



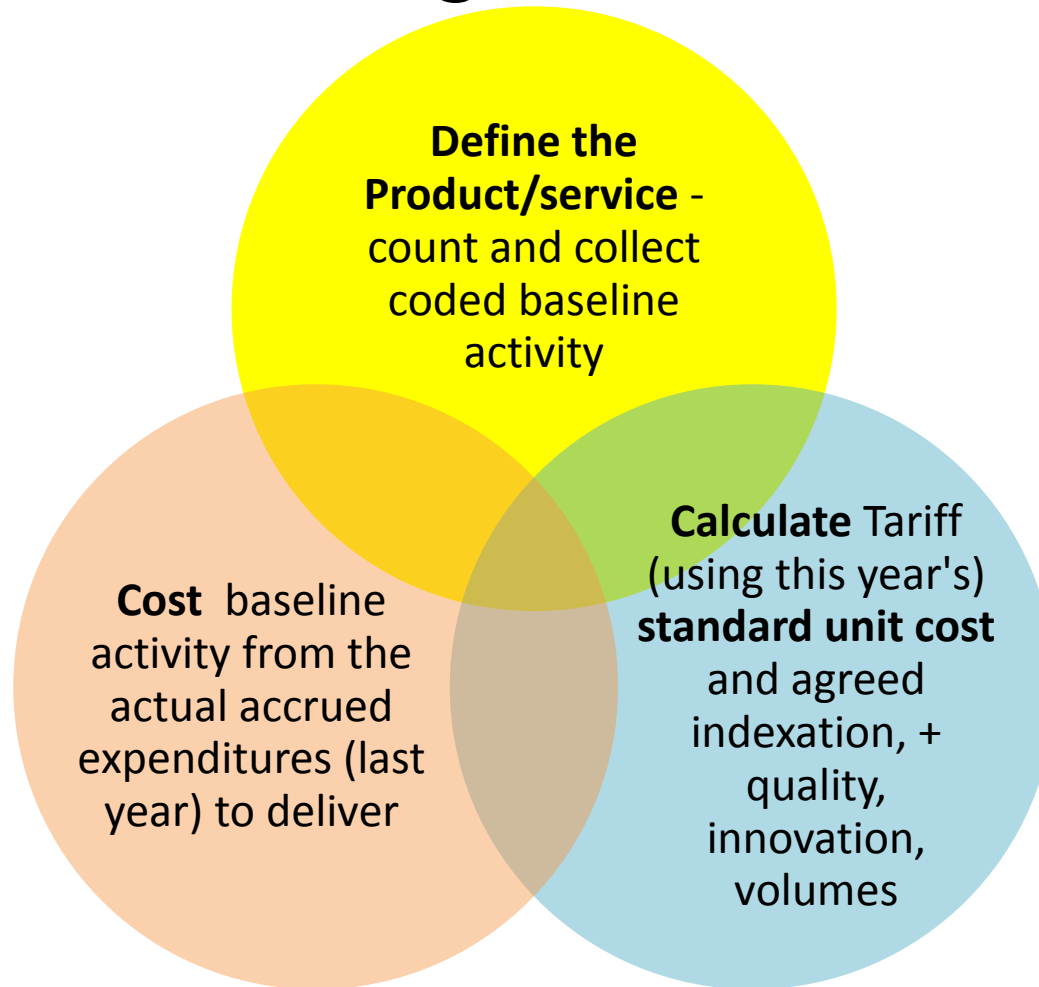
Moving to a native grouper for CBGs

Ric Marshall OAM, PhD

Improving the INA CBG grouper

November 1st, 2018: 13.00-14.15

BUILDING BLOCKS FOR CBGs as a funding mechanism



The use case for purpose built CBGs

1. STABLE ACTIVITY DATA

- Consistently abstracted case assignment
- Minimum datasets reviewed and updated yearly

2. CONSISTENT COST DATA

- Valid and reliable resource utilisation tracking
- Accurate case level variation measures

3. MEANINGFUL TARIFF/PRICE SIGNALS

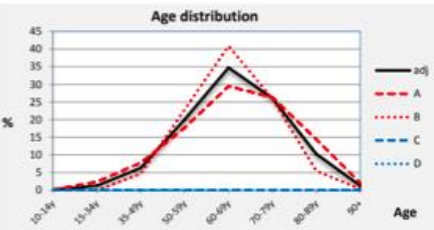
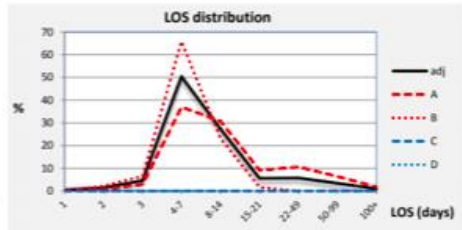
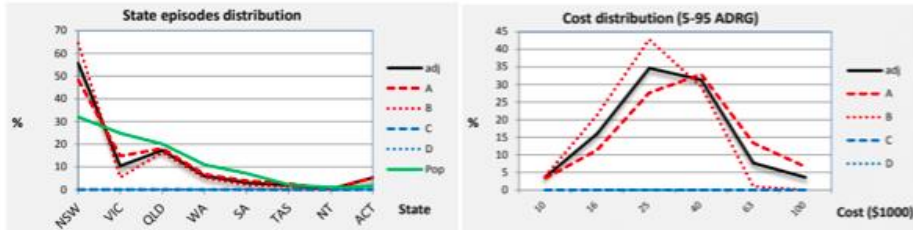
- Logical path from cost to Tariff
- Clear and transparent calculation methods

1. Better classification definitions

- **COUNTING** – The episode beginning and end +
 - content scope (Inclusions and exclusions)
 - conditional logic – exceptions
- **CLASSIFICATION** – The categories
 - Comprehensive – and Mutually exclusive – Comparable >>
- **CODING**
 - Standards well documented – ‘living’ clarification network
 - A body and professional discipline of practice
 - QA program and mechanisms – including coding audits
 - Follow up to resolve discrepancies and irregularities –

REFINEMENT CYCLES

1. Co-ordination of updates of input codesets with revisions of the grouper – minor and major
2. Planning of review subject matter – including stakeholder and expert advisor – technical and clinical
3. Sequencing of implementation steps:-
 - One year of coded data required for accurate cost weights calculation from costing study.
 - Period of impact analysis before implementation of new version – 2 years from release to use.

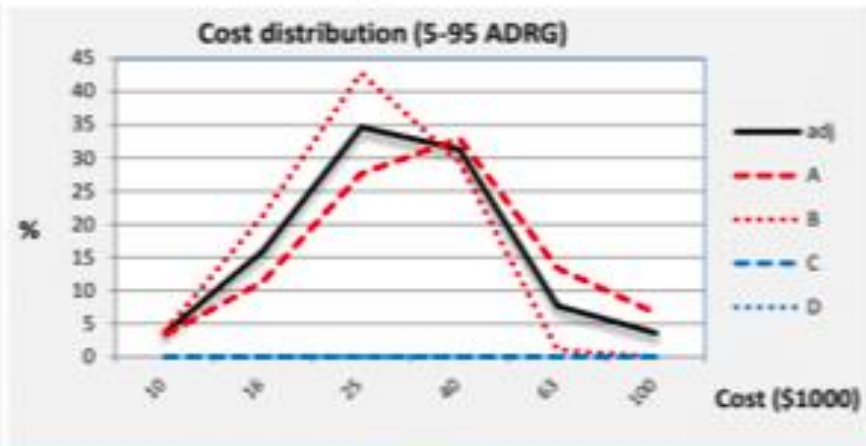
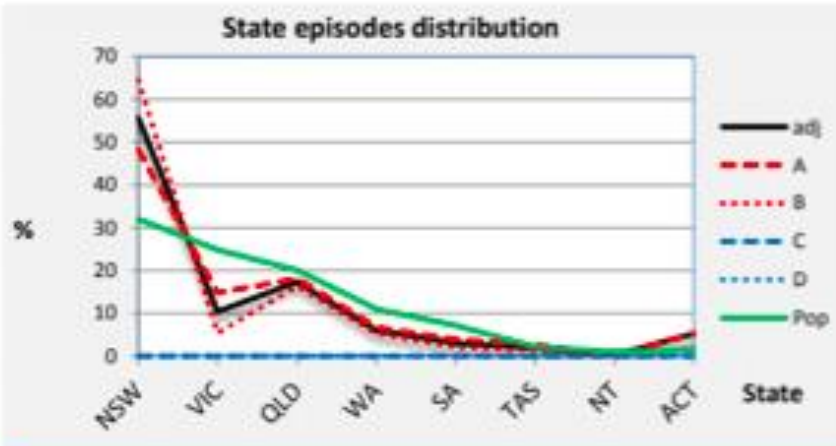


Index	Set	MDC	ADRG	DRG			
				A	B	C	D
N episodes (per year)	4,464,546	328,712	635	341	294		
Mean Cost	4,659	7,686	36,164	44,311	26,693		
Mean LOS (days)	3.0	4.0	12.4	17.5	6.4		
CV weighted, Cost (%)	188	118	74	80	35		
CV weighted, LOS (%)	173	137	145	139	41		
% samedays	52	33	0	0	0		
%LOS = 1 day	67	55	0	1	0		
% trasferred to acute hosp (01)	5	10	17	20	13		
% death (08)	1	0	1	1	0		
% males	49	52	48	49	48		
N PDX (per year)			635	341	294		
N ADX (per year)			2,033	1,661	372		
N INT (per year)			1,466	1,022	445		
PDX% in top 50% of ADRG			50	36	50		
ADX% in top 50% of ADRG			50	44	77		
INT% in top 50% of ADRG			50	39	76		
N episodes (per year) - Private hospitals*	3,431,070	371,344	2,205	840	1,366		
Mean LOS (days) - Private Hospitals*	2.2	3.1	9.1	11.6	7.6		
CV weighted, LOS (%) - Private Hospitals*	148	123	135	169	36		

* Private hospitals are assessed over 2 years (2010-12) due to data availability
All other indices are over 3 years (2010-13) in public establishments

Code	Description	DCL/Type	N / year	M Cost	% eps					
					ADRG	DRG A	DRG B	DRG C	DRG D	
ADX Median rank = 23.1										
Z8643	Personal history of tobacco use disorder	0	186	34,816	29.3	27.1	31.9			
D649	Anaemia unspecified	0	179	43,419	28.2	32.7	22.9			
I959	Hypotension unspecified	0	99	45,734	15.5	20.5	9.8			
Z720	Tobacco use current	0	55	35,116	8.7	9.4	7.9			
I10	Essential (primary) hypertension	0	47	56,440	7.3	10.4	3.7			
E86	Volume depletion	0	45	50,616	7.1	9.2	4.8			
D62	Acute posthaemorrhagic anaemia	0	41	44,245	6.4	9.0	3.4			
K590	Constipation	1	36	49,041	5.6	10.4				
T840	Mechanical comp internal jt prosthesis	2	35	60,865	5.5	10.2				
N390	Urinary tract infection site not spec	1	29	70,500	4.5	8.4				
I978	Oth postproc disrd circulatory sys NEC	0	26	43,651	4.1	6.0	2.0			
I489	Atrial fibrillation and flutter unsp	0	26	60,635	4.1	6.5	1.2			
E876	Hypokalaemia	0	24	60,548	3.8	5.9	1.5			
T810	Haem & haematoma comp a procedure NEC	1	22	61,394	3.4	6.3				
N179	Acute kidney failure unspecified	0	21	58,447	3.4	5.7	0.7			
E119	Type 2 diabetes mellitus wo complication	0	20	34,519	3.2	2.9	3.5			
T848	Oth comp int ortho prosth dev impl gft	2	20	62,229	3.1	5.8				
Z9664	Presence of hip implant	0	19	66,711	3.0	5.4	0.2			
B956	Staph aureus cause dis class oth chptr	0	18	87,463	2.8	5.3				
Z602	Living alone	0	17	37,788	2.7	3.0	2.3			
Z921	Persl h/o long term use anticoagulants	1	17	64,851	2.6	4.9				
F059	Delirium unspecified	0	16	58,522	2.5	4.1	0.7			
E877	Fluid overload	0	16	68,904	2.5	4.2	0.6			
E1172	Type 2 DM w features insulin resistance	0	15	57,396	2.4	3.4	1.2			
I952	Hypotension due to drugs	0	14	34,852	2.2	2.4	1.8			
INT Median rank = 3.0										
4951900	Total arthroplasty of knee, bilateral	OR	380	29,340	59.8	37.3	86.0			
1370602	Administration of packed cells	Proc	267	45,336	42.1	53.2	29.2			
4932400	Revision of total arthroplasty of hip	OR	58	73,796	9.2	17.0	0.1			
4931800	Total arthroplasty of hip, unilateral	OR	56	43,850	8.9	16.1	0.5			
4931900	Total arthroplasty of hip, bilateral	OR	46	33,060	7.2	13.4	0.1			
4951800	Total arthroplasty of knee, unilateral	OR	43	38,523	6.8	7.2	6.4			
4952700	Revision of total arthroplasty of knee	OR	36	55,052	5.6	9.6	1.0			
9056200	Patella resurfacing	OR	26	23,003	4.0	4.4	3.6			
4934600	Revision of partial arthroplasty of hip	OR	25	63,969	4.0	7.3	0.1			
4752200	Hemiarthroplasty of femur	OR	24	50,859	3.7	6.7	0.2			
9206200	Administration of other serum	Proc	24	67,329	3.7	6.1	1.0			
4951700	Hemiarthroplasty of knee	OR	22	30,582	3.5	2.8	4.2			
4704800	Closed reduction of dislocation of hip	Proc	19	74,024	3.0	5.7				
9206000	Administration of autologous blood	Proc	19	35,749	3.0	3.0	3.0			
3002300	Excisional debridement of soft tissue	OR	12	97,036	1.9	3.5				
9068601	Non exc debridement skin & sbc tissue	Proc	10	105,416	1.6	3.0				
4930300	Arthrothomy of hip	OR	10	116,943	1.6	2.9				
5012400	Aspiration j/oth synovial cavity NEC	Proc	9	93,881	1.5	2.7				
4950900	Synovectomy of knee	OR	8	57,217	1.3	2.3	0.1			
4950001	Arthrothomy of knee	OR	6	69,441	1.0	1.9				
4953401	Tot replacmnt arthroplast patfem jt knee	OR	6	22,531	1.0	0.5	1.6			
4931200	Excision arthroplasty of hip	OR	5	127,612	0.8	1.6				
9068500	Exc debridement skin & sbc tissue	OR	5	114,319	0.7	1.4				
9057401	Excision of joint, NEC	OR	5	93,745	0.7	1.4				
1370603	Administration of platelets	Proc	4	80,116	0.7	1.3				

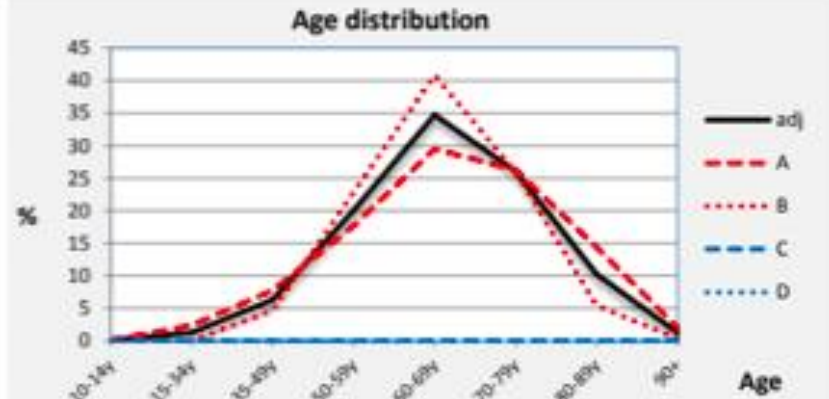
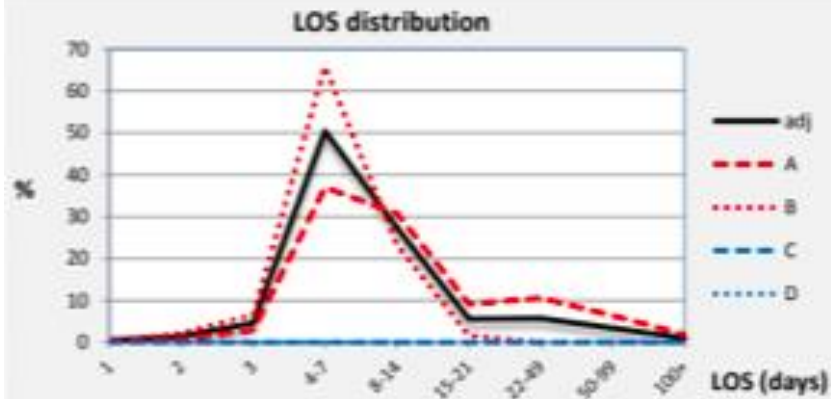
Code	Description	DCL	N / year	M Cost	% eps					
					ADRG	DRG A	DRG B	DRG C	DRG D	
PDX Median rank = 0.8										
M170	Primary gonarthrosis bilateral	0	375	29,337.6	59.0	35.5	86.3			
M171	Other primary gonarthrosis	0	48	30,605.7	7.6	5.9	9.6			
M161	Other primary coxarthrosis	1	38	36,659.5	6.0	11.1				
M160	Primary coxarthrosis bilateral	1	32	31,650.4	5.0	9.3				
T845	Infectn inf reat dt internal jt prosth	2	29	91,470.7	4.6	8.5				
S7203	Fracture of subcapital section of femur	0	20	50,507.1	3.1	5.5	0.5			
T840	Mechanical comp internal jt prosthesis	2	19	56,877.9	2.9	5.5				
T848	Oth comp int ortho prosth dev impl gft	2	8	31,626.2	1.2	2.2				
M8795	Unsp osteonecrosis pelv rgn & thigh	1	7	41,138.3	1.0	2.0				
M0696	Rheumatoid arthritis unsp lower leg	0	4	33,470.6	0.6	0.7	0.6			
M2556	Pain in a joint lower leg	0	3	24,183.6	0.5	0.7	1.1			
S7200	Fracture of neck femur part unsp	0	2	61,425.4	0.4	0.7				
T847	Infectn inf dt oth int ortho prosth dev	2	2	100,605.4	0.4	0.7				
M172	Post traumatic gonarthrosis bilateral	0	2	30,522.7	0.3	0.2	0.3			
M174	Other secondary gonarthrosis bilateral	0	2	39,183.0	0.3	0.3	0.2			
Q6589	Other congenital deformities of hip	1	2	49,403.3	0.3	0.5				
S7211	Fracture intertrochanteric section femur	0	2	63,100.6	0.3	0.4	0.1			
S723	Fracture of shaft of femur	1	2	44,942.1	0.3	0.5				
S7204	Fracture of midcervical section of femur	0	2	42,797.0	0.3	0.5				
M0806	Juvenile rheumatoid arthritis lower leg	1	1	40,555.0	0.2	0.4				
S7300	Dislocation of hip unspecified	1	1	55,501.6	0.2	0.3				
S7210	Fracture trochanteric section femur unsp	0	1	36,290.0	0.2	0.3				
M8715	Osteonecrosis dt drugs pelv rgn & thigh	1	1	34,495.3	0.2	0.3				
M8415	Nonunion fx [psdarthrs] pelv rgn & thigh	1	1	51,633.9	0.2	0.3				
M1396	Arthritis unspecified lower leg	1	1	17,156.7	0.2	0.3				



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M160	Primary coxarthrosis bilateral	1	32	31,650.4	5.0	9.3			
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S7203	Fracture of subcapital section of femur	0	20	50,507.1	3.1	5.5	0.5		
T840	Mechanical comp internal jt prosthesis	2	19	56,877.9	2.9	5.5			
T848	Oth comp int ortho prosth dev impl gft	2	8	31,626.2	1.2	2.2			
M8795	Unsp osteonecrosis pelv rgn & thgh	1	7	41,138.3	1.0	2.0			
M0696	Rheumatoid arthritis unsp lower leg	0	4	33,470.6	0.6	0.7	0.6		
M2556	Pain in a joint lower leg	0	3	24,183.6	0.5		1.1		
S7200	Fracture of neck femur part unsp	0	2	61,425.4	0.4	0.7			
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S723	Fracture of shaft of femur	1	2	44,942.1	0.3	0.5			
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S7300	Dislocation of hip unspecified	1	1	55,501.6	0.2	0.3			
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4934600	Revision of partial arthroplasty of hip	OR	25	63,969	4.0	7.3	0.1
4752200	Hemiarthroplasty of femur	OR	24	50,859	3.7	6.7	0.2
9206200	Administration of other serum	Proc	24	67,329	3.7	6.1	1.0
4951700	Hemiarthroplasty of knee	OR	22	30,582	3.5	2.8	4.2
4704800	Closed reduction of dislocation of hip	Proc	19	74,024	3.0	5.7	
9206000	Administration of autologous blood	Proc	19	35,749	3.0	3.0	3.0
3002300	Excisional debridement of soft tissue	OR	12	97,036	1.9	3.5	
9068601	Non exc debridement skin & sbc tissue	Proc	10	105,416	1.6	3.0	
4930300	Arthrotomy of hip	OR	10	116,943	1.6	2.9	
5012400	Aspiration jt/oth synovial cavity NEC	Proc	9	93,881	1.5	2.7	
4950900	Synovectomy of knee	OR	8	57,217	1.3	2.3	0.1
4950001	Arthrotomy of knee	OR	6	69,441	1.0	1.9	
4953401	Tot replacmnt arthroplast patfem jt knee	OR	6	22,531	1.0	0.5	1.6
4931200	Excision arthroplasty of hip	OR	5	127,612	0.8	1.6	
9066500	Exc debridement skin & sbc tissue	OR	5	114,319	0.7	1.4	
9057401	Excision of joint, NEC	OR	5	93,745	0.7	1.4	
1370603	Administration of platelets	Proc	4	80,116	0.7	1.3	



USAID
FROM THE AMERICAN PEOPLE

BENCHMARKING AGAINST OTHER CLASSIFICATIONS

- Same data set grouped to two classifications
 - Matrix for comparison of grouping of cases
- Clinical profiles of each set of adjacent DRGs
 - Principal Dx – top 5
 - Additional Dx
 - Px
 - Demographics

2. Better costing

1. COSTING STANDARDS

- Principles clearly specified
- Patient episode the costing focus
- Reconciliation – to audited total expenditure

2. COST STUDY FRAMEWORK AND PROCESSES

- Sample clearly specified – well motivated
- Reporting template simple and from standard records
- Able to be stratified to whole sector

3. REPORTING AT THE HOSPITAL LEVEL

- Published for whole sector and peer groups
- Individual hospital results returned to each
- Results replicable by the hospital/group monthly or quarterly

Cost reports

- Details of the sample
- Quality of the financial, activity data and utilisation data obtained
- Use of imported allocation statistics for cost modeling rather than patient level utilisation
- Reconciliation reports
- Stratification methodology from sample to national all hospital scaled estimate.

A CBG National Hospital Cost Data Collection - 30 random DRGs

NATIONAL HOSPITAL COST DATA COLLECTION (National)

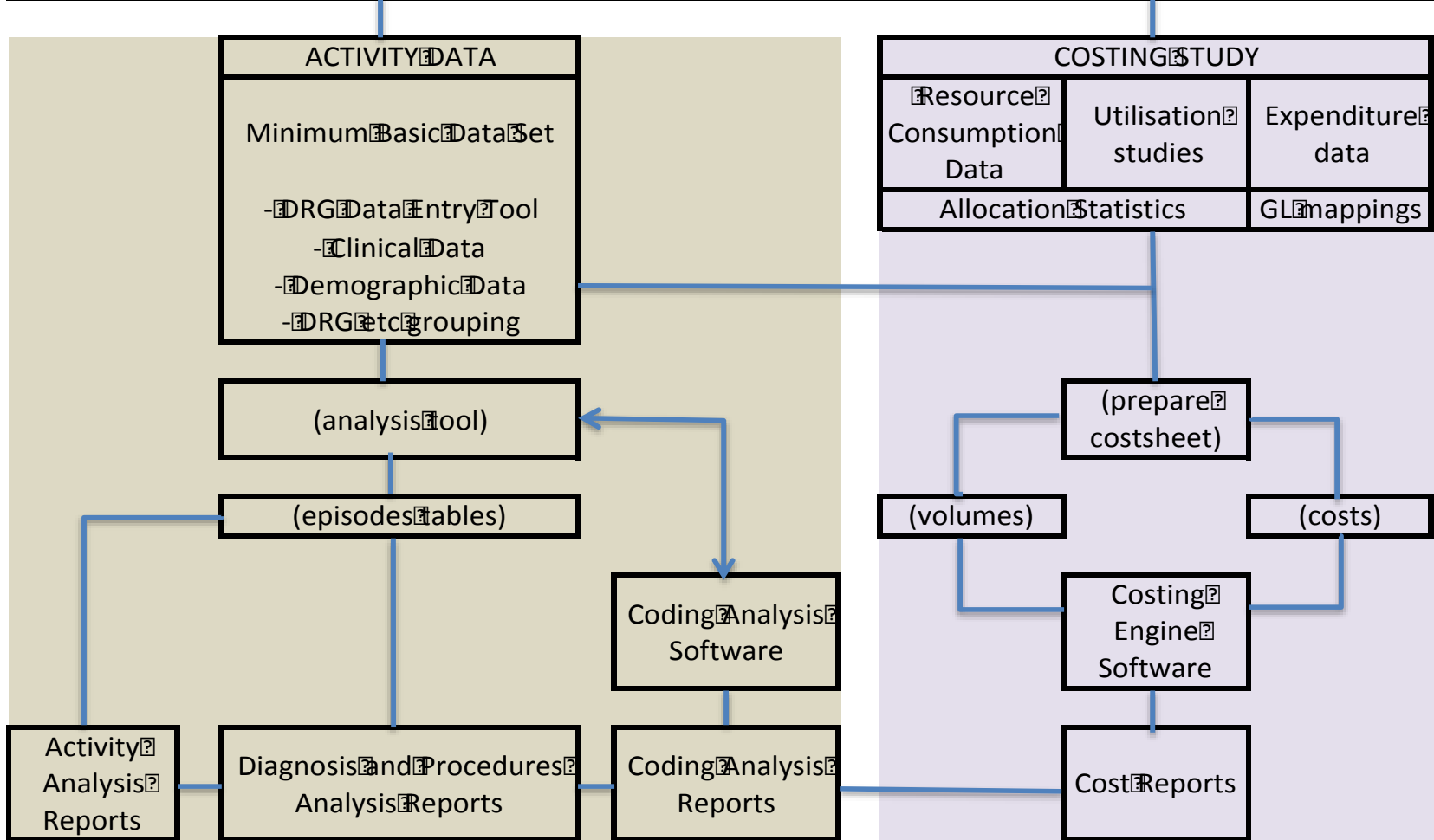
COST WEIGHTS FOR AR-DRG VERSION 8.0, Round 20 (2015-16)

Public Sector - Sample

DRG	DRG Description	Cost Weight	Number of Seps	Number of Days	ALOS (Days)	Average Cost per DRG (\$)			Average Component Cost per DRG (\$)							
						Total	Direct	Overhead	Ward Medical		Ward Nursing		Non Clinical Salaries	Pathology		Imaging
									Direct	Overhead	Direct	Overhead		Direct	Overhead	Allied
A11B	INS IMPLNT SP INFUS DEV, MINC	4.44	12	41	3.42	23,104	19,939	3,165	1,593	79	1,836	110	650	70	14	Pharmacy
B64B	DELIRIUM, MINC	0.80	3,327	8,293	2.49	4,156	3,111	1,045	502	25	844	62	303	81	8	Critical Care
B80B	OTHER HEAD INJURIES, MINC	0.31	19,842	21,464	1.08	1,613	1,251	362	146	6	182	13	84	9	1	Oper Rooms
C02Z	ENUCLEATIONS & ORBITAL PROCS	1.97	666	1,939	2.91	10,221	7,712	2,509	1,226	72	1,282	156	500	278	33	Emerg Depts
F09C	OTH CARDIOTHR PR-CPB PMP, MINC	2.48	450	1,296	2.88	12,905	10,538	2,367	784	34	788	49	376	259	33	Supplies
F14A	VASC PR-MJR RECONSTR-PMP, MAJC	6.39	1,283	15,854	12.36	33,207	25,965	7,242	2,896	151	4,598	299	1,524	1,210	96	Spec Proc Suites
F14B	VASC PR-MJR RECONSTR-PMP, INTC	2.82	3,138	14,329	4.57	14,683	11,788	2,894	1,102	52	1,731	110	603	311	31	Pros-theses
F14C	VASC PR-MJR RECONSTR-PMP, MINC	1.39	6,893	10,612	1.54	7,243	5,899	1,344	396	17	513	37	209	69	8	On-Costs
F69B	VALVULAR DISORDERS, MINC	0.38	7,801	10,033	1.29	1,997	1,526	471	215	10	235	17	122	41	3	Hotel
G10A	HERNIA PROCEDURES, MAJC	2.18	4,359	16,309	3.74	11,337	8,759	2,578	1,118	66	1,454	114	480	221	16	Deprec
G48B	COLONOSCOPY, MINC	0.39	69,268	74,484	1.08	2,027	1,561	465	208	12	132	12	66	74	6	
I29Z	KNEE RECONSTRUCTION/REVISION	1.76	4,817	6,085	1.26	9,151	7,316	1,834	546	32	598	51	240	16	2	
I31C	REV OF HIP REPLACEMENT, MINC	4.89	550	3,660	6.65	25,399	20,455	4,944	1,584	89	2,151	147	811	412	39	
I64A	OSTEOMYELITIS, MAJC	3.81	1,137	17,300	15.22	19,786	14,783	5,003	3,011	158	4,659	340	1,686	559	57	
I72B	SPECIFIC MUSCTENDIN DIS, MINC	0.78	3,345	8,998	2.69	4,043	2,976	1,067	580	34	877	66	335	100	8	
I75A	INJ SH,ARM,ELB,KN,LEG,ANK,MAJC	2.16	4,767	37,300	7.82	11,210	8,092	3,118	1,458	93	2,689	209	960	226	21	
J69A	SKIN MALIGNANCY, MAJC	3.01	384	3,572	9.30	15,639	11,456	4,183	2,007	112	3,189	258	1,506	397	46	
K06B	THYROID PROCEDURES, MINC	1.74	4,087	6,500	1.59	9,056	7,152	1,904	679	39	604	50	276	364	31	
K40A	ENDO&INVEST PR METAB DIS, MAJC	3.48	689	5,963	8.65	18,118	13,736	4,382	2,238	131	3,518	250	1,129	808	91	
K40B	ENDO&INVEST PR METAB DIS, MINC	0.44	3,380	3,664	1.08	2,286	1,750	536	235	15	147	14	73	109	9	
K61B	SEV NUTRIT DISTURBANCE, MINC	1.71	387	2,048	5.29	8,870	6,536	2,335	1,220	67	2,331	185	721	180	18	
L03B	KDNY,URT&MJR BLDR PR NPSM,INTC	4.66	1,031	6,232	6.04	24,236	18,789	5,447	1,843	88	2,526	176	876	816	81	
L62B	KDNY&UNRY TR NEOPLASMS, MINC	0.70	1,449	2,721	1.88	3,640	2,741	899	398	26	630	46	229	140	17	
O03B	ECTOPIC PREGNANCY, MINC	1.04	2,070	3,136	1.51	5,388	4,139	1,249	450	37	493	47	198	130	8	
P66A	NEO,ADMWT 2000-2499G-OR/V,EXTC	5.54	1,097	19,482	17.76	28,780	21,737	7,043	4,571	345	6,972	533	1,605	479	54	
R62A	OTHER NEOPLASTIC DIS, MAJC	2.09	986	5,960	6.04	10,881	8,117	2,764	1,477	85	2,380	184	826	473	45	
T61B	POSTOP&POSTTRAUM INFECT, MINC	0.81	6,030	18,869	3.13	4,200	3,131	1,069	678	37	984	72	342	79	7	
X62A	POISON/TOXIC EFF DRUGS, MAJC	1.72	10,089	44,371	4.40	8,934	6,752	2,182	997	54	1,669	109	638	189	16	
X63A	SEQUELAE OF TREATMENT, MAJC	1.53	5,757	27,410	4.76	7,951	5,919	2,032	1,088	59	1,614	119	593	306	24	
Y61Z	SEVERE BURNS	1.43	445	1,679	3.77	7,450	5,516	1,934	867	49	1,862	113	696	137	19	
Y62B	OTHER BURNS, MINC	0.49	1,983	3,090	1.56	2,539	1,899	639	296	14	543	35	181	24	3	
Total	Total	1.00	5,441,992	14,150,836	2.60	5,199	3,976	1,223	546	35	885	66	309	15	3	

Data flows required for CBG development and payment system operation

Hospital Patient Records + Supply Chain and Financial Data



3. Better modeling and analysis

1. Validity of categories refining classification

- Clinical meaningfulness & Resource homogeneity
- Reliability and consistency of grouping between
 - hospitals – coders – clinicians & across time periods

2. Clearly documented and communicated

- Tariff calculation components
 - Activity base
 - Cost base
 - Relativities
 - Indices and adjustment factors

3. Impact assessments

- Distribution changes – hospitals – clinical specialties
- Consistency with clinical and demand/supply developments

Global budget context

- Expenditure based model and budget input
- Reconciliation: $\Sigma \text{ activity} * \text{ price} = \text{ budget}$
- Need multiple hospitals for pilots or proof of concept and for impact analysis

SUPPORT TEAM CAPABILITIES

- CLASSIFICATION AND CODING
- COSTING
- MODELLING
- STAKEHOLDER CONSULTATION
- EXPERT ADVISORY GROUPS MANAGEMENT

CLEAR ACCESSIBLE DOCUMENTATION

REGULAR REFINEMENTS

DATA INTEGRITY PROGRAM

AND

•MEASURE AND EVALUATE



•FEEDBACK TO USERS AND PROVIDERS (IA)



•BENCHMARK



•IMPROVE



•SET STRATEGIES AND TARGETS

