

Activity Based Funding Conference 2015

Workshop Two: Explaining the National Efficient Price

27 May 2015

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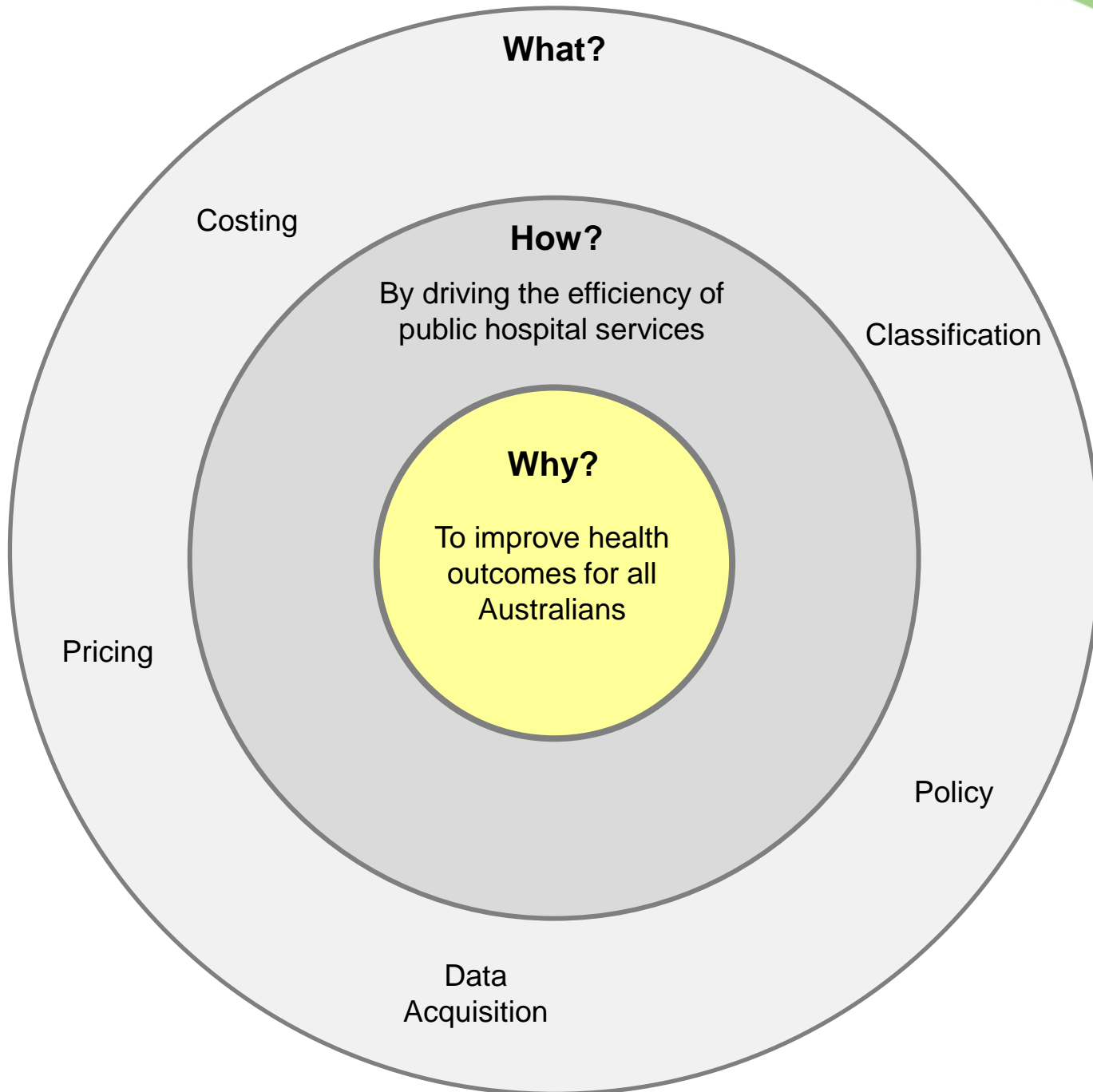
Workshop Overview

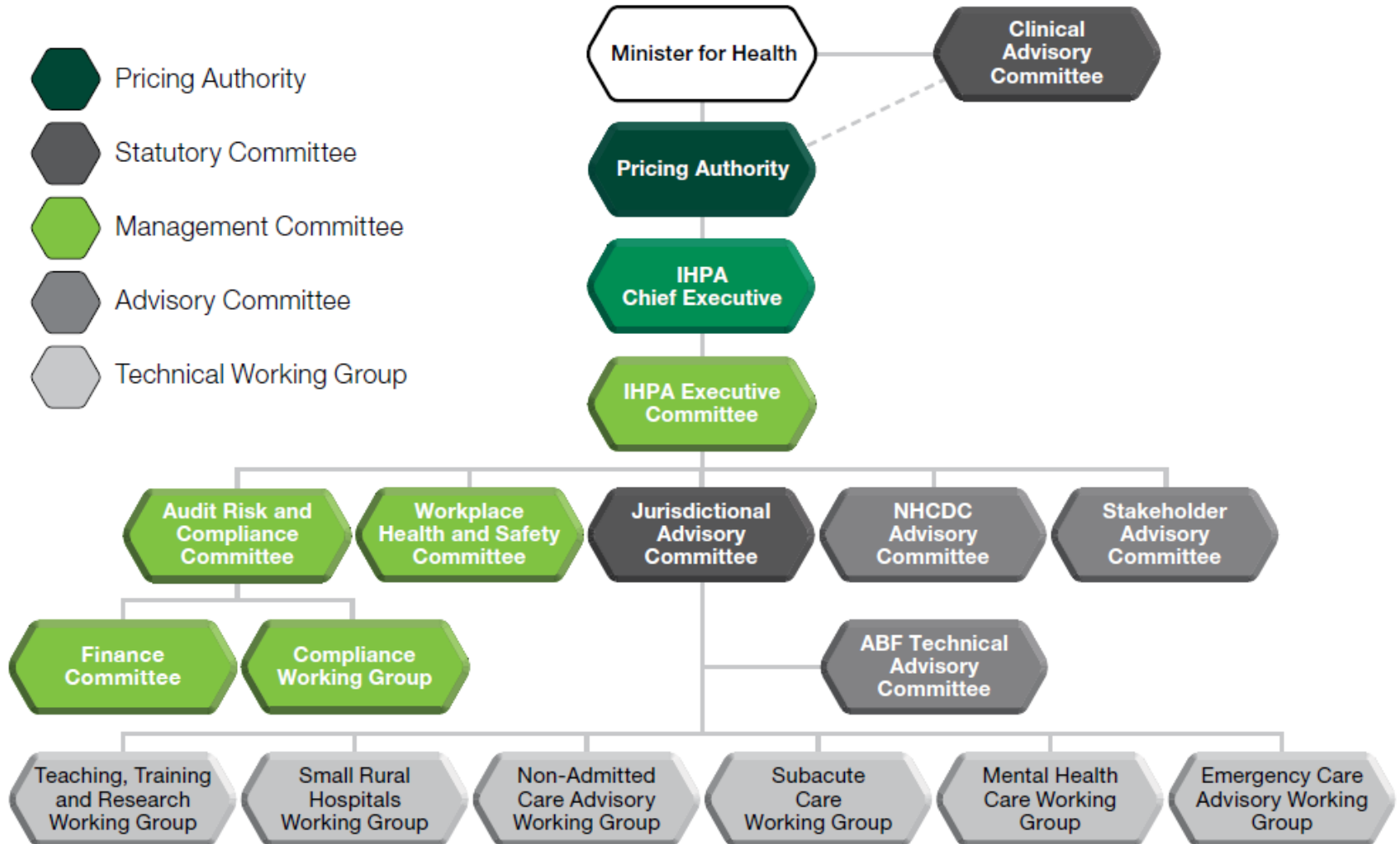
Session 1 (9:00 – 10:30)

- NEP from above
 - Data flow
 - Pricing
 - Roles and uses

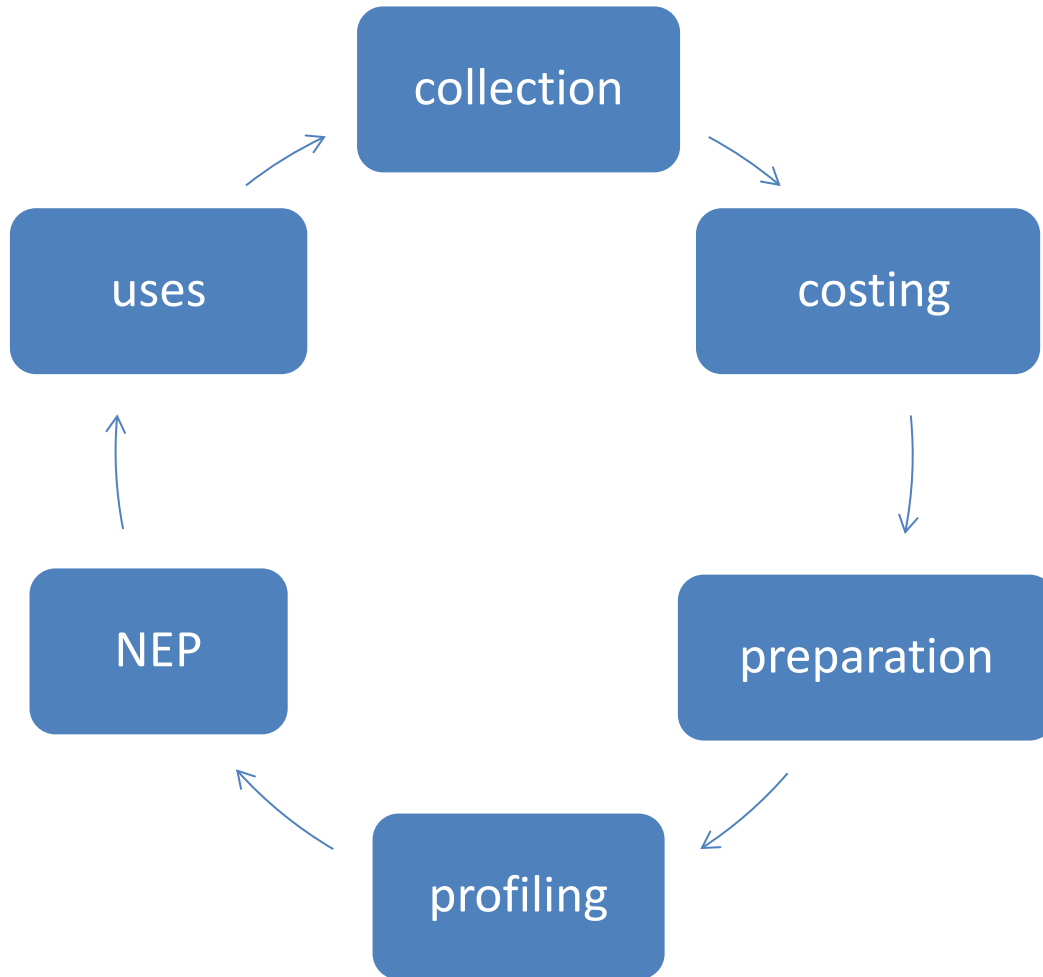
Session 2 (11:00 – 12:30)

- Continuation of Session 1 & Discussion





NEP cycle



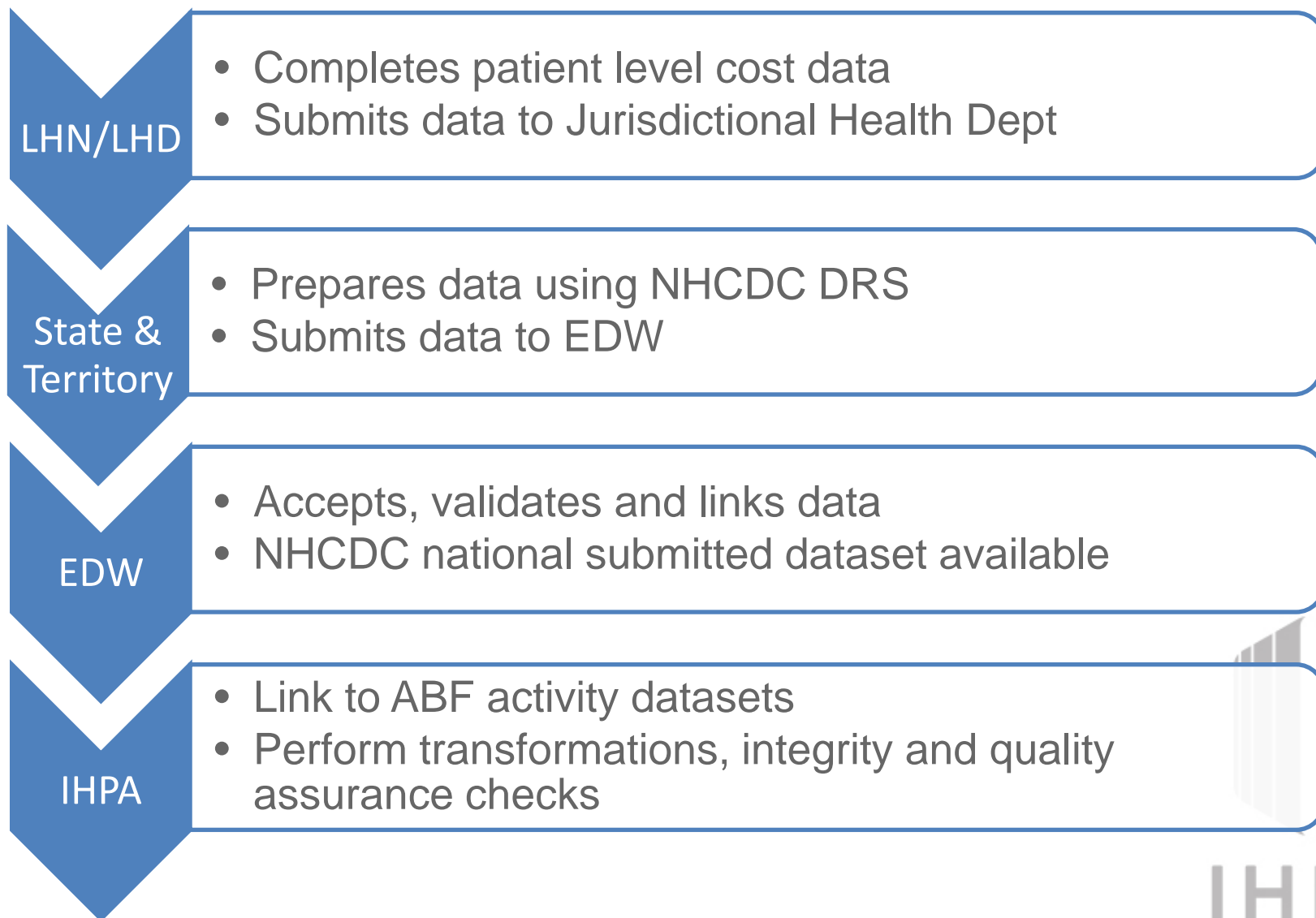
Session 1: NEP from above



Data Flow



Cost Data Process Flow



What is the NHCDC

The National Hospital Cost Data Collection is an annual retrospective study

Relies on variables submitted through the Activity Based Funding collections

The largest collection of its type in the world consisting of detailed patient activity and costs

- 402 hospitals

- 4.8 million admitted acute separations,

- 6.5 million emergency (admitted and non-admitted) presentations

- 12.6 million non-admitted service events

- 161,515 admitted subacute separations

- Total \$31.5 billion in total costs

Primary purpose - calculation of the NEP

Also used to develop and refine classifications and for benchmarking



How do we know the data is robust?

Australian Hospital Patient Cost Standards

Independent Financial Review

Quality Assurance Reports

Independent reviews



How are the costs analysed?

Cost Centre Definitions

- Clinical Services
- Operating Theatres
- Allied Health Services
- Imaging
- Pathology
- Pharmacy
- Emergency Department
- Critical Care Services
- Specialised Procedure Services
- Other Services not already categorise

Line Item Definitions

- Salaries and Wages, Nursing/Medical/VMO/Allied Health/Other
- Labour (staff) oncosts, all staff types
- Pathology
- Imaging
- Drugs - PBS (eg high cost and S100) & Non PBS
- Prostheses (surgically implanted)
- All other medical and surgical supplies
- All other Goods and Services
- Hotel Goods and Services
- Blood Products
- Leasing costs
- Building Depreciation & Equipment
- Corporate costs (from outside the hospital GL and not otherwise specified)
- Not in scope - Capital works & Excluded costs



How are the costs analysed?

Cost Buckets

- Ward Medical Salary & Wages
- Ward Nursing Salary & Wages
- Non Clinical Salaries & wages
- Critical Care
- Operating Rooms
- Special Procedure Suites (or SPS)
- On-Costs
- Supplies
- Allied
- Pathology
- Imaging
- Pharmacy
- Emergency Department
- Prostheses
- Hotel
- Depreciation

Other Data influences

Data Sets

- NHCDC Collection
- ABF Activity Datasets:
 - Admitted Patient Care
 - Emergency Department
 - Non-Admitted Patient Care
 - Subacute
- Private Hospital Collections:
 - Overnights
 - Day Hospitals

Costing Studies

- NEP Studies
 - Culturally and Linguistically Diverse
 - Home Delivered Services
 - Indigenous Patients
 - Home Delivered Ventilation
 - Total Parenteral Nutrition
 - Home Enteral Nutrition
- Non-Admitted & Subacute Services
- Teaching, Training and Research
- Mental Health
- Radiotherapy

Pricing



NEP15 = \$4971

Streams

Admitted acute
Admitted subacute
and non-acute
Emergency
department/service
Non-admitted

Classifications

AR-DRG v7.0
AN-SNAP v3.0

URG v1.4
URD v1.3
Tier 2 v1.4

Adjustments

Indigenous
Remoteness
Specialist
psychiatric
Radiotherapy
Dialysis
ICU
Paediatric
Multidisciplinary



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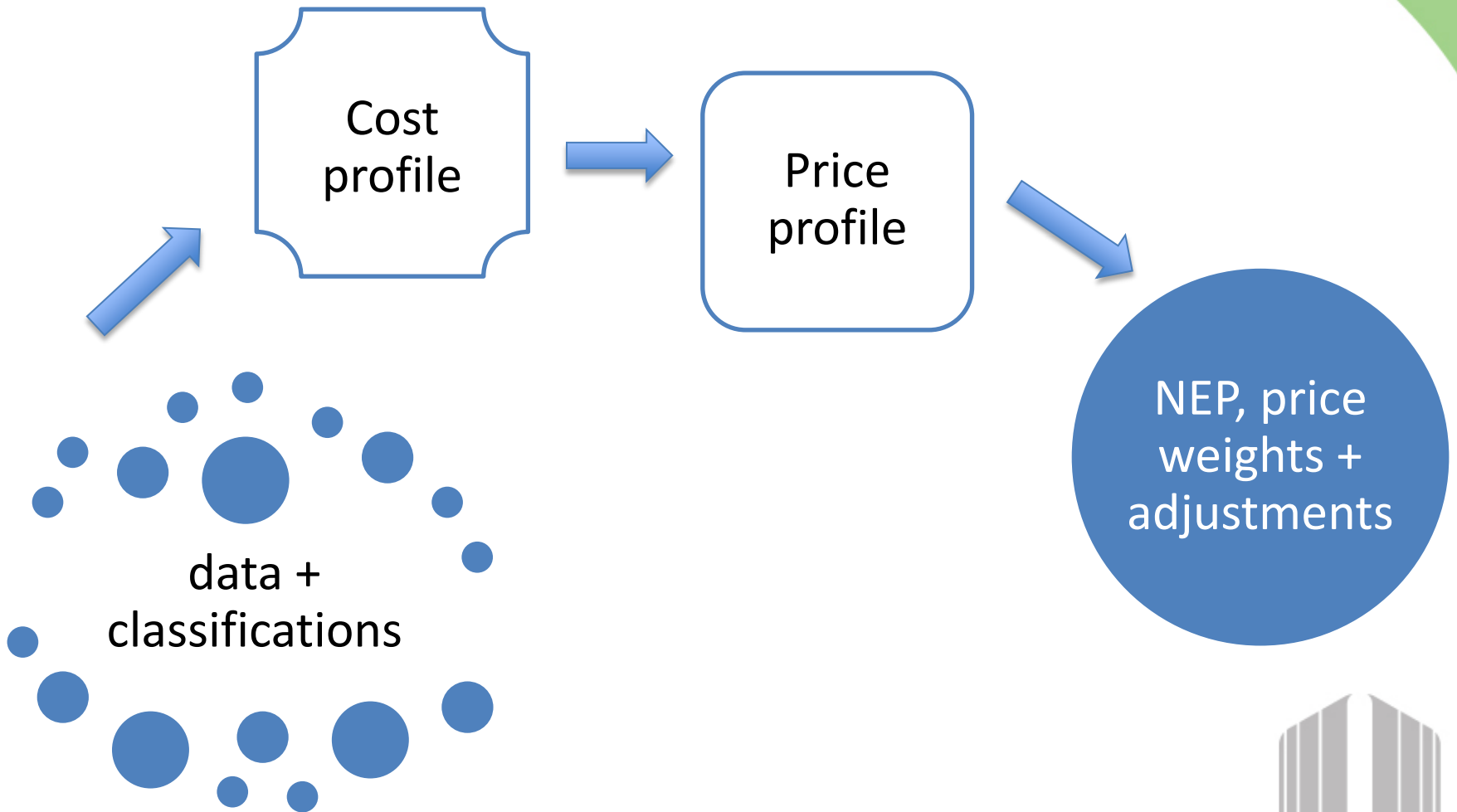
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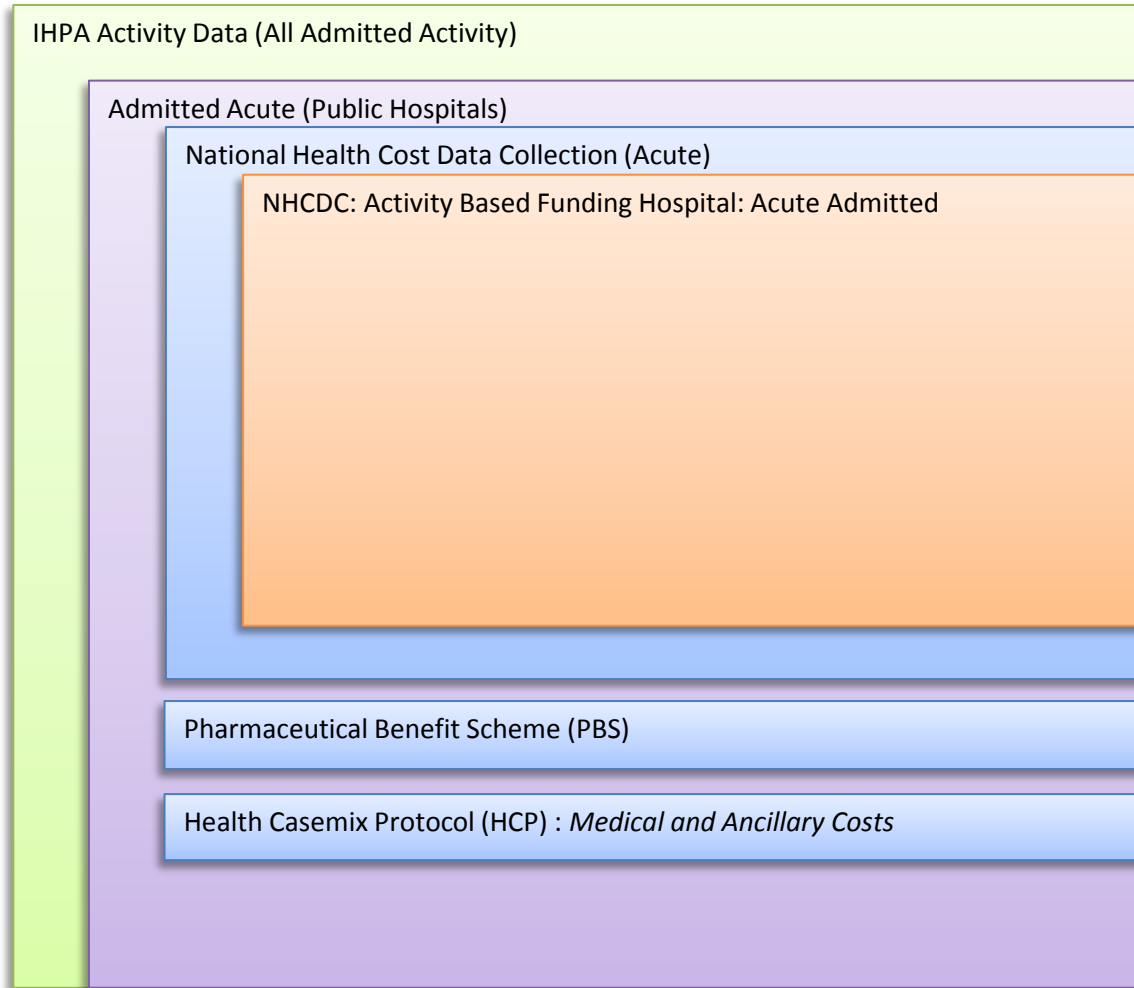
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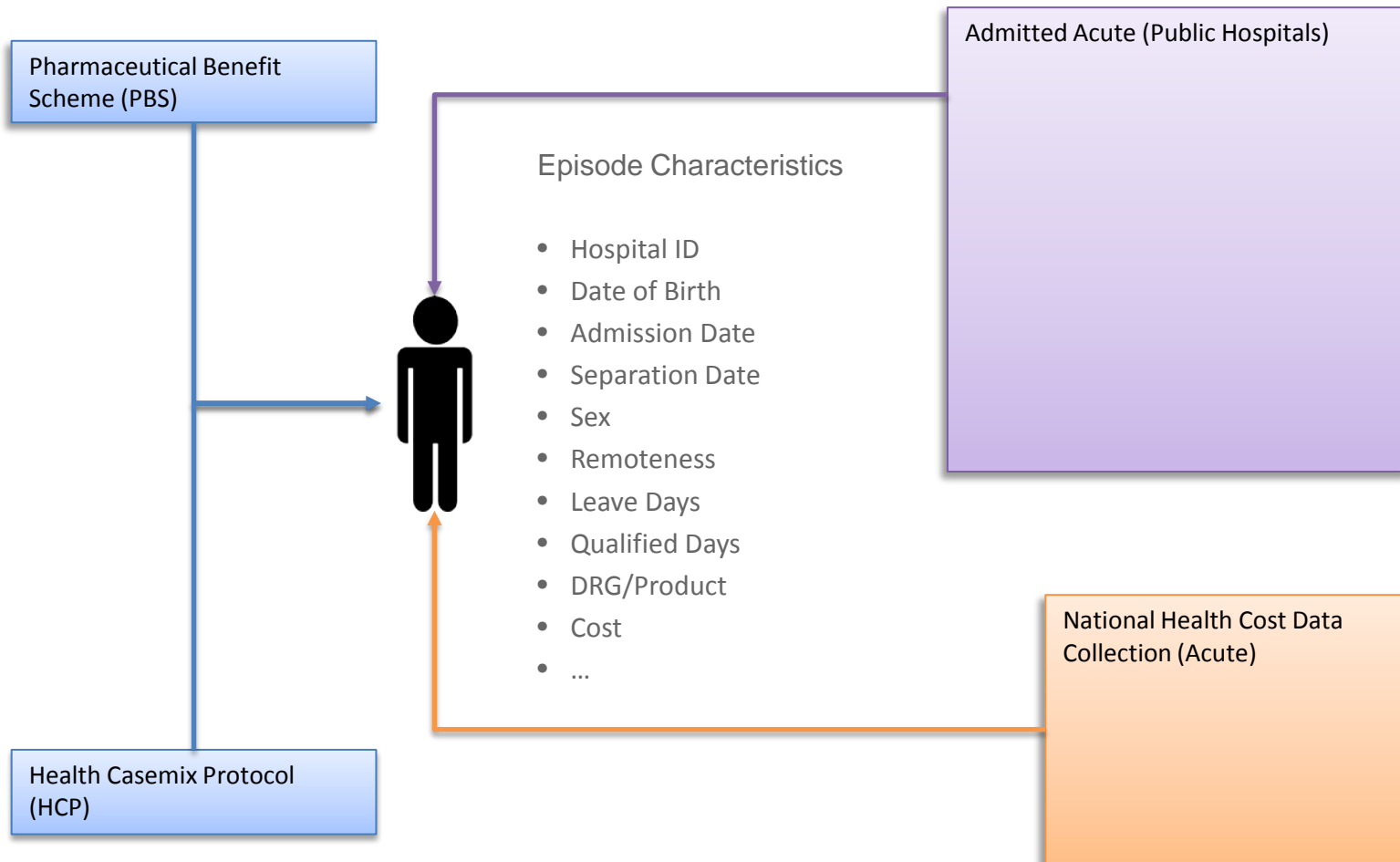




Data Overview



Data Overview



Cost Overview

NHDC: Activity Based Funding Hospital: Acute Admitted

In-Scope Cost

Hospital Casemix Protocol (HCP) : *Medical and Ancillary Costs*

Pharmaceutical Benefit Scheme (PBS)

National Blood Authority: Blood Cost

Teaching, Training and Research

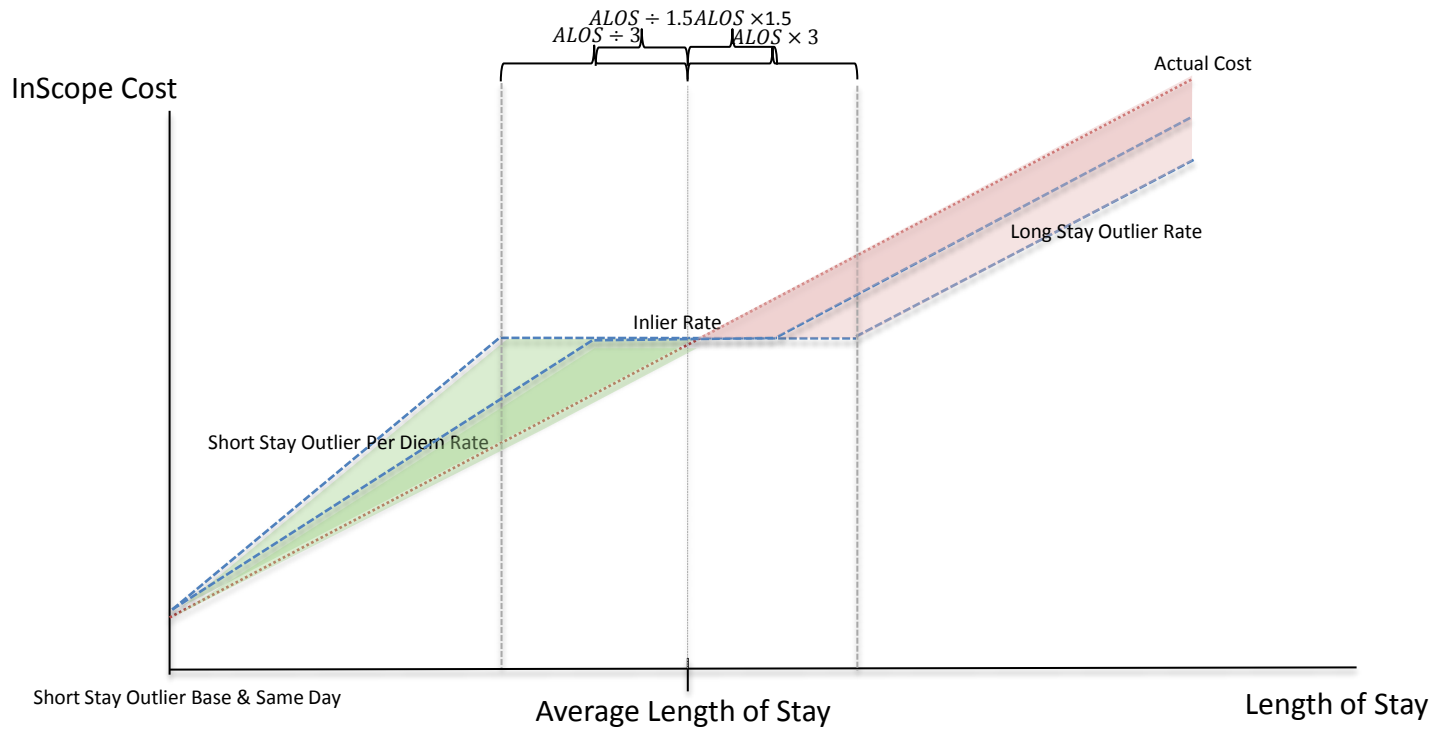
Depreciation, ED, capital

Work in Progress Episodes



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Illustration of cost profile



Cost to price

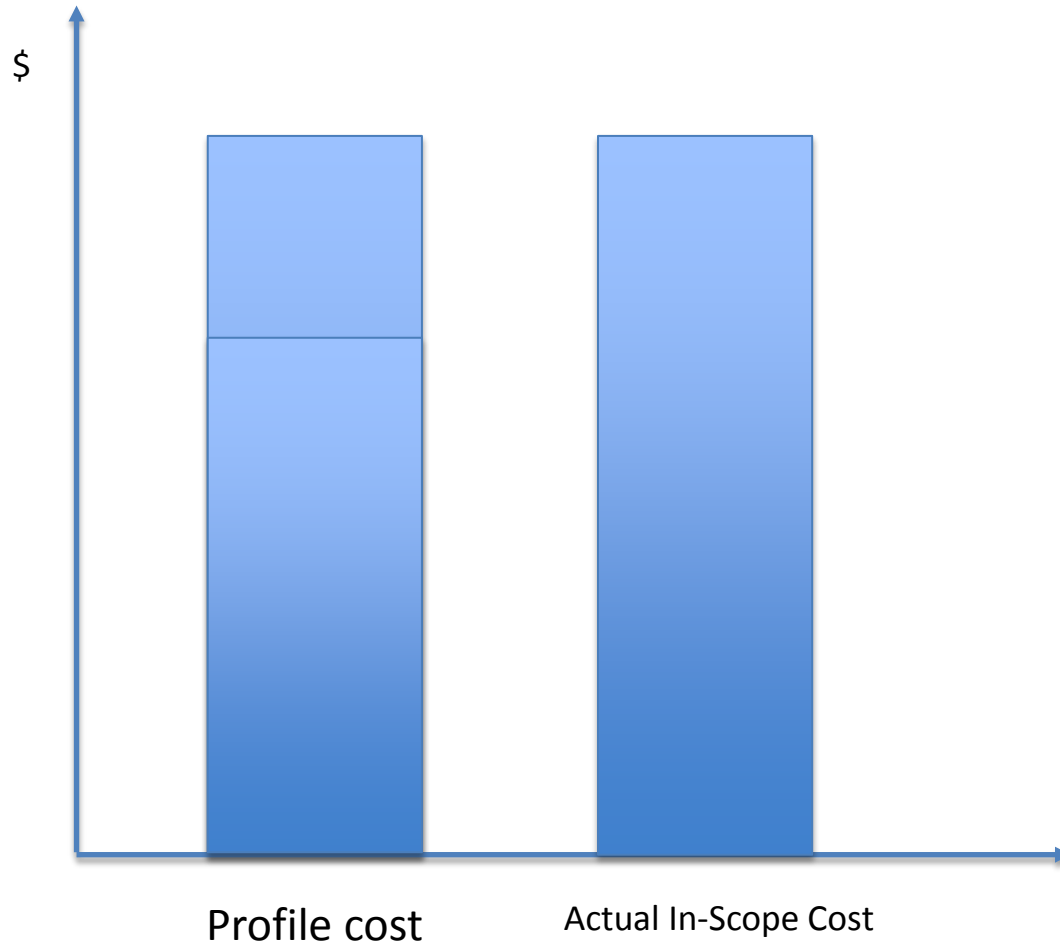
- Move from 2012-13 costs to 2015-16 price via indexation
- Policy
 - Adjustments
 - Equalisation of price across streams eg Gastroscopy, Sameday Acute Admitted and Endoscopy – gastrointestinal Non-admitted)

Adjustment methodology

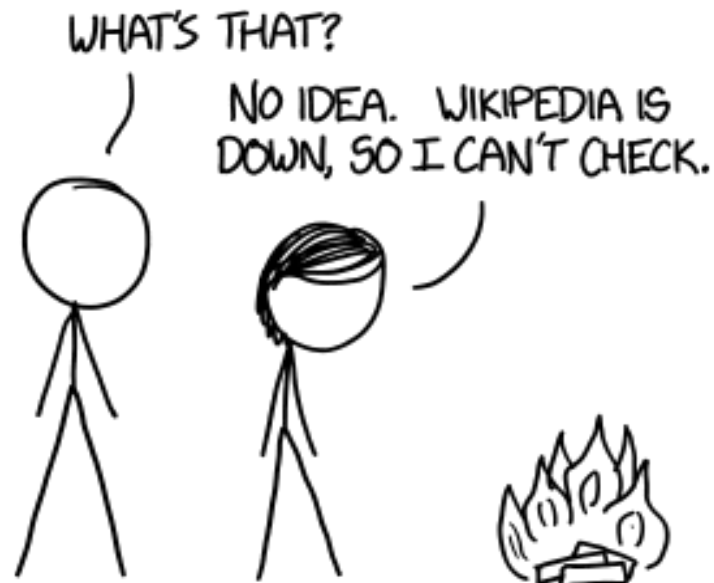
- If the base model alone was used for pricing, many groups of patients would be under-priced
- The idea behind adjustments is to ensure the actual cost of a group of patients is equal to their predicted cost (at a whole group level)
- Under the NHRA, the Pricing Authority has the function:

“... to determine adjustments to the national efficient price to reflect legitimate and unavoidable variations in the costs of delivering health care services”

Adjustment example (general adjustment)



What is the price of an eight day severe burns episode for a remote patient?



What is the price of an eight day severe burns episode for a remote patient?

$$price (\$) = PW \times (1 + A_A) \times NEP$$

AR-DRG V7.0	Description	Inlier Bounds		Price Weights				
		Lower Bound	Upper Bound	Same Day	Short-Stay Outlier Base	Short-Stay Outlier Per Diem	Inlier	Long-Stay Outlier Per Diem
Y61Z	Severe Burns	1	10				0.8891	0.3035

$$\begin{aligned}
 price (\$) &= PW \times (1 + A_A) \times NEP \\
 &= 0.8891 \times (1 + 0.16) \times \$4971 \\
 &= \$5127
 \end{aligned}$$

Admitted Acute Price Calculator

Hospital Characteristics

Specified Intensive Care Unit

Specialised Children's Hospital

NSW
Vic
Old
SA
WA
Tas
NT
ACT

Patient and Episode Characteristics

Aged 17 years or less

Psychiatric Care Days

Radiotherapy

Dialysis

Indigenous

Private

Major City
Inner Regional
Outer Regional
Remote
Very Remote

Same-day

LOS	10
ICU Hours	0

I76B - OTH MUSCULOSKELETAL DSRD -CSCC
I77A - FRACTURE OF PELVIS +CSCC
I77B - FRACTURE OF PELVIS -CSCC
I78A - FRACTURE NECK OF FEMUR +CSCC
I78B - FRACTURE NECK OF FEMUR -CSCC
I79A - PATHOLOGICAL FRACTURE +CCC

I77A - Fractures of Pelvis W Catastrophic or Severe CC

Price Weight Table		Episode Price Weights and Adjustments	
Same-day price list		ICU-adjusted LOS	10
Bundled ICU		Episode Category	Inlier
ALOS	12	Price Weight	2.5706 - PW
Inlier Lower Bound	3	Paediatric Adj.	100% - A_{Paed}
Inlier Upper Bound	35	Spec. Psych. Age Adj.	0% - A_{SPA}
Private Service Adj	10%	Indigenous Adj.	0% - A_{Ind}
Paediatric Adj.	100%	Remoteness Area Adj.	8% - A_{A}
Same-day PW		Radiotherapy Adj.	0% - A_{RT}
Short-Stay Outlier Base PW		Dialysis Adj.	0% - A_{Dia}
Short-Stay Outlier Per Diem PW	0.8569	ICU Adj.	0.0000 - A_{ICU}
Inlier PW	2.5706	Priv. Pat. Service Adj.	10% - A_{PPS}
Long-Stay Outlier Per Diem PW	0.1897	Priv. Pat. Accom. Adj.	0.0700 - A_{Acc}
		NEP	\$4,971

PRICE

$$= [(PW \times APaed \times (1 + ASPA) \times (1 + AInd + AA + ART + ADia) + (AICU \times ICU \text{ hours})] - [(PW + AICU \times ICU \text{ hours}) \times APPS + LOS \times AAcc] \times NEP$$

$$= \{ [2.5706 \times 1 \times (1 + 0) \times (1 + 0 + 0.08 + 0 + 0) + (0 \times 0)] - [(2.5706 + 0 \times 0) \times 0.1 + 10 \times 0.07] \} \times \$4,971$$

$$= \{ [2.5706 \times 1 \times 1 \times 1.08 + 0] - [0.25706 + 0.7] \} \times \$4,971$$

$$= \{ 2.776248 - 0.95706 \} \times \$4,971$$

$$= 1.819188 \times \$4,971$$

$$= \$9,043$$

Select hospital, patient and episode characteristics

Applicable pricing specifications

Step by step calculation of price



Roles and uses



Roles and Uses

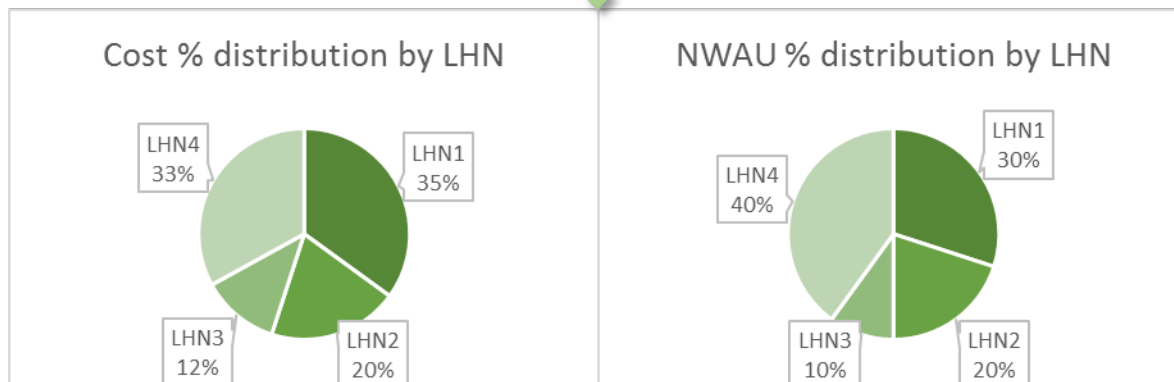
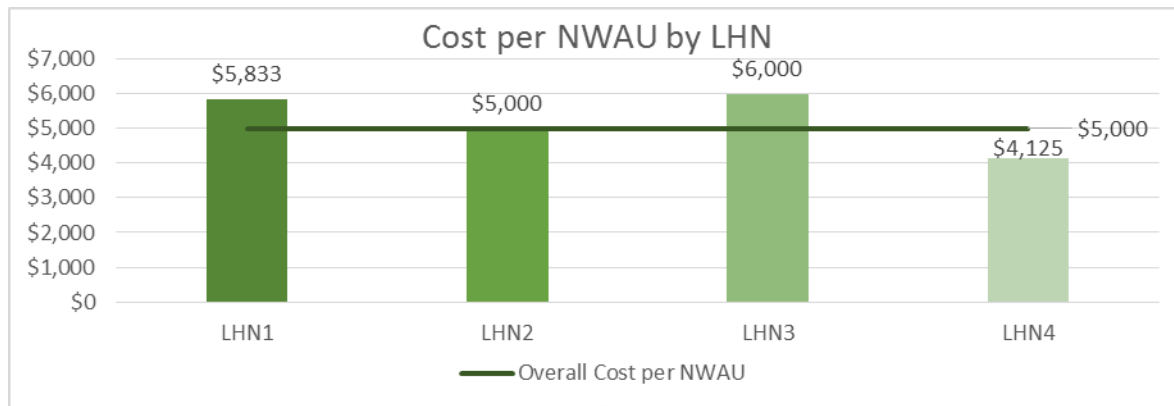
- The Administrator of the National Health Funding Pool (National Health Funding Body)
 - Growth in funding from Commonwealth to states and territories
 - Allocation of each state/territory's Commonwealth funding as payments to LHNs
- The National Health Performance Authority
 - Financial performance and relative efficiency of public hospitals
- Other uses
 - Financial performance benchmarking
 - Efficiency analysis
 - In general, a means of communicating and exploring the dynamics of hospital service delivery

Roles and Uses

Comparisons of
cost per NWAU

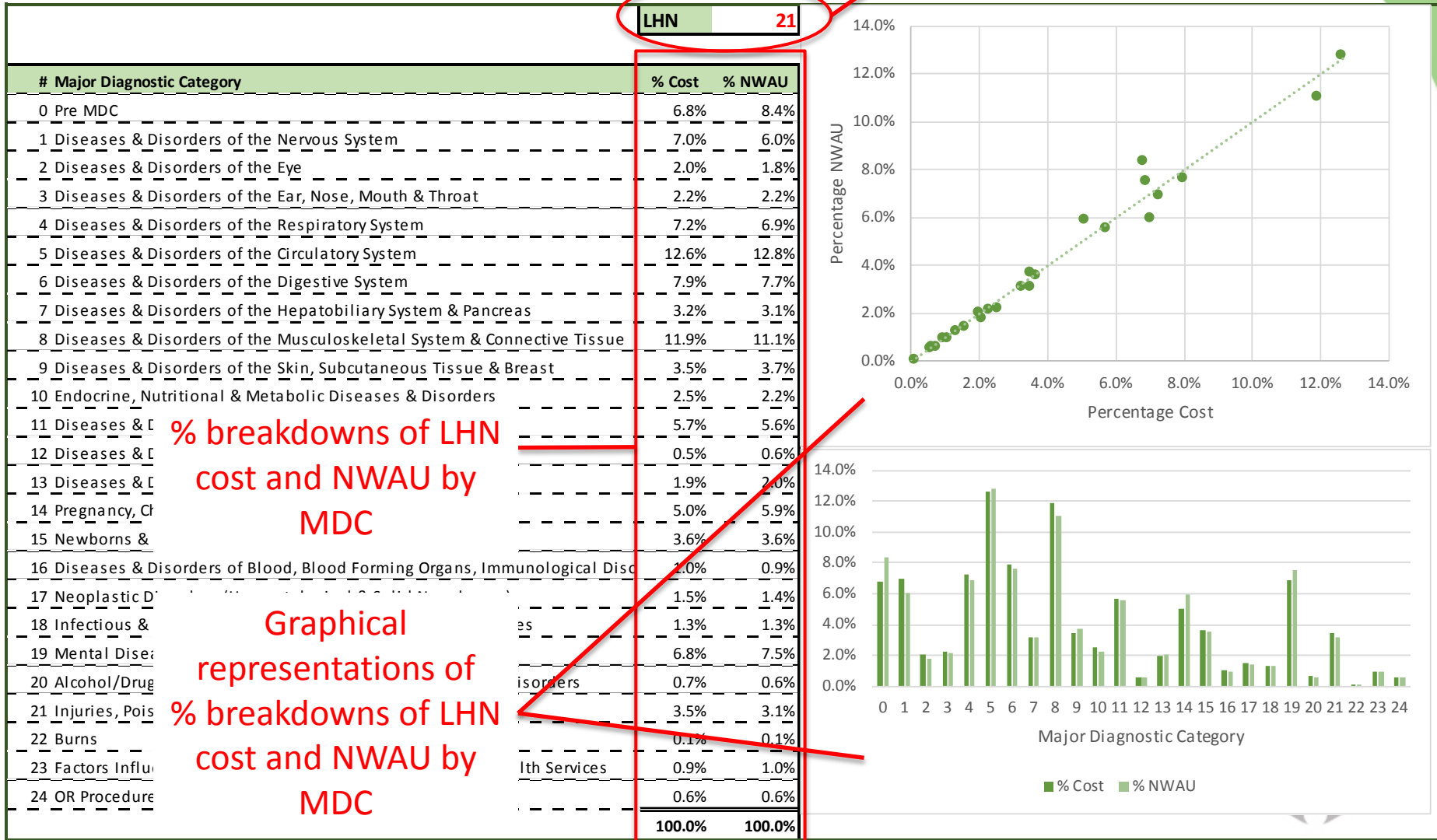


Cost distribution
vs.
NWAU distribution



% Cost vs. % NWAU

Select LHN



% Cost vs. % NWAU

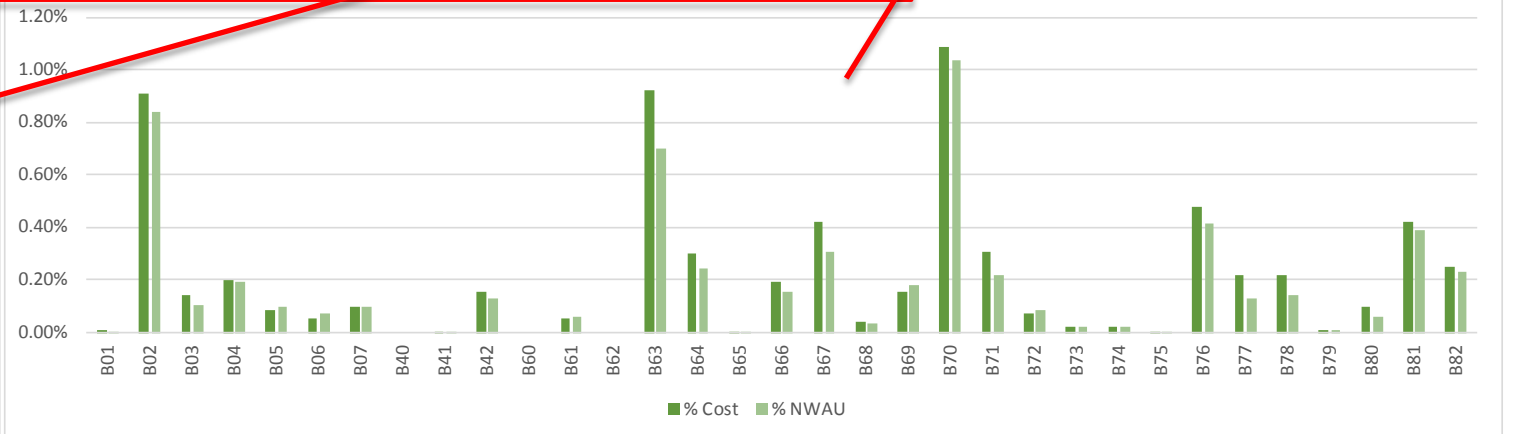
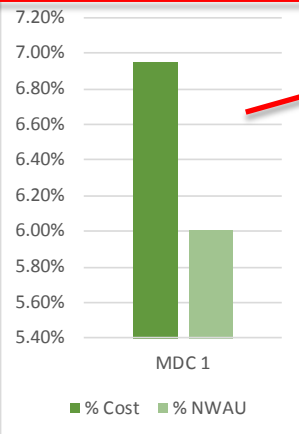
Select LHN and MDC

LHN	21	% Cost	% NWAU
MDC	1 - NERVOUS SYSTEM	MDC 1	6.95% 6.01%

ADRG	% Cost	% NWAU	ADRG	% Cost	% NWAU
B01 - VENTRICULAR SHUNT REVISION	0.01%	0.01%	B67 - DEGNRTV NERV SYS DIS	0.42%	0.31%
B02 - CRANIAL PROCEDURES	0.91%	0.84%	B68 - MLT SCLROSIS&CEREBEL ATAXIA	0.04%	0.04%
B03 - SPINAL PROCEDURES	0.14%	0.11%	B69 - TIA & PRECEREBRAL OCCLUSN	0.16%	0.18%
B04 - EXTRACRANIAL VASCULAR PROCS	0.20%	0.19%	B70 - STROKE & OTH CEREBROVAS DSRD	1.09%	1.04%
B05 - CARPAL TUNNEL RELEASE	0.08%	0.10%	B71 - CRANIAL & PERIPHL NERV DSRD	0.31%	0.22%
B06 - CBL PSY,MUS DYSY,NEUPHTY PR	0.05%	0.08%	B72 - NRVS SYS INF EX VRL MNGTS	0.07%	0.09%
B07 - CRANL/PRPHL NERV & OTH NERV PR	0.10%	0.10%	B73 - VIRAL MENINGITIS	0.02%	0.03%
B40 - PLASMAPHERESIS+NEURLGCL DIS,SD	0.00%	0.00%	B74 - NONTRAUMATIC STUPOR & COMA	0.02%	0.02%
B41 - TELEMETRIC EEG MONITORING	0.00%	0.01%	B75 - FEBRILE CONVULSIONS	0.00%	0.01%
B42 - NERVOUS SYS DX W VENT SUPPORT	0.15%	0.13%	B76 - SEIZURES	0.48%	0.42%
B60 - ACUTE PARA/QUAD+/-OR PROCS	0.00%	0.00%	B77 - HEADACHES	0.22%	0.13%
B61 - SPINAL CORD COND+/-OR PROCS	0.06%	0.06%	B78 - INTRACRANIAL INJURIES	0.22%	0.15%
B62 - APHERESIS	0.00%	0.00%	B79 - SKULL FRACTURES	0.01%	0.01%
B63 - DMNTIA&CHRNIC DISTURB CRBRL FN	0.92%	0.70%	B80 - OTHER HEAD INJURIES	0.10%	0.06%
B64 - DELIRIUM	0.30%	0.24%	B81 - OTHER DSRD OF NERVOUS SYS	0.42%	0.39%
B65 - CEREBRAL PALSY	0.00%	0.00%	B82 - CHR & UNSP PARA/QUAD+/-OR PR	0.25%	0.23%
B66 - NERVOUS SYSTEM NEOPLASM	0.19%	0.16%			

% breakdowns of LHN cost and NWAU by ADRG

Graphical representations of % breakdowns



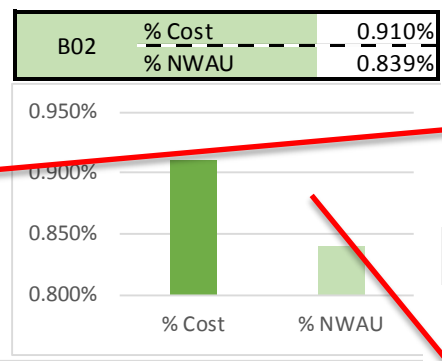
% Cost vs. % NWAU

Select LHN and ADRG

LHN	21
ADRG	B02 - CRANIAL PROCEDURES

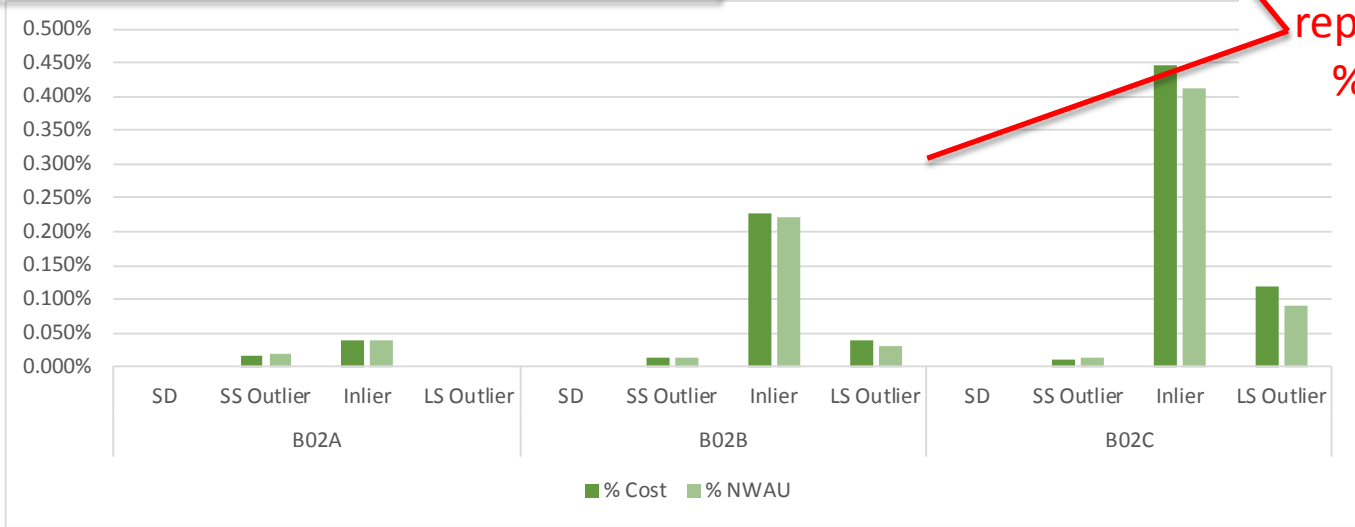
Description	Same-Day Price	Inlier Bounds	
		Lower	Upper
B02A - Cranial Procs W Cerebral Haemorrhage W Cat CC		6	56
B02B - Cranial Procs W/O Cerebral Haem W Cat CC or (W Cerebral Haem W Sev CC)		5	46
B02C - Cranial Procs W/O Cerebral Haem W Sev CC or W/O Cat/Sev CC		2	22

		Episode Price Category			
		SD	SS Outlier	Inlier	LS Outlier
B02A	% Cost	0.000%	0.016%	0.039%	0.000%
	% NWAU	0.000%	0.018%	0.038%	0.000%
B02B	% Cost	0.000%	0.013%	0.226%	0.038%
	% NWAU	0.000%	0.012%	0.221%	0.031%
B02C	% Cost	0.000%	0.010%	0.447%	0.120%
	% NWAU	0.000%	0.015%	0.412%	0.091%



% breakdowns of LHN cost and NWAU within DRGs

Graphical representations of % breakdowns





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