

## Changes between AR-DRG V6.0 and AR-DRG V7.0

The National Casemix and Classification Centre (NCCC) at the University of Wollongong has finalised AR-DRG Version 7.0. Its development has been guided by extensive clinical consultation and data analysis, combined with advice from the DRG Technical Group (DTG).

A companion paper entitled 'Overview of AR-DRG V7.0' provides a summary of how Version 7.0 was developed and how it performs. This paper provides additional information and has been prepared to outline the changes between AR-DRG V7.0 and the previous version (Version 6.0). Reference is also made to Version 6.0X, which was implemented while Version 7.0 was being developed. Version 6.0X saw the re-introduction of some DRGs for obstetrics, mental health and breast malignancies that had been removed in Version 6.0.

Version 7.0 was developed using the 2009/10 hospital morbidity data collection. Approximately 20% of separations in that data set are assigned to a different class in Version 7.0 than in Version 6.0 (see Table 1). The percentage of movements between Versions 7.0 and 6.0X is less than this (approximately 16%) as Version 7.0 incorporates the majority of changes in Version 6.0X.

**Table 1** Summary of changes between versions 6.0 and 7.0

MDC	Total episodes in 2009/10	Episodes with any change*	% any change*
Pre-MDC	16,252	5,809	35.7%
MDC 01 Nervous system	310,880	71,248	22.9%
MDC 02 Eye	308,943	17,964	5.8%
MDC 03 Ear, nose, mouth & throat	405,450	118,930	29.3%
MDC 04 Respiratory system	366,994	41,392	11.3%
MDC 05 Circulatory system	569,612	168,598	29.6%
MDC 06 Digestive system	1,046,982	119,092	11.4%
MDC 07 Hepatobiliary system & pancreas	128,389	20,857	16.3%
MDC 08 Musculoskeletal system & connective tissue	720,834	157,374	21.8%
MDC 09 Skin, subcutaneous tissue & breast	373,521	92,342	24.7%
MDC 10 Endocrine, nutritional & metabolic diseases & disorders	118,182	38,744	32.8%
MDC 11 Kidney & urinary tract	1,400,589	58,008	4.1%
MDC 12 Male reproductive system	115,929	9,746	8.4%
MDC 13 Female reproductive system	279,995	94,566	33.8%
MDC 14 Pregnancy, childbirth & the puerperium	500,389	379,803	75.9%
MDC 15 Newborns & other neonates	86,510	59,693	69.0%
MDC 16 Blood & blood forming organs & immunological disorders	117,073	69,092	59.0%
MDC 17 Neoplastic disorders (haematological & solid neoplasms)	419,615	11,548	2.8%
MDC 18 Infectious & parasitic diseases	1,628	792	74.5%
MDC 19 Mental diseases & disorders	71,946	18,578	27.9%
MDC 20 Alcohol/drug use & alcohol/drug induced organic mental disorders	261,259	72,811	67.9%
MDC 21 Injuries, poisoning & toxic effects of drugs	61,927	42,027	11.2%

MDC	Total episodes in 2009/10	Episodes with any change*	% any change*
MDC 22 Burns	4,304	479	28.4%
MDC 23 Factors influencing health status & other contacts with health services	169,682	170	1.7%
Unrelated OR DRGs	8,565	678	7.9%
Error DRGs	4,994		0.0%
<b>Total</b>	<b>8,197,266</b>	<b>1,678,167</b>	<b>20.5%</b>

\* Any change includes movements between MDCs, ADRGs and DRGs

## Movements between Major Diagnostic Categories

The first step in the classification process is to assign a patient care episode to one of 23 Major Diagnostic Categories (MDCs). This is a high level classification of diagnoses and other health problems. The 23 MDCs are listed in the table above. A small number of high cost episodes are classified at this stage to a separate 'Pre-MDC' group.

A very small number (0.1%) of episodes move into a different MDC when grouped to Version 7.0. Three quarters of these are admissions for sleep disorders that have been moved out of the mental health MDC in Version 7. The remainder are largely trauma cases that have been moved to the injuries MDC from the Pre-MDC branch.

## Movements between ADRGs within the same Major Diagnostic Category

**The second stage in the assignment process is to classify each episode of care to an Adjacent Diagnosis Related Group (ADRG).** For example, there is one ADRG for knee replacements and a different ADRG for hip replacements. Each of these may be further split in the last stage of assigning an episode of care to a DRG. Continuing with this same example, the knee replacement ADRG contains two DRGs in Version 7.0:

- Knee replacement with catastrophic or severe complications and/or comorbidities
- Knee replacement without catastrophic or severe complications and/or comorbidities

In total, 1.7 million episodes stay in the same MDC but are allocated to a different DRG in Version 7.0. These episodes are shown in Table 2. Of these, 83.3% are assigned to the same ADRG as they would be in Version 6.0 but to a different DRG. This percentage varies from 100% for many MDCs to only 11% for MDC 15 (Newborns and other neonates). The major movements between ADRGs occur within four MDCs as described below.

### MDC 15 (Newborns and other neonates)

MDC 15 (Newborns and other neonates) was a clinical focus area for Version 7.0 and the degree of change in MDC 15 reflects the new ADRGs, updated code lists and splitting variables that were introduced as a result of the detailed clinical review of neonatal episodes that was undertaken in 2011. There are now 17 ADRGs in MDC 15, up from 14 in the previous version.

### MDC 10 (Endocrine, nutritional and metabolic diseases and disorders)

Diabetes and bariatric surgery were also major clinical focus areas in 2011 with four new ADRGs for bariatric surgery replacing two ADRGs for obesity procedures. These changes have driven the high percentage of episodes that move to a different ADRG in Version 7.0.

### MDC 8 (Diseases and disorders of the musculoskeletal system and connective tissue)

Four new medical ADRGs have been introduced in Version 7.0. In total, nearly 95% of the movement in this MDC is due to the introduction of these four new ADRGs.

## MDC 20 (Alcohol/drug use and alcohol/drug induced organic mental disorders)

Two new same day ADRGs have been introduced in Version 7.0. These are V65Z (Treatment for Alcohol Disorders, Sameday) and V66Z (Treatment for Drug Disorders, Sameday). These new ADRGs account for the movements between ADRGs in this MDC.

**Table 2 Episodes in the same MDC that changed ADRGs**

MDC	Same ADRG*	Different ADRG*	Total	% same ADRG
Pre MDC	5,050	3	5,053	99.9%
MDC 01 Nervous system	71,113		71,113	100.0%
MDC 02 Eye	17,511	453	17,964	97.5%
MDC 03 Ear, nose, mouth & throat	112,999	5,931	118,930	95.0%
MDC 04 Respiratory system	41,365	3	41,368	100.0%
MDC 05 Circulatory system	168,434	157	168,591	99.9%
MDC 06 Digestive system	92,820	26,160	118,980	78.0%
MDC 07 Hepatobiliary system & pancreas	20,734	99	20,833	99.5%
MDC 08 Musculoskeletal system & connective tissue	30,966	126,105	157,071	19.7%
MDC 09 Skin, subcutaneous tissue & breast	92,197	41	92,238	100.0%
MDC 10 Endocrine, nutritional & metabolic diseases & disorders	22,541	16,200	38,741	58.2%
MDC 11 Kidney & urinary tract	57,998	1	57,999	100.0%
MDC 12 Male reproductive system	9,745		9,745	100.0%
MDC 13 Female reproductive system	94,433	131	94,564	99.9%
MDC 14 Pregnancy, childbirth & the puerperium	365,750	14,053	379,803	96.3%
MDC 15 Newborns & other neonates	6,416	53,277	59,693	10.7%
MDC 16 Blood, blood forming organs & immunological disorders	68,439	653	69,092	99.1%
MDC 17 Neoplastic disorders	9,339	2,209	11,548	80.9%
MDC 18 Infectious & parasitic diseases	18,564	806	19,370	95.8%
MDC 19 Mental diseases & disorders	66,930		66,930	100.0%
MDC 20 Alcohol/drug use & induced organic mental disorders	11,023	31,004	42,027	26.2%
MDC 21 Injuries, poisoning & toxic effects of drugs	473	55	528	89.6%
MDC 22 Burns	2,527		2,527	100.0%
MDC 23 Factors influencing health status & other contacts	4,315	984	5,299	81.4%
<b>Total</b>	<b>1,391,686</b>	<b>278,325</b>	<b>1,670,007</b>	<b>83.3%</b>

\* The number of episodes that stay in the same ADRG or go to a different ADRG when grouped in Version 7.0.

## Movements between DRGs within the same ADRG

As seen in Table 2 above, 1.39 million episodes are allocated to the same MDC and ADRG in Version 7.0 as they are in Version 6.0 but are allocated to a different DRG in Version 7.0. These are episodes that move from one resource level to another (with resource level defined as A, B, C, D or Z – see DRG manual).

The overall profile of movements between resource levels within the one ADRG is shown in Table 3. As shown in this table, 61.1% of the episodes that change DRGs within the one ADRG are episodes that were allocated to a Z category DRG in Version 6.0. The Z category applies when there are no splits within the ADRG. The changes in Version 7.0 reclassify these episodes to a more precise DRG.

**Table 3 Summary of changes at the DRG level**

Resource level Version 6.0	Resource level Version 7.0					Total	As % of total
	A	B	C	D	Z		
A		30,149	15,816		15,748	61,713	4.4%
B	39,796		372,646	3	32,264	444,709	32.0%
C	468	33,729		217	27	34,441	2.5%
D		2	587			589	0.0%
Z	164,350	582,123	103,761			850,234	61.1%
<b>Total</b>	<b>204,614</b>	<b>646,003</b>	<b>492,810</b>	<b>220</b>	<b>48,039</b>	<b>1,391,686</b>	<b>100.0%</b>
<b>As % of resource level in Version 6.0</b>							
A	0.0%	48.9%	25.6%	0.0%	25.5%	100.0%	
B	8.9%	0.0%	83.8%	0.0%	7.3%	100.0%	
C	1.4%	97.9%	0.0%	0.6%	0.1%	100.0%	
D	0.0%	0.3%	99.7%	0.0%	0.0%	100.0%	
Z	19.3%	68.5%	12.2%	0.0%	0.0%	100.0%	
<b>Total</b>	<b>14.7%</b>	<b>46.4%</b>	<b>35.4%</b>	<b>0.0%</b>	<b>3.5%</b>	<b>100.0%</b>	

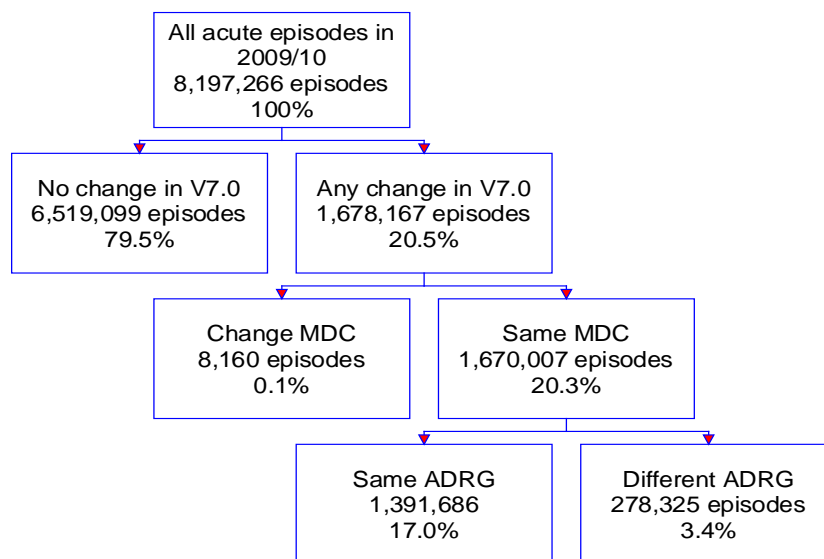
The bottom half of the table shows changes as a percentage of each resource level in Version 6.0. This is best explained by example. Of the 850,234 episodes that were allocated to a 'level Z' DRG in Version 6 and moved to another level in Version 7, 19.3% are now allocated to a level A DRG, 68.5% to a level B DRG and 12.2% to a level C DRG.

Nearly one third of changes at the DRG level are episodes that move from a 'level B' DRG to a 'level C' DRG in Version 7.0. This change is largely due to the inclusion of more same day DRGs and changes in how some DRGs are defined in Version 7.0.

**Summary**

Changes in Version 7.0 are summarised in Figure 1 and by MDC in Table 4.

**Figure 1 Summary of changes from Version 6.0 to Version 7.0**



The data in Table 4 are sorted based on the percentage of records that are allocated to a different class in Version 7.0 than they were in Version 6.0.

While approximately 20% of all separations are assigned to a different class in Version 7.0 than in Version 6.0, this is not the case across all MDCs. The MDC with the highest percentage of change is MDC 14 (Obstetrics). In practice, almost all of this change is because Version 7.0 maintains the obstetric classes reintroduced in Version 6.0X. This also applies to MDC 19 (Mental health).

**Table 4 Summary of changes by MDC**

MDC	Total episodes	% no change	% change			% any change
			MDC	ADRG	DRG	
MDC 14 Pregnancy, childbirth & the puerperium	500,389	24.1%	0.0%	2.8%	73.1%	75.9%
MDC 15 Newborns & other neonates	86,510	31.0%	0.0%	61.6%	7.4%	69.0%
MDC 20 Alcohol/drug use & induced organic mental disorders	61,927	32.1%	0.0%	50.1%	17.8%	67.9%
MDC 16 Blood & blood forming organs & immunological disorders	117,073	41.0%	0.0%	0.6%	58.5%	59.0%
Pre-MDC	16,252	64.3%	4.7%	0.0%	31.1%	35.7%
MDC 13 Female reproductive system	279,995	66.2%	0.0%	0.1%	33.7%	33.8%
MDC 10 Endocrine, nutritional & metabolic diseases & disorders	118,182	67.2%	0.0%	13.7%	19.1%	32.8%
MDC 05 Circulatory system	569,612	70.4%	0.0%	0.0%	29.6%	29.6%
MDC 03 Ear, nose, mouth & throat	405,450	70.7%	0.0%	1.5%	27.9%	29.3%
MDC 22 Burns	8,909	71.6%	0.0%	0.0%	28.4%	28.4%
MDC 19 Mental diseases & disorders	261,259	72.1%	2.3%	0.0%	25.6%	27.9%
MDC 18 Infectious & parasitic diseases	73,574	73.7%	0.0%	1.1%	25.2%	26.3%
MDC 09 Skin, subcutaneous tissue & breast	373,521	75.3%	0.0%	0.0%	24.7%	24.7%
MDC 01 Nervous system	310,880	77.1%	0.0%	0.0%	22.9%	22.9%
MDC 08 Musculoskeletal system & connective tissue	720,834	78.2%	0.0%	17.5%	4.3%	21.8%
MDC 07 Hepatobiliary system & pancreas	128,389	83.8%	0.0%	0.1%	16.2%	16.3%
MDC 06 Digestive system	1,046,982	88.6%	0.0%	2.5%	8.9%	11.4%
MDC 04 Respiratory system	366,994	88.7%	0.0%	0.0%	11.3%	11.3%
MDC 12 Male reproductive system	115,929	91.6%	0.0%	0.0%	8.4%	8.4%
Unrelated OR DRGs	8,565	92.1%	7.9%	0.0%	0.1%	7.9%
MDC 02 Eye	308,943	94.2%	0.0%	0.2%	5.7%	5.8%
MDC 11 Kidney & urinary tract	1,400,589	95.9%	0.0%	0.0%	4.1%	4.1%
MDC 17 Neoplastic disorders (haematological & solid neoplasms)	419,615	97.3%	0.0%	0.5%	2.2%	2.8%
MDC 23 Factors influencing health status & other contacts	317,913	98.3%	0.0%	0.3%	1.4%	1.7%
MDC 21 Injuries, poisoning & toxic effects of drugs	173,986	99.6%	0.1%	0.0%	0.3%	0.4%
Error DRGs	4,994	100.0%	0.0%	0.0%	0.0%	0.0%
<b>Total</b>	<b>8,197,266</b>	<b>79.5%</b>	<b>0.1%</b>	<b>3.4%</b>	<b>17.0%</b>	<b>20.5%</b>

In real terms, the most significant change is in MDC 15 (Newborns and other neonates). This MDC underwent major review in the development of Version 7.0 based on concerns by paediatric and neonatal experts about previous versions of the classification. MDC 15 is considered a significant improvement over previous DRG versions.

The changes in the next two MDCs (MDC 20 Alcohol/drug and MDC 16 Blood and immunological disorders) are largely due to the introduction of new same day classes. The same applies to many of the remaining MDCs.

Further details on changes in Version 7.0 are available from the NCCC and will be included in the AR-DRG Version 7.0 manual.

#### Key statistics

- Version 7.0 has 771 DRGs
- 73 more than V6.0 and 63 more than V6.0X
- Statistical performance improved from 65.1 to 69.4 (see companion paper)
- 126 ADRGs changed
- 13 ADRGs added and 7 deleted
- 92 DRGs added and 19 deleted
- Reflecting changes in clinical practice, 37 of the additional DRGs are for same day admissions