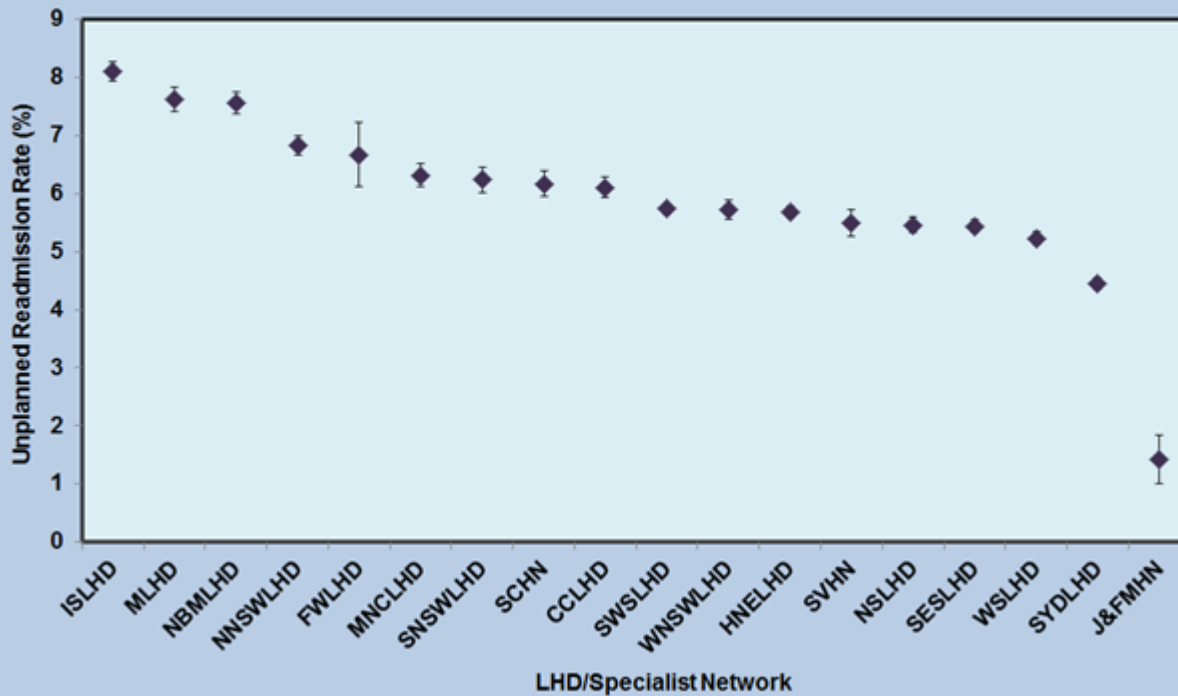


- In 2013-14, there were 78,000 readmissions within 28 days of the initial discharge from hospital

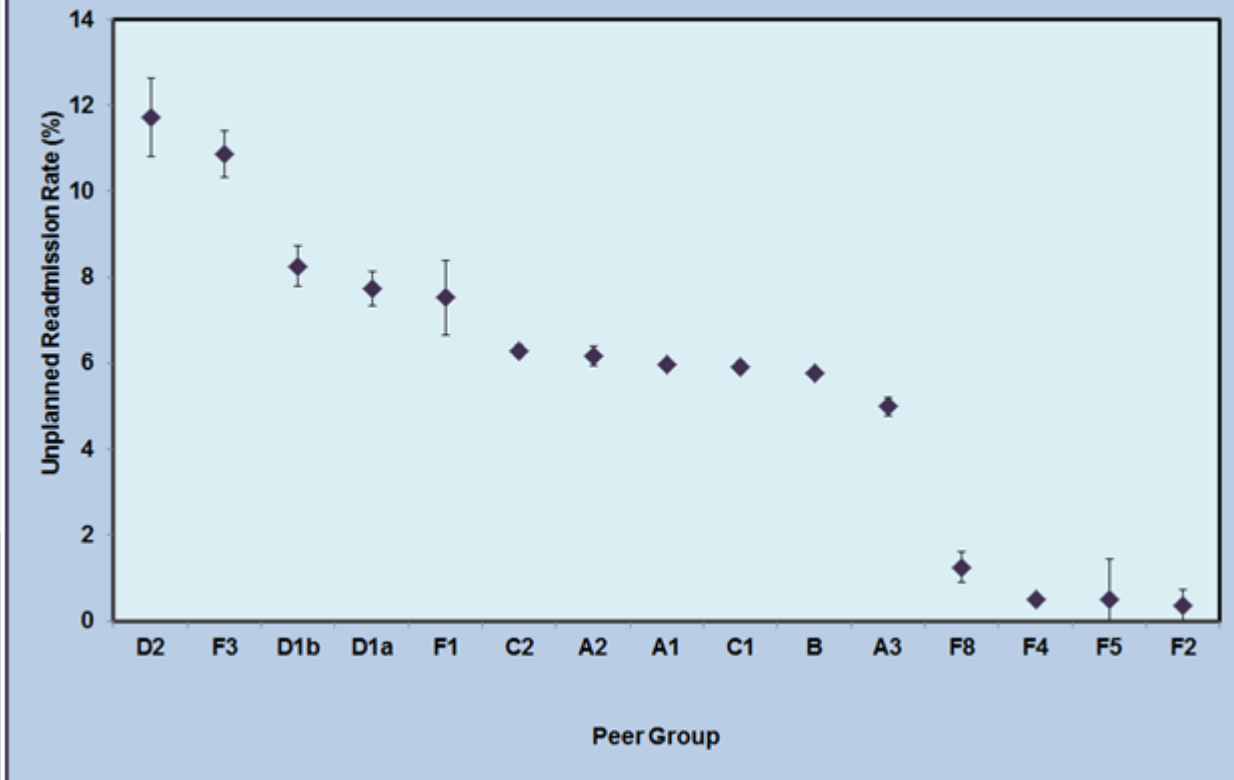
Unplanned Readmissions (within 28 days)

- Complex indicator, often misunderstood
- Only a portion of unplanned readmissions (<20%) could be considered to be result of inadequate/substandard care received during initial hospital stay
- Complex factors at play – chronic illness, follow-up care in the community, socio-economic factors etc.
- Rate increases with: age, comorbidities, rurality/remoteness, Aboriginality, socio-economic status
- Joint review under way with the CEC and a group of LHD Directors of Clinical Governance
- Contact: Kathy.Smith@doh.health.nsw.gov.au

Unplanned Readmission Rates,
by LHD/Specialist Network, NSW 2012-13

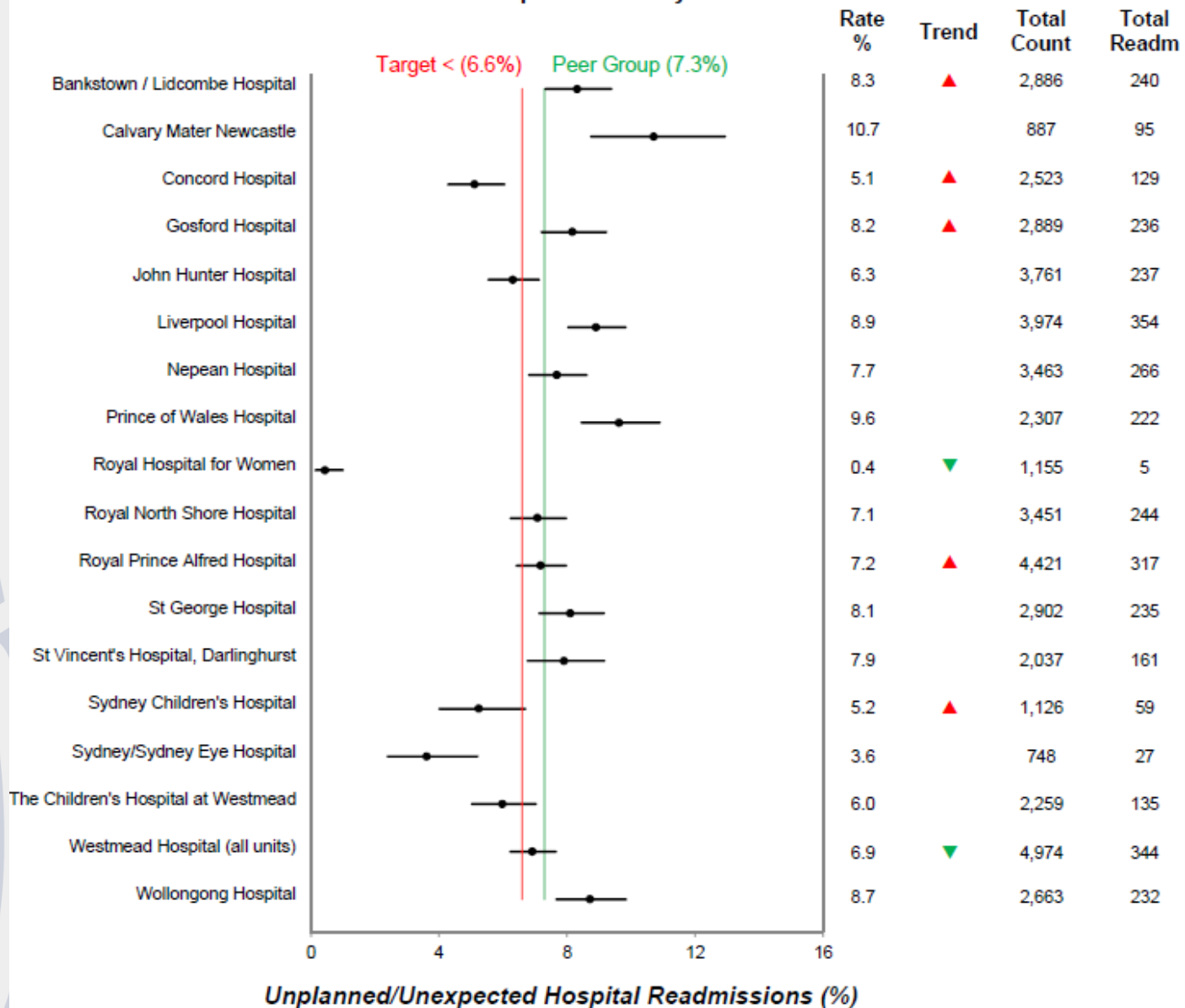


Unplanned Readmission Rates,
by Peer Group, NSW 2012-13

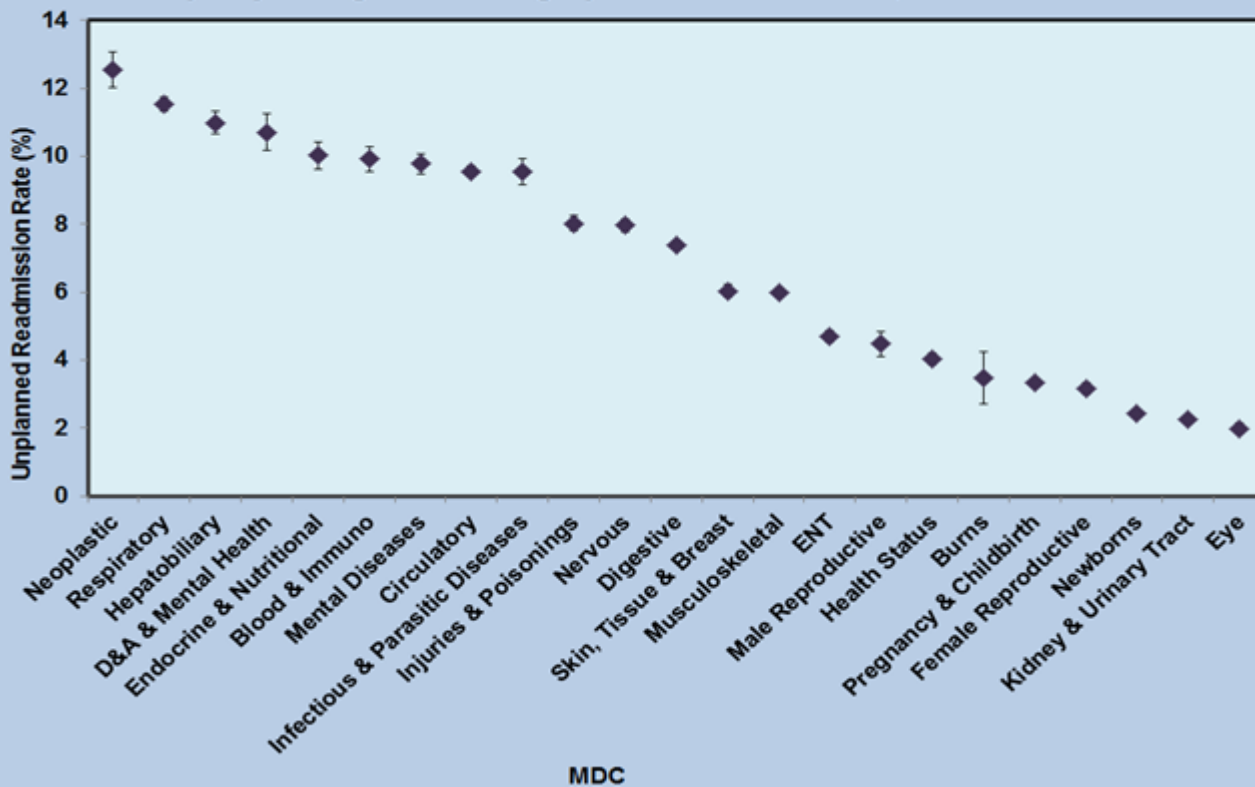


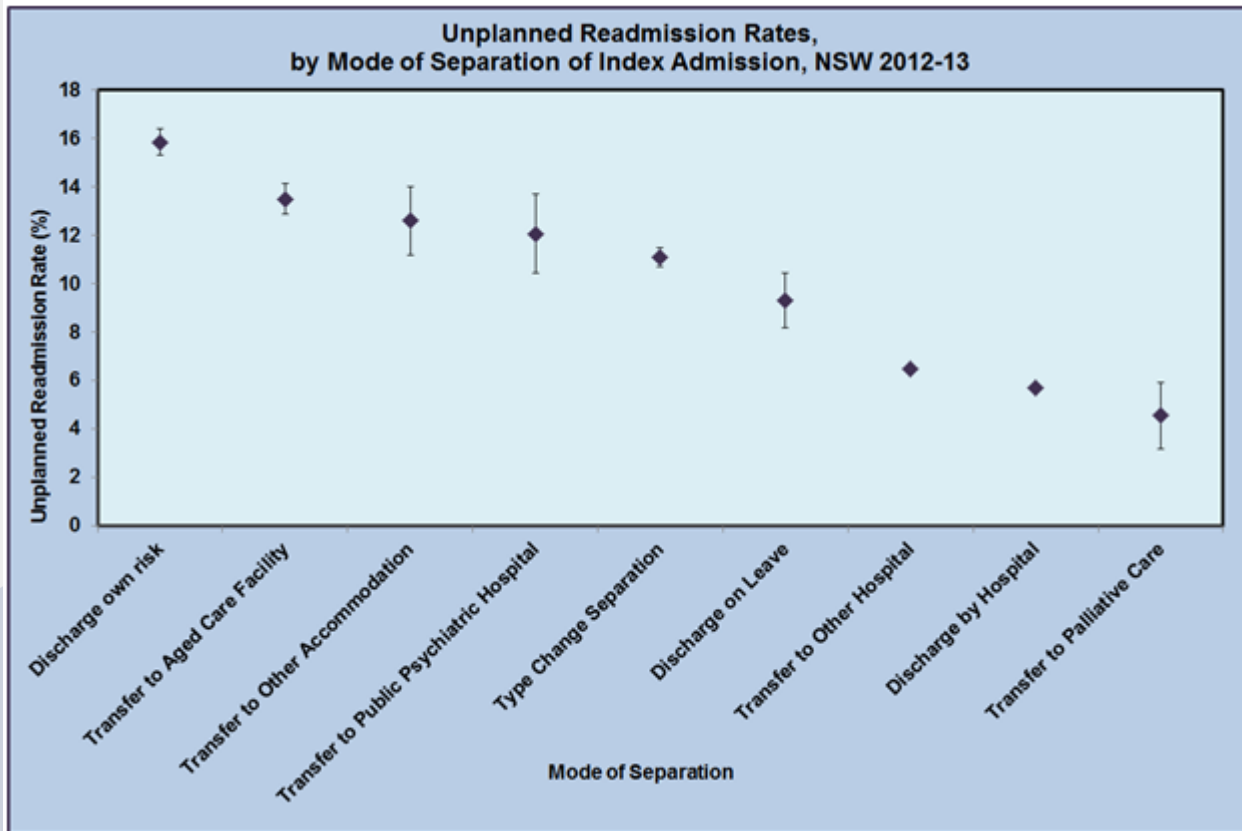
Unplanned Hospital Readmissions - All Admissions for Jun 2014 - Peer Group A

Comparative Analysis



Unplanned Readmission Rates,
by Major Diagnostic Category of Index Admission, NSW 2012-13

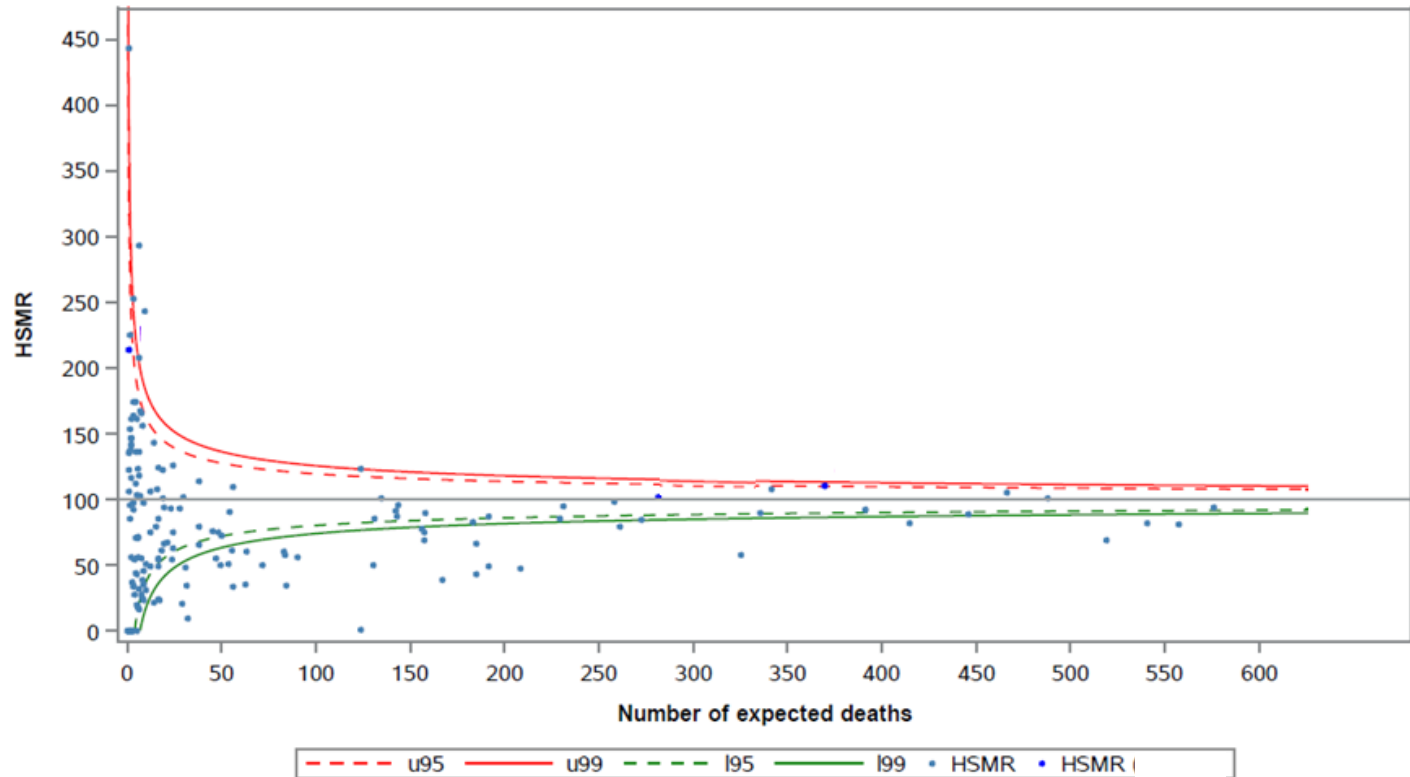




In-hospital Mortality (work in progress)

- Based on emerging national standards (Australian Commission for Safety and Quality in Healthcare)
- Used as flags for further exploration rather than definitive 'performance indicators'
- Three types of routine indicators:
 - Hospital Standardised Mortality Ratio (HSMR)
 - Deaths in Low Mortality Diagnostic Related Groups (DLMDRG)
 - Condition Specific Mortality Indicators
 - Acute Myocardial Infarction (AMI)
 - Stroke
 - Fractured neck of femur
 - Pneumonia
- Contact: Baohui.Yang@doh.health.nsw.gov.au

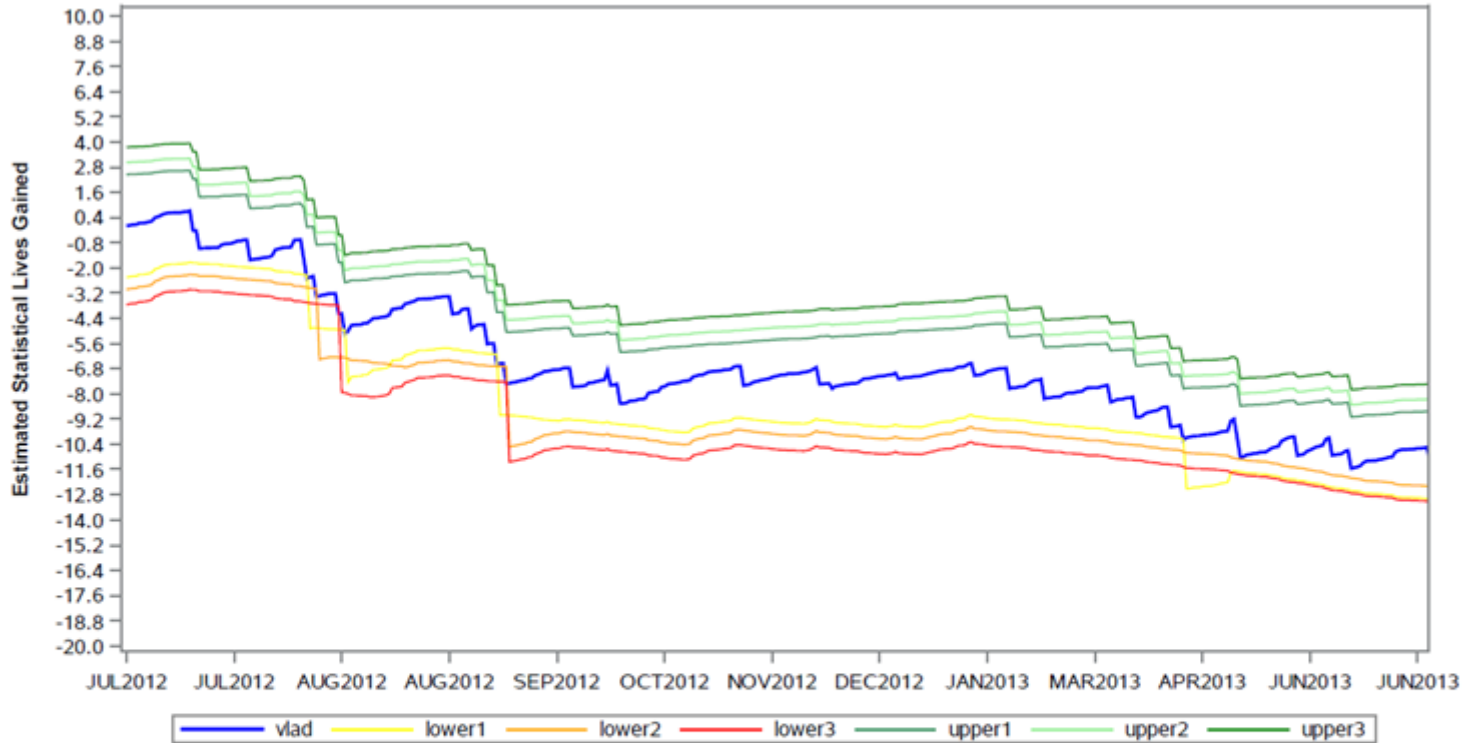
HSMR - hospitals in NSW



Hospitals with predicted deaths less than 0.2 are suppressed from the graph

Data source: HIE JUL2012 to JUN2013

VLAD for pneumonia in-hospital mortality -



Data source: HIE JUL2012 to JUN2013

Note

Number of Lower Level 1 flags: 4
 Lower Level 1 flags reached at: 04AUG2012, 10SEP2012, 13AUG2012, 20APR2013

Number of Lower Level 2 flags: 2
 Lower Level 2 flags reached at: 06AUG2012, 11SEP2012

(JUL2012 to JUN2013)

LHD	Hospitals	All separations	Low mortality separations	death	DLMDRG rate
		49986	18214		0.077

area_code	facility_name	stay	episode number	age	sex	start date	end date	DIAGP	PROCP	end date	an_drg	death
			1	77	1	30OCT2012	31OCT2012	K42.0	95550-01	31OCT2012	G70B	1
			1	71	1	21OCT2012	22OCT2012	R56.8		22OCT2012	B76B	1
			1	79	1	10SEP2012	18SEP2012	R04.0	95550-00	18SEP2012	D62Z	1
			1	87	1	16JUL2012	19JUL2012	K31.82	30473-00	19JUL2012	G47B	1
			1	85	1	16JUL2012	19JUL2012	N40	37203-00	19JUL2012	M02B	1
			1	89	1	19SEP2012	20SEP2012	K55.0		20SEP2012	G70B	1
			1	81	1	24OCT2012	25OCT2012	R10.0		25OCT2012	G66Z	1
			1	92	1	28APR2013	30APR2013	D58.9	13706-02	30APR2013	Q61B	1
			1	87	1	13JUN2013	14JUN2013	K55.0	95550-01	14JUN2013	G70B	1
			1	82	2	30JAN2013	07FEB2013	K56.5	30378-00	07FEB2013	G04B	1
			1	85	2	02MAR2013	06MAR2013	H16.3	42512-00	06MAR2013	C02Z	1
			1	83	2	27DEC2012	01JAN2013	N13.1	36624-00	01JAN2013	L04C	1
			1	83	1	22MAY2013	24MAY2013	G41.2	13882-00	24MAY2013	B76B	1
			1	91	2	26NOV2012	28NOV2012	K55.0	95550-01	28NOV2012	G70B	1

High Users of Health Services (1)

Methods

- Obtain a 'linked data set' which enables combined analysis of admitted patient and ED services
- Assign an NWAU value to each record and add up NWAUs for each individual patient
- Order the patients from highest total NWAU in a year to lowest total NWAU in a year
- Determine top 1% and to 5% cut off points
- Multiply NWAU values with the State price to provide an approximation of cost associated with the services provided to each patient
- Using detailed information contained in each patient record, break the 1% and 5% cohorts into subgroups to analyse demographic, geographic and clinical features of each group
- Notes:
 - 'Nursing home type' patients and 'ED only' admissions were excluded
 - Chemotherapy and renal dialysis patient were included
 - Justice Health was excluded

High Users of Health Services (2)

Preliminary Results (using 2011-12 data)

- The top 1% of acute hospital users account for 10% of the total Health Budget and equate to 16,596 patients
 - 45% are 65 years and over
 - 94% were admitted to hospital more than once
 - 8% have died in hospital
 - 58% are female
 - Top 10 SRGs (69%) – Tracheostomy, Acute Psychiatry, Orthopaedics, Vascular Surgery, Qualified Neonate, Haematology, Non Subspecialty Surgery, Respiratory Medicine, Non Subspecialty Medicine, Cardiothoracic Surgery
- The top 5% of acute hospital users account for 22% of the total Health Budget and equate to 82,982 patients
 - 54% are 65 years and over
 - 91% were admitted to hospital more than once
 - 6% have died in hospital
 - 53% are female
 - Top 10 SRGs (64%) - Orthopaedics, Acute Psychiatry, Respiratory Medicine, Non Subspecialty Medicine, Neurosurgery, Colorectal Surgery, Cardiothoracic Surgery, Vascular Surgery, Tracheostomy, Non Subspecialty Surgery

Summary

- Inpatient data is routinely collected, rich and widely used, locally and state-wide
- New 'data visualisation tools' are making the data more readily available to clinicians
- Statewide comparative reporting and statistical analysis can generate new insights and point to areas for local investigation and action as well as statewide policy/program development
- MoH performance reporting tends to focus on activity, efficiency (e.g. length of stay), quality (e.g. unplanned readmissions, mortality) and service use (e.g. high users)
- Feedback and ideas are welcome:

Zoran.Bolevich@doh.health.nsw.gov.au