



A structural review of the AR-DRG Classification – moving towards Version 9.0

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Australian Consortium for Classification Development (ACCD):

- **National Centre for Classification in Health (NCCH)**, The University of Sydney – leads the consortium
- **KPMG** – expert advice on AR-DRG development
- **Western Sydney University** – IT systems research, development and maintenance

What do we do – an overview of ACCD

ACCD is contracted by IHPA to develop and refine the AR-DRG Classification System which has two components:

- **ICD-10-AM/ACHI/ACS**

- Ninth Edition: implemented July 2015
- Tenth Edition: to be implemented July 2017

- **AR-DRG classification**

- Version 8.0: released July 2015 to be implemented for pricing from July 2016
- Version 9.0: to be released **July 2017**



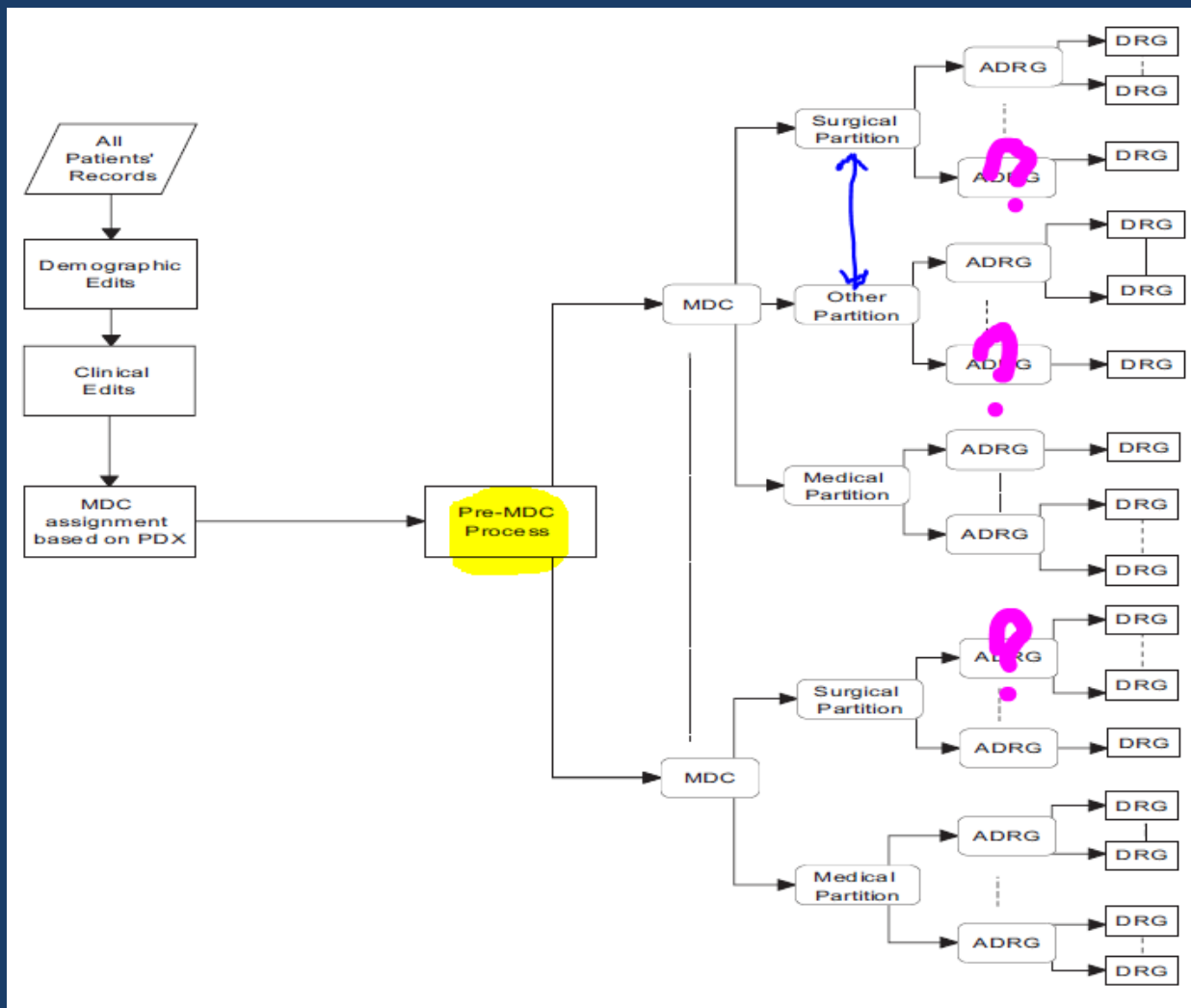


Specific focus of Version 9 development - ADRGs:

- In Pre Major Diagnostic Category (**PreMDC**)
- In the '**Other**' Partitions
- Selected **ADRGs**
 - using administrative variables in their definitions
 - lacking clinical distinctiveness



Focus is on review of the AR-DRG structure





PreMDC ADRGs

- 11 ADRGs (A01 to A40) are currently Pre MDCs, of which the logics is driven by a small selection of high cost interventions (diagnoses ignored)
- 4 ADRGs: paraplegia/quadriplegia (B60, B61 and B82) and HIV (S65) currently apply Pre MDC processing where specific diagnoses overwrite the PDx in the logic

Is the PreMDC logic still appropriate in separating these episodes from their native MDC given the advances in treatment and management of these conditions?



ADRGs in the 'Other' Partition

- ADRGs within each MDC are partitioned into 'Surgical', 'Other' and 'Medical'
- These partitions are defined by the present of OR, non-OR interventions
- No specific guidelines exist to define the type of interventions and the boundaries are blurred

Are there better ways to organise the hierarchy within MDCs?



ADRGs using administrative variables in their definitions

- Administrative variables such as LOS, transfer form part of the definition in a large number of ADRGs
- The Episode Clinical Complexity Model in AR-DRG Version 8.0 significantly reduced the use of administrative variables in DRG assignment

Do these administrative variables continue to be clinical markers of patient classes?



ADRGs using administrative variables in their definition

1. I80 Femoral Fractures, **Transferred** to Acute Facility **<2 Days**
2. I81 Musculoskeletal Injuries, **Sameday**
3. I82 Other **Sameday** Treatment for Musculoskeletal Disorders
4. P01 Neonate W Significant OR Proc, Died or **Transferred** to Acute Facility **<5 Days**
5. P60 Neonate W/O Sig OR Procedures, Died or **Transferred** to Acute Facility **<5 Days**
6. V65 Treatment for Alcohol Disorders, **Sameday**
7. V66 Treatment for Drug Disorders, **Sameday**
8. W60 Multiple Significant Trauma, Died or **Transferred** to Acute Facility **<5 Days**
9. Y60 Burns **Transferred** to Acute Facility **<5 Days**
10. B40 Plasmapheresis W Neurological Disease, **Sameday**
11. I40 Infusions for Musculoskeletal Disorders, **Sameday**
12. L41 Cystourethroscopy for Urinary Disorder, **Sameday**
13. M40 Cystourethroscopy for Male Reproductive System Disorder, **Sameday**
14. U40 Mental Health Treatment W ECT, **Sameday**
15. U60 Mental Health Treatment W/O ECT, **Sameday**
16. Z40 Other Contacts W Health Services W Endoscopy, **Sameday**



ADRGs lacking clinical distinctiveness

- ADRG 103 (Hip replacement) contains a mix of different types of care (e.g. traumatic fracture and osteoarthritis / other bone disease) which are clinically distinctive
- Similarly E65 (Chronic obstructive airways disease) contains episodes with bronchiectasis which is clinically distinct from the other conditions in this ADRG

Should new and clinically distinctive classes be created?



Review - an evidence based approach

- Guided by the agreed principles
- Three dimensional assessment:
 - Clinical evidence (via the established ACCD governance channels)
 - Classification structure (via a series of criteria and thresholds)
 - Cost dispersion (via statistical indicators)



Agreed Principles in the Version 8.0

- Clinically coherent
- Reasonably homogeneous in resource use
- Classification soundness
- Operationally acceptable and robust

Application to ADRG/DRG revisions

- Clinical distinctiveness is a key for ADRG formation
- Resource distribution is a key for DRG formation

Example 2: HIV – proposal to abolish pre-MDC handling and assign according to PDX

PRINCIPLE	EXAMPLE
Clinically coherent, as evidenced by	
The profile of diagnoses (principal and additional)	Recipient ADRGs would include cases with HIV
The profile of interventions	
Patient demographics	
Understandable by and acceptable to relevant clinicians involved in the delivery of care	HIV may be less “visible”
Reasonably robust with respect to changes in management and organisational arrangements of the health system	The change is consonant with practice change, with HIV as an entity being largely managed on an ambulatory basis
Operationally feasible with minimum adverse impacts	
Not creating inappropriate incentives for clinicians	Distribution should not affect incentives
Not creating inappropriate management practices within the health system	Distribution is unlikely to impact on management practices
Reasonably homogeneous in resource use	
Episodes within the component DRGs of an ADRG have relatively similar (not necessarily identical) levels of resource utilisation	There is the potential for HIV episodes - which may have unique comorbidities and costs - to disturb the profile of the recipient ADRG
DRGs within an ADRG are as distinctive as possible from each other, reflecting genuine and material differences in complexity.	There is a loss of distinctiveness
Classification soundness	
Statistically robust (for example, adequate volume)	A residual HIV ADRG would have a low volume, which therefore favours complete as opposed to partial redistribution
Reasonably balanced branches	
Stable over time, with changes only made in response to significant clinical or economic changes.	There is no reason to expect secular change



- For each proposal, statistics are analysed to answer following questions:
 - What ADRGs have been affected and the size of episodes affected?
 - Do the episodes that have moved clinically fit in the hosting ADRGs?
 - Do the movements make resource utilisation homogeneity of the hosting ADRGs better or worse?
 - What is the overall impact on the performance of the classification?

Example: ADRG S65 (HIV) Analysis – Two Options

Two possibilities were considered together with the removal of pre MDC logic:

- A. Creation of a dedicated ADRG HIV within MDC 18
- B. Allowing the episodes that come to MDC 18 to distribute to the existing ADRG T64 (Other Infectious and Parasitic Diseases)

Statistical performance of Option B was better - creation of ADRG HIV was not progressed

(A)

Episodes	N	Mean cost	Mean LOS
Total	5,012,452	4,671	2.83
Not affected	3,979,544	4,754	2.77
Movement	1,372	12,727	6.45
Indirectly affected	1,031,536	4,344	3.02
Total affected	1,032,908	4,355	3.03
ADRG/DRG	n ADRGs	n DRGs	
Source only	1	3	
Target only	75	121	
Source-target	0	0	

Criteria	Cost	LOS
Δ AICc	1,014	996
Δ Deviance (Total)	674	318
Δ Dev (Total) per move	0.49	0.23
Δ Dev % Base mov eps	34.1	32.2

Performance \uparrow or =
Performance \downarrow
NA - division by 0

(B)

Episodes	N	Mean cost	Mean LOS
Total	5,012,452	4,671	2.83
Not affected	3,979,544	4,754	2.77
Movement	1,372	12,727	6.45
Indirectly affected	1,031,536	4,344	3.02
Total affected	1,032,908	4,355	3.03
ADRG/DRG	n ADRGs	n DRGs	
Source only	1	3	
Target only	74	120	
Source-target	0	0	

Criteria	Cost	LOS
Δ AICc	632	405
Δ Deviance (Total)	422	131
Δ Dev (Total) per move	0.31	0.10
Δ Dev % Base mov eps	21.4	13.2

Performance \uparrow or =
Performance \downarrow
NA - division by 0



ADRG S65 (HIV) Analysis – Episode Distribution

The episodes were spread over 74 ADRGs across the classification
 Populated ADRGs received 77% of all episodes

Figure 1
(extract)

Table 3 Affected ADRGs

***** New ADRGs & DRGs:
 ***** Removed ADRGs & DRGs:
 S65
 S65A S65B S65C
 ***** Source ADRGs only (N = 1):
 S65
 ***** Target ADRGs only (N = 74):
 801 B02 B42 B60 B61 B63 B67 B71 B72 B73 B77 B81 C03 C60 C63 D11 D63 D67 E02 E40 E41 E42 E62 E67 E68
 E76 F21 F42 F61 G46 G47 G48 G67 G70 H43 H62 H63 I12 I69 J01 J08 J09 J10 J11 J13 J60 J64 J67 J68 J69
 K09 K40 K61 K62 L67 M62 N61 Q02 Q60 Q61 Q62 R01 R03 R61 R63 T01 T60 T62 T63 T64 U62 U63 Z61 Z64

Figure 2
(extract)

		Movement of episodes between ADRGs: Volume order				ADRG (base)	
						S65	
		N ADRG	%ADRG	%Move	%Cum	1,372	1,372
ADRGp	ADRGp Desc						
T64	OTH INFECTIOUS & PARASITIC DIS	4,623	5%	18%	18%	252	252
R63	CHEMOTHERAPY	127,480	0%	12%	30%	165	165
E62	RESPIRATORY INFECTN/INFLAMM	62,745	0%	11%	41%	148	148
R61	LYMPHOMA & N-ACUTE LEUKAEMIA	26,668	0%	9%	50%	122	122
Q61	RED BLOOD CELL DISORDERS	60,047	0%	5%	55%	66	66
G67	OESOPHAGITIS & GASTROENTERITIS	55,220	0%	4%	59%	59	59
B71	CRANIAL & PERIPHL NERV DSRD	21,395	0%	3%	62%	35	35
Q60	RETICLENDO & IMMUNITY DISORD	27,755	0%	2%	64%	31	31
T63	VIRAL ILLNESS	18,648	0%	2%	66%	31	31
J64	CELLULITIS	56,471	0%	2%	68%	30	30
T60	SEPTICAEMIA	17,316	0%	2%	71%	30	30
T62	FEVER OF UNKNOWN ORIGIN	10,160	0%	2%	73%	27	27
J11	OTHER SKIN, SUBC TIS & BRST PR	35,807	0%	2%	74%	25	25
E42	BRONCHOSCOPY	10,306	0%	1%	76%	20	20
B63	DMNTIA&CHRNIC DISTURB CRBRL FN	8,232	0%	1%	77%	16	16
Q62	COAGULATION DISORDERS	7,449	0%	1%	78%	16	16
T01	INFECT & PARASITIC DIS +OR PROC	4,835	0%	1%	79%	16	16
Z64	OTH FACTORS INFL HEALTH STATUS	46,781	0%	1%	80%	15	15
G48	COLONOSCOPY	66,948	0%	1%	81%	14	14
Q02	BLD&IMMUN SYS DSRD,+OTH OR PR	2,122	1%	1%	83%	14	14



ADRG S65 (HIV) Analysis – Deviance Impact

69% of increase in deviance occurred in 4 ADRGs caused by movement of 36% of episodes
 Two largest changes were caused (a) in DRG T64C by 138 low cost episodes from S65C;
 (b) in E62A by high cost episodes from S65A. We consider the change acceptable.

Proposal						Affected blocks						Base			
ADRG	ADRG Description	DRG	N	Mean	CV	Eps type	N	Mean	CV	Eps in	Δ Deviance	DRG	N	Mean	CV
T64	OTH INFECTIOUS & PARASITIC D		4,623	10,550	150		4,623			252	101				
		T64A	774	29,405	114	Ind aff targ	732	28,276	117	0	1	T64A	732	28,276	117
						<- Move	36	54,983	57	36	12	S65A	279	38,511	95
						<- Move	6	13,671	76	6	2	S65B	502	10,013	120
		T64B	1,526	10,486	115	Ind aff targ	1,478	10,282	116	0	1	T64B	1,478	10,282	116
						<- Move	19	21,534	106	19	7	S65A	279	38,511	95
						<- Move	28	13,256	56	28	-1	S65B	502	10,013	120
						<- Move	1	24,528		1	-10	S65C	591	2,861	176
		T64C	2,323	4,309	131	Ind aff targ	2,161	4,462	127	0	3	T64C	2,161	4,462	127
						<- Move	2	15,867	2	2	4	S65A	279	38,511	95
						<- Move	22	7,685	75	22	8	S65B	502	10,013	120
						<- Move	138	1,205	313	138	7	S65C	591	2,861	176
E62	RESPIRATORY INFECTN/INFLAM		62,745	8,140	115		62,745			148	75				
		E62A	31,373	8,797	106	Ind aff targ	31,234	8,769	105	0	0	E62A	31,234	8,769	105
						<- Move	53	25,678	89	53	8	S65A	279	38,511	95
						<- Move	86	8,309	86	86	-3	S65B	502	10,013	120
		E62B	31,372	3,484	105	Ind aff targ	31,363	3,484	105	0	0	E62B	31,363	3,484	105
						<- Move	9	4,021	55	9	-5	S65B	502	10,013	120
T63	VIRAL ILLNESS		18,648	2,285	153		18,648			31	58				
		T63A	2,499	5,594	146	Ind aff targ	2,476	5,473	144	0	1	T63A	2,476	5,473	144
						<- Move	7	38,428	56	7	55	S65A	279	38,511	95
						<- Move	16	9,976	163	16	7	S65B	502	10,013	120
		T63B	16,149	1,773	109	Ind aff targ	16,141	1,772	109	0	0	T63B	16,141	1,772	109
						<- Move	7	2,779	134	7	-6	S65B	502	10,013	120
						<- Move	1	5,593		1	1	S65C	591	2,861	176
G67	OESOPHAGITIS & GASTROENTER		55,220	2,556	168		55,220			59	58				
		G67A	17,552	5,155	136	Ind aff targ	17,506	5,139	134	0	0	G67A	17,506	5,139	134
						<- Move	10	29,670	156	10	59	S65A	279	38,511	95
						<- Move	36	6,173	83	36	-6	S65B	502	10,013	120
		G67B	37,668	1,345	154	Ind aff targ	37,655	1,345	154	0	0	G67B	37,655	1,345	154
						<- Move	6	3,419	84	6	2	S65B	502	10,013	120
						<- Move	7	2,194	128	7	2	S65C	591	2,861	176

Figure 3
(extract)





To date, more than 60 in scope proposals have been assessed individually, with:

- Ongoing clinical input from/via ACCD's Principle Clinical Advisor
- Two rounds of clinical input from the Classifications Clinical Advisory Group (CCAG) and the DRG Technical Group (DTG)
- Huge amount of statistical analyses to support clinical decisions and impact assessments

The overall impact of the proposals (when merged) will be assessed after CCAG/DTG endorse final recommendations in upcoming meetings

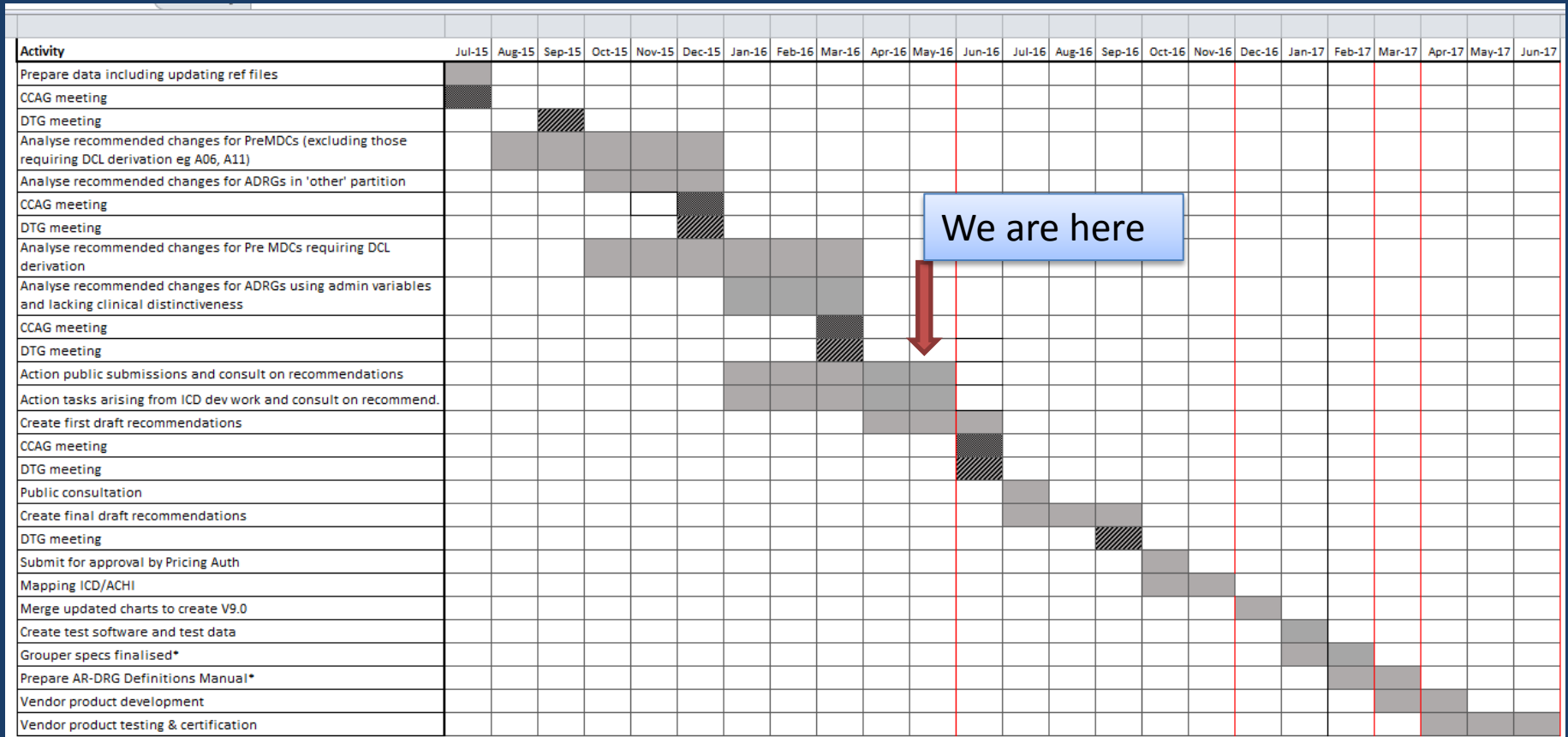


Parallel tasks

- Arising from a variety of public submissions
- Synchronising with the development of the foundation classification (ICD-10-AM/ACHI/ACS) development
- Preparing for release
 - Specifications to software developers
 - Summary of Changes
 - Print ready files for manuals
 - Certification of software tools
 - Education



AR-DRG V9.0 Development timeline:





Thank you



Number of ADRGs by Partition, AR-DRG V8						
		Number of Partitions	Number of ADRGs in			Total
			Surgical	Other	Medical	
MDC/PreMDC						
Pre	Major procedures with a principal diagnosis associated with any MDC	2	10	1		11
1	Diseases and Disorders of the Nervous System	3	7	3	23	33
2	Diseases and Disorders of the Eye	2	12		4	16
3	Diseases and Disorders of the Ear, Nose, Mouth and Throat	3	12	1	8	21
4	Diseases and Disorders of the Respiratory System	3	2	3	17	22
5	Diseases and Disorders of the Circulatory System	3	21	4	15	40
6	Diseases and Disorders of the Digestive System	3	10	3	7	20
7	Diseases and Disorders of the Hepatobiliary System and Pancreas	3	6	2	5	13
8	Diseases and Disorders of the Musculoskeletal System and Connective Tissue	3	29	1	21	51
9	Diseases and Disorders of the Skin, Subcutaneous Tissue and Breast	2	10		8	18
10	Endocrine, Nutritional and Metabolic Diseases and Disorders	3	11	1	5	17
11	Diseases and Disorders of the Kidney and Urinary Tract	3	8	3	9	20
12	Diseases and Disorders of the Male Reproductive System	3	6	1	5	12
13	Diseases and Disorders of the Female Reproductive System	2	10		3	13
14	Pregnancy, Childbirth and the Puerperium	2	5		4	9
15	Newborns and Other Neonates	2	8		9	17
	Diseases and Disorders of the Blood and Blood Forming Organs and Immunological	2	2		3	5
16	Neoplastic Disorders (Haematological and Solid Neoplasms)	2	4		4	8
17	Infectious and Parasitic Diseases	3	1	1	6	8
18	Mental Diseases and Disorders	2		1	9	10
19	Alcohol/Drug Use and Alcohol/Drug Induced Organic Mental Disorder	1			7	7
20	Injuries, Poisoning and Toxic Effects of Drugs	3	9	1	7	17
21	Burns	2	3		3	6
22	Factors Influencing Health Status and Other Contacts with Health Services	3	1	1	6	8
23	Unrelated OR Procedures (ADRG801)	1	1			1
801	Unrelated OR Procedures (ADRG801)	1	1			1
96x	Error DRGs (DRG 96x)	1			3	3
	Total number of Partitions	62	23	15	24	
	Total number of ADRGs		188	27	191	403