



**Queensland  
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## A review of the Condition Present on Admission (CPoA) variable

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### Key Findings

The Condition Present on Admission (CPoA) variable is used to distinguish between conditions that were present on admission to an episode of care and those conditions that arose during an episode of care.

The variable was introduced to the Queensland Hospital Admitted Patient Data Collection in July 2006. This report presents the results of a quality assessment of the variable. The key findings are as follows:

- For private facilities, with the introduction of the CPoA variable for morphology codes in 2008/09, the rate that expected 'present on admission' conditions were coded as 'not present on admission' increased from 0.30% to 0.69%.
- In 2009/10, 0.89% of expected 'present on admission' conditions were coded as 'not present on admission'.
- In 2009/10, 26.64% of expected complications (not present on admission) were coded as 'present on admission'.
- A higher percentage of CPoA coding errors relate to overnight episodes than to same day episodes.
- A higher percentage of CPoA coding errors relate to transferred and episode changed patients than to those not being transferred or episode changed.
- A large number of CPoA coding errors are evident for pregnancy related conditions.

For improvement in the quality of the CPoA variable, it is suggested that the ACS0048 coding standard be expanded with further examples to illustrate the flag's correct assignment for chronic conditions and obstetrics codes. Additionally, targeted communication to clinical coders on the standard and appropriate coding of the flag is also recommended to address the issues raised in this report.

## 1. Background and purpose of the report

The Condition Present on Admission (CPoA) variable, also known as the Condition Onset Flag (COF), was introduced to the Queensland Hospital Admitted Patient Data Collection (QHAPDC) on 1 July 2006. The purpose of the variable is to distinguish between all conditions (including principal diagnoses, other diagnoses and external cause diagnoses) that were present on admission to an episode of care versus conditions that arose during an episode of care. On 1 July 2008, collection of the CPoA variable was also introduced in the QHAPDC for morphology diagnosis codes.<sup>1</sup>

The CPoA variable can take a value of 'present on admission' (PoA), indicating that a condition for a patient was present on the commencement of the episode, or 'not present on admission' (non-PoA), indicating that the condition was not present on the commencement of the episode. An indicator value of 'unknown/uncertain' was introduced to the QHAPDC on 1 July 2008 to identify conditions where it is uncertain whether the condition was present on admission or arose during admission. Prior to the introduction of the unknown/uncertain option, these conditions were given a CPoA value of 'present on admission'.

The definition of the CPoA variable within QHAPDC is slightly different to the definition in the Australian Coding Standards (ACS0048). Where QHAPDC differentiates between conditions that are 'present on admission' and 'not present on admission', the ACS0048 differentiates between conditions that are 'not noted as arising during the episode of admitted patient care' and conditions 'with onset during the episode of admitted patient care'. Although the definitions are essentially equivalent, the differences in the wording may influence the CPoA flag that a coder assigns to a diagnosis. It is also noted that the indicators used for the variable in QHAPDC are the reverse of the indicators used in the ACS0048, which may also impact upon the quality of the coding. Additionally, the QHAPDC CPoA value of 'unknown/uncertain' does not exist in the ACS0048<sup>2</sup>.

For conditions which are the principal diagnoses of patients, the CPoA variable always takes a value of 'present on admission' as such diagnoses are the reason for the admission and by definition were present on the commencement of the episode. However, the value of the flag can vary, and must be recorded, for all non-principal diagnoses.<sup>1</sup>

Under the definition of the variable, it is expected that chronic conditions and comorbidities of patients should be given a CPoA flag of 'present on admission', while complications of care should be flagged as arising (i.e. 'not present on admission') within that episode of care. Most hospital stays involve a patient being admitted into hospital and later discharged without any complications, so that the CPoA variable is straightforward to assign (the patient either had the condition on arrival, or they didn't). However, in some instances the assignment of the CPoA flag is not clear cut, due to the division of hospital admissions into statistical episodes. For example, a patient who experiences a complication of care may subsequently begin a new, linked episode of care within the one hospital stay. In the first episode, the complication will be recorded as *non-PoA* whereas in the second it will be recorded as *PoA*. Although the condition itself is actually a complication of care, it will not be recorded as such in the second episode because the complication had occurred before the episode began.

In regards to morphology codes, the Australian Coding Standards (ACS) 0233 instructs that morphology codes are only to be assigned directly following a corresponding neoplasm code. As such, the ACS0048 then instructs that the CPoA flag given to the morphology code should be the same as the flag given to the neoplasm code.<sup>2</sup>

This report assesses the quality with which the CPoA variable has been recorded in the QHAPDC since its implementation in 2006/07 until 2009/10.

## 2. Method

In order to assess the quality of the CPoA variable, it is essential to identify what value of the variable a diagnosis should take. For some conditions this cannot be universally determined, however a range of diagnoses exist which are regarded as 'present on admission' (PoA) conditions and could seldom develop during the time a patient was in hospital (e.g. sickle-cell anaemia, multiple sclerosis, contact with venomous octopus). On the other hand, other conditions exist which are complications of care by definition (e.g. accidental puncture and laceration during a procedure). Thus, the quality of the flag can be assessed for these expected 'present on admission' conditions as well as these expected complications of care.

The QHAPDC (Queensland Hospital Admitted Patient Data Collection) contains all diagnosis information for each admitted episode of care, including principal diagnosis, other diagnoses, external causes and morphology codes. Diagnosis codes are sourced from the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification (ICD-10-AM). All other diagnoses, external causes and morphology codes were extracted from the QHAPDC for the years 2006/07 to 2009/10, excluding mental health facilities, non-Queensland residents, boarders, organ procurements and unqualified neonates. Morphology diagnoses were only included in the analysis for 2008/09 and 2009/10, since the CPoA variable was not collected for morphology codes prior to these years.

Consideration was given to exclude episodes which involved either contract care or leave for a patient, since for example, if a patient is on leave and an incident occurs, the CPoA flag would be legitimately assigned as 'not present on admission' (non-PoA), but according to the methods employed here, might be counted as an error. However, these exclusions did not notably alter the results, and so have not been reported.

The value of the CPoA flag for each diagnosis was then examined to identify whether the CPoA flag was being assigned as expected, using the two following methods.

1. *A computerised algorithm provided by the Australian Institute of Health and Welfare (AIHW), based on the work conducted by Jacskon et al<sup>3</sup>.*

The algorithm was written for use with the SAS statistical analysis software package. It identifies diagnoses which should have been assigned a CPoA flag of *PoA*, and highlights any of these which have been assigned a CPoA flag of *non-PoA*. For example, if a patient was diagnosed with ICD-10-AM code X33 (victim of lightning), and this condition was assigned a CPoA value of *non-PoA*, then this would be counted as an error. The AIHW algorithm is utilised throughout Section 3 (Quality of expected 'present on admission' conditions) of this report.

2. *The CHADx (Classification of Hospital Acquired Diagnoses)*

The CHADx was developed as a means for hospitals to monitor a range of hospital-acquired diagnoses<sup>4</sup>. It essentially identifies hospital-acquired diagnoses, and groups them into clinically meaningful sub-chapters and chapters. Within the CHADx, there are several sub-chapters that contain conditions which are highly likely to have been hospital acquired (i.e. *non-PoA*). Here, by taking this select subset of the CHADx, the CHADx can then be used to identify diagnoses which should have been assigned a CPoA

value of *non-PoA*, and highlight any of these which have been assigned a CPoA value of *PoA*. For example, if a patient is diagnosed with ICD-10-AM code T81.2 (accidental laceration/puncture during a procedure) and the CPoA flag is given as *PoA*, this would be counted as an error. This report utilises the CHADx subset in Section 4 (Quality of expected complications).

As earlier noted, the assignment of the CPoA flag in episode changes and transfers is not clear cut for complications of care. That is, a complication should be 'not present on admission' in an initial episode, but can be 'present on admission' in an episode change or transfer. This is not the case for expected 'present on admission' conditions, which should always be coded as 'present on admission' regardless of whether the patient has been transferred or not. For this reason, episode changes and transfers were excluded from the data for the CHADx method (Section 4), but not excluded from the data for the AIHW algorithm (Section 3).

Diagnoses that had a CPoA value of 'unknown/uncertain' had no impact on either method, and as such were not altered in any way.

As a final note, in 2008/09, the ICD-10-AM edition was changed from the 5<sup>th</sup> edition (which corresponds to years 2006/07 and 2007/08) to the 6<sup>th</sup> edition (which corresponds to years 2008/09 and 2009/10). Hence, the ICD-10-AM codes that were included in each of the methods described have been edited so that the appropriate ICD-10-AM codes were applied to the appropriate years i.e. only 5<sup>th</sup> edition ICD-10-AM codes were applied to 2006/07 and 2007/08, and only 6<sup>th</sup> edition ICD-10-AM codes were applied to 2008/09 and 2009/10.

### **2.1. Inconsistent recording of CPoA variable for 'outcome of delivery' and 'live born infants according to place of birth'**

The Australian Coding Standards (ACS) 0048 instructs that ICD-10-AM codes Z37 (outcome of delivery) and Z38 (live born infants according to place of birth) are to be assigned a CPoA flag of 'present on admission', but the ACS0048 was not introduced in Australia until 2008/09. Hence, for QHAPDC data in years prior to this, there was no CPoA coding standard for Z37 and Z38 so that these ICD-codes could take a CPoA value of 'present on admission' or 'not present on admission', and assignment was influenced by place of delivery and reason for admission (principal diagnosis). Queensland standards varied from the national standard to provide for CPoA assignment as determined by the clinical coders. However to comply with the national standard the CPoA variable was recoded for data supplied to the AIHW.

Table 2.1 contains the number of other diagnoses of Z37 and Z38 that were flagged as 'not present on admission' by year, by facility type. Prior to the introduction of ACS0048 in 2008/09, over 70% of these codes were flagged as 'not present on admission' within public facilities, and approximately 50% were flagged within private facilities.

**Table 2.1 Number of Z37 or Z38 other diagnoses that were flagged as ‘not present on admission’ by facility type, Queensland, 2006/07-2009/10.**

Facility Type	Year	non-PoA Diagnoses	Total Diagnoses	Percentage non-PoA
Public	2006/07	33,069	46,688	70.83
	2007/08	36,119	48,904	73.86
	2008/09	0	49,757	0.00
	2009/10	0	50,156	0.00
Private	2006/07	10,276	19,498	52.70
	2007/08	9,332	19,787	47.16
	2008/09	0	20,270	0.00
	2009/10	0	20,338	0.00

Because there was no CPoA standard for Z37 and Z38 ICD-10-AM codes in QHAPDC data before 2008/09, it is not accurate to report the CPoA errors for Z37 and Z38 as ‘errors’ before 2008/09. Additionally, due to the inconsistent coding of Z37 and Z38 ICD-codes it is difficult to make comparisons between years. Hence, any Z37 or Z38 ICD-10-AM codes with a CPoA flag of ‘not present on admission’ were recoded to ‘present on admission’ to be comparable with 2008/09 and 2009/10 data.

All following tables are presented with the adjustment to Z37 and Z38 CPoA flags having been made.

## 2.2. CPoA flag of other diagnoses, external causes and morphology codes

Table 2.2 displays the number of other diagnoses, external causes and morphology codes recorded as ‘present on admission’ (PoA) and ‘not present on admission’ (non-PoA) by year, by facility type. From 2008/09 onwards, the number of diagnoses with a CPoA value of unknown/uncertain is also provided. For each year, the percentage of diagnoses with a CPoA value of ‘not present on admission’ is higher for public facilities than for private facilities. Public facilities are also more likely to utilise the ‘unknown/uncertain’ value, however the proportion of diagnoses coded as ‘unknown/uncertain’ is very small for both facility types.

**Table 2.2 Number and percentage of other diagnoses, external causes and morphology codes recorded by CPoA flag, year and facility type.**

Facility Type	Year	CPoA flag					
		PoA		Non-PoA		Unknown/Uncertain	
		N	%	N	%	N	%
Public	2006/07	1,920,117	91.18	185,666	8.82	N/A	N/A
	2007/08	2,069,607	91.52	191,666	8.48	N/A	N/A
	2008/09	2,160,871	91.28	200,948	8.49	5,449	0.23
	2009/10	2,250,480	90.58	228,683	9.20	5,250	0.21
Private	2006/07	1,264,912	95.09	65,272	4.91	N/A	N/A
	2007/08	1,314,231	95.18	66,581	4.82	N/A	N/A
	2008/09	1,492,474	95.19	74,713	4.77	646	0.04
	2009/10	1,557,429	94.86	83,972	5.11	376	0.02

### 3. Quality of expected ‘present on admission’ conditions

#### 3.1. Quality for expected PoA conditions by facility type, ICD type, same day status and referral source

The results of the SAS algorithm provided by the Australian Institute of Health and Welfare (AIHW) are presented below. Each table presents the number of CPoA errors and the percentage of error.

Table 3.1 displays the overall proportion of expected PoA conditions which have a CPoA value of non-PoA, by year, by facility type. The denominator used to calculate the percentage is the total number of diagnoses of expected PoA conditions i.e. the total number of occurrences of the diagnoses that are listed on the AIHW algorithm.

Over the four listed years the total percentage of error ranges between 0.79% and 0.97%, and does not indicate any obvious trend. When public facilities are considered alone, there is an improvement in the quality of the CPoA flag. The percentage of error for public facilities decreases overall from 1.43% in 2006/07 to 0.98% in 2009/10. In comparison, for private facilities, the percentage of error increases overall from 0.36% in 2006/07 to 0.89% in 2009/10. However, the percentage of error for private facilities is still lower than public facilities in each year. Table 3.1 also indicates that private facilities experience a relatively large increase in percentage of error between 2007/08 and 2008/09.

**Table 3.1 CPoA potential error rates by facility type.**

Facility Type	Year	PoA Diagnoses coded as non-PoA	PoA Diagnoses	Percentage Error
Public	2006/07	16,697	1,170,973	1.43
	2007/08	14,457	1,256,498	1.15
	2008/09	11,786	1,305,885	0.90
	2009/10	13,272	1,348,260	0.98
Private	2006/07	3,128	872,619	0.36
	2007/08	2,760	922,394	0.30
	2008/09	7,662	1,111,547	0.69
	2009/10	9,035	1,148,682	0.79
Overall	2006/07	19,825	2,043,592	0.97
	2007/08	17,217	2,178,892	0.79
	2008/09	19,448	2,417,432	0.80
	2009/10	22,307	2,496,942	0.89

Table 3.2 further breaks down the error rate information by year, by ICD type (external cause, other diagnoses or morphology) by facility type. From 2008/09 onwards, within private facilities, morphology codes account for a very large proportion of the CPoA errors, with the corresponding percentage of error being higher than the alternative ICD types. The inclusion of morphology codes accounts for the increase in error for private facilities, and consequently also for the overall increase in error from 2007/08 to 2008/09.

**Table 3.2 CPoA potential error rates by ICD type and facility type.**

Facility Type	ICD Type	Year	PoA Diagnoses coded as non-PoA	PoA Diagnoses	Percentage Error
Public	External Cause	2006/07	412	152,905	0.27
		2007/08	335	161,876	0.21
		2008/09	345	174,804	0.20
		2009/10	416	173,554	0.24
	Other Diagnoses	2006/07	16,285	1,018,068	1.60
		2007/08	14,122	1,094,622	1.29
		2008/09	11,325	994,730	1.14
		2009/10	12,765	1,030,710	1.24
	Morphology	2008/09	116	136,351	0.09
		2009/10	91	143,996	0.06
Private	External Cause	2006/07	102	35,814	0.28
		2007/08	84	35,694	0.24
		2008/09	104	36,880	0.28
		2009/10	134	38,600	0.35
	Other Diagnoses	2006/07	3,026	836,805	0.36
		2007/08	2,676	886,700	0.30
		2008/09	2,639	827,682	0.32
		2009/10	3,773	853,375	0.44
	Morphology	2008/09	4,919	246,985	1.99
		2009/10	5,128	256,707	2.00

Table 3.3 presents the error rate information by year, by same day status, by facility type. For same day status, it is more appropriate to look at the number of *episodes* with CPoA error, as opposed to the number of *diagnoses*. Hence, Table 3.3 gives the number of *episodes that involved an expected PoA diagnosis that was coded as non-PoA*. Also, the denominator used to calculate the percentage error becomes the total number of *episodes that involved expected PoA diagnoses*.

Both facility types display a higher percentage of error for overnight patients than for same day patients. This may be due to the fact that there is a higher potential for error, since a higher volume of comorbidities would correspond to overnight stays. For private facilities, with the inclusion of morphology codes in 2008/09, the percentage of error for same day patients increases from 0.08% in 2007/08 to 0.94% in 2008/09.

**Table 3.3 Percentage of episodes that involved at least 1 expected PoA condition that was coded as non-PoA by same day status and facility type.**

Facility Type	Same Day Status	Year	Episodes with Errors	Total Episodes	Percentage Error
Public	Same Day	2006/07	2,262	222,576	1.02
		2007/08	2,707	237,634	1.14
		2008/09	2,281	238,257	0.96
		2009/10	2,549	227,413	1.12
	Overnight	2006/07	11,548	294,590	3.92
		2007/08	9,792	311,330	3.15
		2008/09	7,833	315,118	2.49
		2009/10	8,792	326,103	2.70
Private	Same Day	2006/07	254	288,068	0.09
		2007/08	237	309,161	0.08
		2008/09	3,146	334,535	0.94
		2009/10	3,403	346,199	0.98
	Overnight	2006/07	2,468	163,292	1.51
		2007/08	2,200	166,434	1.32
		2008/09	2,800	171,401	1.63
		2009/10	3,444	173,156	1.99

Table 3.4 breaks down the episodes that involved an expected PoA diagnosis that was coded as non-PoA into episode changes, transfers and all other episode types. For both facility types, there is a higher percentage of error for episode changes and transfers, compared with other episode types.

**Table 3.4 Percentage of episodes that involved at least 1 expected PoA condition that was coded as non-PoA, broken down into episode changes, transfers and other episode types, by facility type.**

Facility Type	Referral Source	Year	Episodes with Errors	Total Episodes	Percentage with Error
Public	Episode Change	2006/07	673	12,153	5.54
		2007/08	616	13,159	4.68
		2008/09	573	15,308	3.74
		2009/10	692	16,491	4.20
	Transfer	2006/07	1,113	21,252	5.24
		2007/08	984	21,790	4.52
		2008/09	900	21,473	4.19
		2009/10	1,003	22,162	4.53
	Other	2006/07	12,024	483,761	2.49
		2007/08	10,899	514,015	2.12
		2008/09	8,641	516,594	1.67
		2009/10	9,646	514,863	1.87
Private	Episode Change	2006/07	84	3,137	2.68
		2007/08	105	3,377	3.11
		2008/09	117	3,812	3.07
		2009/10	136	4,201	3.24
	Transfer	2006/07	227	12,619	1.80
		2007/08	232	13,532	1.71
		2008/09	277	13,139	2.11
		2009/10	288	12,363	2.33
	Other	2006/07	2,411	435,604	0.55
		2007/08	2,100	458,686	0.46
		2008/09	5,552	488,985	1.14
		2009/10	6,423	502,791	1.28

### 3.2. Quality of expected ‘present on admission’ conditions by ICD-10-AM

Table 3.5 displays the number of ICD-10-AM codes that appear in the AIHW SAS algorithm by ICD chapter, by edition. The 5<sup>th</sup> edition corresponds to the 2006/07 and 2007/08 financial years, while the 6<sup>th</sup> edition corresponds to the 2008/09 and 2009/10 financial years. ICD chapter ‘morphology of neoplasms’ features most prominently in the algorithm, although the inclusion of the chapter in the 5<sup>th</sup> edition algorithm is redundant given that morphology codes have been excluded from the analysis in 2006/07 and 2007/08.

#### 3.2.1. Quality of expected PoA conditions by ICD-10-AM chapter

ICD-10-AM diagnoses codes were inspected by looking at the number of other diagnoses, external cause diagnoses and morphology codes that were expected to be coded as PoA, but had a CPoA value of non-PoA. The percentage of diagnoses that were coded as such are displayed in Table 3.6, broken down by ICD-10-AM chapter heading. Error rates where the CPoA error counts do not exceed 10 for an

ICD-10-AM chapter have been marked by an asterisk. The counts and totals for each ICD-10-AM chapter are provided in Table A1 in the appendix.

Comparable figures for all Australian states and territories (unpublished data provided by AIHW) are also presented in Table 3.6 and Table A2 in the appendix. National data was only available for 2008/09 and 2009/10 since the CPoA variable was not nationally implemented until 2008/09.

For Queensland, from those ICD-10-AM chapters that have an adequate error count, chapters P (certain conditions originating in the perinatal period), O (pregnancy, childbirth and the puerperium), H (diseases of the ear and mastoid process) and AB (certain infectious and parasitic diseases) register the highest percentage of CPoA errors. Nationally a similar trend is apparent, particularly with ICD chapters P and O again registering the highest percentage of errors. Overall, the error rate for Queensland is just higher than the national error rate.

**Table 3.5 Number of ICD-10-AM codes that are included in the AIHW algorithm, broken down by ICD-10-AM chapter.**

Chapter		5th Edition		6th Edition	
		N	%	N	%
AB	Certain infectious and parasitic diseases	269	2.58	269	2.57
C/D	Neoplasms	790	7.58	790	7.55
part D	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	54	0.52	54	0.52
E	Endocrine, nutritional and metabolic diseases	274	2.63	278	2.66
F	Mental and behavioural disorders	256	2.46	274	2.62
G	Diseases of the nervous system	115	1.10	115	1.10
H	Diseases of the ear and mastoid process	75	0.72	75	0.72
I	Diseases of the circulatory system	142	1.36	140	1.34
J	Diseases of the respiratory system	76	0.73	76	0.73
K	Diseases of the digestive system	264	2.53	263	2.52
L	Diseases of the skin and subcutaneous tissue	115	1.10	115	1.10
M	Diseases of the musculoskeletal system and connective tissue	2,031	19.49	2,031	19.42
N	Diseases of the genitourinary system	207	1.99	208	1.99
O	Pregnancy, childbirth and the puerperium	142	1.36	150	1.43
P	Certain conditions originating in the perinatal period	115	1.10	115	1.10
Q	Congenital malformations, deformations and chromosomal abnormalities	887	8.51	883	8.44
R	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	6	0.06	6	0.06
ST	Injury, poisoning and certain other consequences of external causes	44	0.42	44	0.42
U-Y	External causes of morbidity and mortality	1,511	14.50	1,525	14.58
Z	Factors influencing health status and contact with health services	638	6.12	638	6.10
Morphology of neoplasms		2,408	23.11	2,408	23.03
<b>All</b>		<b>10,419</b>	<b>100.00</b>	<b>10,457</b>	<b>100.00</b>

Table 3.6 CPOA potential error rates by chapter heading of ICD-10-AM. Figures are provided for Queensland and all Australia (unpublished data provided by AIHW). An asterisk (\*) denotes an error count of 10 or less.

ICD Chapter		Percentage Error					
		QLD				AIHW	
		2006/07	2007/08	2008/09	2009/10	2008/09	2009/10
AB	Certain infectious and parasitic diseases	3.31	2.77	3.13	2.70	2.62	2.59
C/D	Neoplasms	0.19	0.09	0.10	0.09	0.11	0.13
part D	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	1.71	0.91	1.04	0.94	1.24	1.25
E	Endocrine, nutritional and metabolic diseases	0.80	0.66	0.98	1.17	1.35	1.61
F	Mental and behavioural disorders	0.65	0.48	0.34	0.40	0.35	0.40
G	Diseases of the nervous system	0.77	0.69	0.71	0.76	0.99	1.06
H	Diseases of the ear and mastoid process	2.36	1.52	2.56	3.05	3.29	3.29
I	Diseases of the circulatory system	1.06	0.86	1.16	1.40	1.63	1.87
J	Diseases of the respiratory system	1.98	1.56	1.78	1.99	1.96	2.08
K	Diseases of the digestive system	1.12	0.79	0.73	0.93	1.19	1.31
L	Diseases of the skin and subcutaneous tissue	1.82	1.03	1.16	1.28	2.02	2.10
M	Diseases of the musculoskeletal system and connective tissue	1.28	1.11	1.27	1.25	1.54	1.58
N	Diseases of the genitourinary system	0.47	0.39	0.29	0.52	0.47	0.58
O	Pregnancy, childbirth and the puerperium	4.04	4.03	4.03	5.31	4.12	4.52
P	Certain conditions originating in the perinatal period	5.66	4.63	4.98	6.37	4.75	5.18
Q	Congenital malformations, deformations and chromosomal abnormalities	0.75	0.53	0.32	0.83	0.47	0.67
R	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	1.46	0.76	0.89	0.86*	1.62	2.89
ST	Injury, poisoning and certain other consequences of external causes	0.00*	5.13*	4.55*	1.54*	1.31*	1.73*
U-Y	External causes of morbidity and mortality	0.27	0.21	0.21	0.26	0.23	0.28
Z	Factors influencing health status and contact with health services	1.23	1.02	0.68	0.70	0.58	0.68
Morphology of neoplasms		-	-	1.31	1.30	0.49	0.48
<b>Total</b>		<b>0.97</b>	<b>0.79</b>	<b>0.80</b>	<b>0.89</b>	<b>0.77</b>	<b>0.86</b>

### 3.2.2. Principal diagnosis (PD)

Principal diagnoses (PD) always take a CPoA value of PoA, and do not result in CPoA errors. However, PDs can be used to identify admissions that typically lead to CPoA errors. As such, the principal diagnoses that appear with an error other diagnosis, external cause or morphology code were inspected. In the case where a principal diagnosis appears with multiple other diagnosis errors in a single episode, the principal diagnosis was only counted once.

Table 3.7 presents the percentage of principal diagnosis ICD-10-AM codes within each chapter that appear with an expected PoA condition that was coded as non-PoA. The denominator can be described as the total number of occurrences of the ICD-10-AM principal diagnosis codes from the selected chapter. For a complete version of Table 3.7, including the counts and totals for each principal diagnoses chapter, see Table A3 of the appendix.

**Table 3.7 Percentage of PD chapter that appears with an expected PoA condition that was coded as non-PoA.**

ICD Chapter		Percentage Error			
		2006/07	2007/08	2008/09	2009/10
AB	Certain infectious and parasitic diseases	1.51	1.28	1.35	1.25
C/D	Neoplasms	1.26	1.21	2.19	2.28
part D	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	1.05	0.72	0.94	1.2
E	Endocrine, nutritional and metabolic diseases	2.03	1.63	1.61	1.86
F	Mental and behavioural disorders	1.12	1.18	1.22	1.27
G	Diseases of the nervous system	1.08	0.94	0.84	1.07
H	Diseases of the ear and mastoid process	0.52	0.49	0.46	0.51
I	Diseases of the circulatory system	1.98	1.77	1.95	1.98
J	Diseases of the respiratory system	1.48	1.26	1.26	1.36
K	Diseases of the digestive system	1	0.94	0.98	1.1
L	Diseases of the skin and subcutaneous tissue	1.32	1.4	1.32	1.45
M	Diseases of the musculoskeletal system and connective tissue	1.17	1.53	1.31	1.45
N	Diseases of the genitourinary system	1.3	1.18	1.29	1.59
O	Pregnancy, childbirth and the puerperium	5.73	3.93	2.16	2.76
P	Certain conditions originating in the perinatal period	7.58	6.38	3.75	4.04
Q	Congenital malformations, deformations and chromosomal abnormalities	3.93	5.16	2.2	2.87
R	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	0.77	0.69	0.64	0.81
ST	Injury, poisoning and certain other consequences of external causes	1.17	1.17	1.09	1.22
Z	Factors influencing health status and contact with health services	0.51	0.5	1.05	1.12
<b>Total</b>		<b>1.53</b>	<b>1.30</b>	<b>1.35</b>	<b>1.51</b>

In each year, the most problematic PD chapters are P (certain conditions arising in the perinatal period), O (pregnancy, childbirth and the puerperium), Q (congenital malformations, deformations and chromosomal abnormalities) and I (diseases of the circulatory system). Of these ICD chapters, P, O and Q relate to pregnancy. Conversely, the least problematic PD chapters are H (diseases of the ear and mastoid process), Z (factors influencing health status and contact with health services) and R (symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified).

For Table 3.6 and Table 3.7, it is noted that within episodes involving a Z37 or Z38 diagnosis with a CPoA value of non-PoA, those episodes could also contain other diagnoses with a CPoA value of non-PoA that should have been coded as PoA i.e. when assigning a non-PoA flag to Z37 and Z38 diagnoses, coders may have been inclined to also assign a CPoA flag of non-PoA to other diagnoses listed in the same episode. Hence, although Z37 and Z38 other diagnoses were recoded in this analysis to PoA (in accordance with the national standard), the other diagnoses in the episode may still be coded incorrectly.

This is investigated for PDs in Table 3.8. The table first displays the number of times the PDs within each chapter appear with a diagnosis that has a CPoA error. It then displays the subset of these principal diagnoses which, had the Z37 and Z38 other diagnosis CPoA flags not been recoded to PoA, would have also appeared with a Z37 or Z38 diagnosis coded as non-PoA. Only the years 2006/07 and 2007/08 appear in the table, since these are the only years when a PD can appear with a Z37 or Z38 other diagnosis that was coded as non-PoA.

**Table 3.8 Percentage of PD chapter that appears with an expected PoA condition that was coded as non-PoA, that would have also appeared with a diagnosis of Z37 or Z38 that was non-PoA.**

Year	ICD Chapter		PDs with CPoA error	PDs with error and Z37/Z38 error	Percent
2006/07	F	Mental and behavioural disorders	461	2	0.43
	O	Pregnancy, childbirth and the puerperium	5,487	5,106	93.06
	P	Certain conditions originating in the perinatal period	757	126	16.64
	Q	Congenital malformations, deformations and chromosomal abnormalities	125	1	0.80
	ST	Injury, poisoning and certain other consequences of external causes	1,176	1	0.09
	Z	Factors influencing health status and contact with health services	1,332	7	0.53
2007/08	F	Mental and behavioural disorders	477	1	0.21
	K	Diseases of the digestive system	1,089	1	0.09
	M	Diseases of the musculoskeletal system and connective tissue	779	1	0.13
	O	Pregnancy, childbirth and the puerperium	3,871	3,553	91.79
	P	Certain conditions originating in the perinatal period	642	52	8.10
	ST	Injury, poisoning and certain other consequences of external causes	1,225	1	0.08
Z	Factors influencing health status and contact with health services	1,385	4	0.29	

In each year, there are only a handful of PD chapters that would have appeared with non-PoA Z37 or Z38 other diagnoses. For each year, over 90% of the PDs within chapter O (pregnancy, childbirth and the puerperium) that appeared with a CPoA error would have also appeared with a Z37 or Z38 non-PoA other diagnosis. This indicates that, despite the fact that all Z37 and Z38 other diagnoses have been recoded to align with the national standard, there are still other diagnoses that register CPoA errors in the same episode.

Table 3.9 presents the top 5 three character ICD-10-AM PD codes, which most often appear with an expected PoA other diagnosis that has been coded as non-PoA, ranked by percentage of error. For a PD to qualify for the top 5, it must have had a denominator of over 100 i.e. it must have been diagnosed at least 100 times.

**Table 3.9 The 5 ICD-10-AM PDs that most often appear with an expected PoA condition that was coded as non-PoA, ranked by percentage error. A PD must have been diagnosed more than 100 times to appear in the table.**

Year	ICD-10-AM Code		PD with CPoA Error	Total PD	Percent with Error
2006/07	045	Premature separation of placenta	54	217	24.88
	035	Maternal care for known or suspected fetal abnormality and damage	52	211	24.64
	071	Other obstetric trauma	161	942	17.09
	041	Other disorders of amniotic fluid and membranes	28	169	16.57
	014	Gestational hypertension with significant proteinuria	166	1,075	15.44
2007/08	045	Premature separation of placenta	47	214	21.96
	035	Maternal care for known or suspected fetal abnormality and damage	40	190	21.05
	Q25	Congenital malformations of great arteries	21	154	13.64
	041	Other disorders of amniotic fluid and membranes	19	142	13.38
	014	Gestational hypertension with significant proteinuria	148	1165	12.70
2008/09	035	Maternal care for known or suspected fetal abnormality and damage	35	185	18.92
	045	Premature separation of placenta	25	212	11.79
	014	Gestational hypertension with significant proteinuria	133	1,291	10.30
	044	Placenta praevia	52	632	8.23
	L98	Other disorders of skin and subcutaneous tissue, not elsewhere classified	59	794	7.43
2009/10	035	Maternal care for known or suspected fetal abnormality and damage	38	174	21.84
	045	Premature separation of placenta	29	196	14.80
	014	Gestational hypertension with significant proteinuria	193	1,344	14.36
	030	Multiple gestation	29	260	11.15
	042	Premature rupture of membranes	521	5,257	9.91

Almost all PDs displayed in Table 3.9 relate to chapter O (pregnancy, childbirth and the puerperium), with O35 (maternal care for known or suspected fetal abnormality and damage), O45 (premature separation of placenta) and O14 (gestational hypertension with significant proteinuria) appearing in the top 5 every year.

Z38 had appeared among the top 5 in 2006/07 and 2007/08, however, according to coding standards, Z38 PDs should not appear with any other diagnosis. As a result, Z38 was removed from the tabulation.

#### 4. Quality of expected complications

Table 4.1 lists the selected CHADx subchapters that have been used to determine CPoA errors for expected complications, and the corresponding ICD-10-AM codes that belong in that subchapter. Each subchapter has been selected because it is deemed to only contain conditions that are highly likely to have been non-PoA i.e. conditions that were almost certainly hospital acquired.

**Table 4.1 Selected CHADx subchapters deemed to only contain conditions that should be assigned an CPoA value of non-PoA (hospital acquired).**

CHADx Chapter		ICD-10-AM codes	
1.3	Failed or difficult intubation	T88.4	Failed or difficult intubation
1.5	Accidental puncture/laceration during procedure	T81.2	Accidental puncture/laceration during procedure
12.1	Fetal heart anomalies	068.0	Labour and delivery complicated by fetal heart rate anomaly
		068.2	Labour and delivery complicated by fetal heart rate anomaly with meconium in amniotic fluid
12.4	Unsuccessful interventions during labour	061.0	Failed medical induction of labour
		061.1	Failed instrumental induction of labour
		061.8	Other failed induction of labour
		061.9	Failed induction of labour, unspecified
		066.5	Failed application of vacuum extractor and forceps, unspecified
		075.5	Delayed delivery after artificial rupture of membranes
12.6	First degree and unspecified perineal tear	070.0	First degree perineal laceration during delivery
		070.9	Perineal laceration during delivery, unspecified
12.7	Second degree perineal tear	070.1	Second degree perineal laceration during delivery
12.8	Third degree and fourth degree perineal tear	070.2	Third degree perineal laceration during delivery
		070.3	Fourth degree perineal laceration during delivery

The results of the CHADx algorithm for determining CPoA errors for expected complications are now presented. As noted previously, episodes resulting from a transfer or episode change have been excluded from the tables that follow (see sections 1 and 2). Each table presents the number of errors and the percentage of error. The denominator used in the calculation of percentage error is the total number of diagnoses of expected complications i.e. the total number of occurrences of the diagnoses that appear in the selected CHADx subchapters.

Table 4.2 presents the error information for the selected CHADx subchapters (expected complications), by year, by facility type. The overall percentage of error is decreasing steadily from 2007/08 onwards. Looking at public facilities, the percentage of error is fairly constant, ranging from 19.29% to 20.48%. Within private facilities, the percentage of error is more than double that of public facilities, ranging from 42.40% to 49.77%. However, private facilities display a decreasing percentage of error from 2007/08 onwards.

**Table 4.2 Percentage of expected complications coded as ‘present on admission’, by year, by facility type.**

Facility Type	Year	Complications coded as PoA	Complications	Percentage Error
Public	2006/07	970	4,806	20.18
	2007/08	988	5,123	19.29
	2008/09	1,509	7,372	20.47
	2009/10	1,888	9,220	20.48
Private	2006/07	1,232	2,595	47.48
	2007/08	1,404	2,821	49.77
	2008/09	1,608	3,470	46.34
	2009/10	1,527	3,601	42.40
Overall	2006/07	2,202	7,401	29.75
	2007/08	2,392	7,944	30.11
	2008/09	3,117	10,842	28.75
	2009/10	3,415	12,821	26.64

Table 4.3 displays the CHADx error rate information, by year, by same day status, by facility type. As was the case for Table 3.3, it is of greater interest to look at episodes as opposed to diagnoses. Hence, the ‘Errors’ column of Table 4.3 can be described as *the number of episodes that involved at least one expected non-PoA diagnosis that was PoA*. Similarly, the denominator then becomes *the number of episodes that involved at least one expected non-PoA diagnosis*. For each year, for private facilities, the percentage of error is higher for overnight patients (ranging from 43.29% to 50.63%) than for same day patients (ranging from 20.86% to 35.85%). This trend is not apparent for public facilities.

Table 4.4 contains the error rate information for each CHADx subchapter, by year. For subchapters 12.1, 12.4, 12.6, 12.7 and 12.8 (which relate to pregnancy and childbirth), any diagnosis that has been assigned a CPoA value of PoA is counted as an error, since the conditions in these subchapters should have a CPoA value of non-PoA. In other words, these subchapters only contain conditions which must be hospital acquired, so if they have been coded otherwise, it must be a CPoA error. However, for CHADx subchapters 1.3 (failed or difficult intubation) and 1.5 (accidental puncture/laceration during procedure), although the conditions are *likely* to have been hospital-acquired, they are not *certain* to have been hospital-acquired. To illustrate why, consider a patient who is intubated in the emergency department of a hospital, and then admitted to the hospital. Within that episode of patient care, the CPoA value of the intubation would be legitimately coded as PoA, which means that the intubation should not be counted as an error.

Hence, the errors and error rates for chapters 1.3 and 1.5 have been displayed twice - once without emergency department exclusions and once with emergency department exclusions. The bracketed figures present the number of errors and error rates, excluding those patients who were admitted from emergency departments.

Over the four recorded years, before emergency department exclusions are made, CHADx subchapter 1.3 (failed or difficult intubation) contains the largest number of diagnoses with a CPoA error, with an error rate of 37.95% in 2006/07. However, once patients from emergency departments are excluded, this figure drops to 30.03%, which is consistent with the error rates for the other CHADx subchapters. As was seen for expected PoA conditions, a large number of errors result from conditions relating to pregnancy, with subchapters 12.1, 12.4, 12.6, 12.7 and 12.8. Of these, 12.1 (fetal heart anomalies) is the most prominent.

**Table 4.3 Percentage of expected complications coded as ‘present on admission’, by year, by same day status, by facility type.**

Facility Type	Same Day Status	Year	Episodes with Errors	Total Episodes	Percentage with Error
Public	Same-day	2006/07	35	126	27.78
		2007/08	19	130	14.62
		2008/09	33	152	21.71
		2009/10	44	195	22.56
	Overnight	2006/07	899	4,464	20.14
		2007/08	941	4,802	19.60
		2008/09	1,400	6,795	20.60
		2009/10	1,690	8,306	20.35
Private	Same-day	2006/07	63	178	35.39
		2007/08	57	159	35.85
		2008/09	34	163	20.86
		2009/10	64	195	32.82
	Overnight	2006/07	1,136	2,328	48.80
		2007/08	1,296	2,560	50.63
		2008/09	1,496	3,112	48.07
		2009/10	1,370	3,165	43.29

Table 4.4 Percentage of expected complications coded as 'present on admission' by CHADx subchapter. Bracketed figures indicate that patients from emergency departments have been excluded.

CHADx Subchapter		Year											
		2006/07			2007/08			2008/09			2009/10		
		Coded as PoA	Total	Percent error	Coded as PoA	Total	Percent error	Coded as PoA	Total	Percent error	Coded as PoA	Total	Percent error
1.3	Failed or difficult intubation	115 (91)	303	37.95 (30.03)	96 (84)	285	33.68 (29.47)	80 (75)	237	33.76 (31.65)	65 (60)	209	31.10 (28.71)
1.5	Accidental puncture/laceration during procedure	303 (261)	1,285	23.58 (20.31)	246 (218)	1,284	19.16 (16.98)	235 (205)	1,371	17.14 (14.95)	303 (273)	1,551	19.54 (17.60)
12.1	Fetal heart anomalies	339	1,112	30.49	407	1,119	36.37	710	2,127	33.38	838	2,842	29.49
12.4	Unsuccessful procedures during labour	235	758	31.00	242	797	30.36	284	984	28.86	294	989	29.73
12.6	First degree and unspecified perineal laceration	377	1,185	31.81	419	1,270	32.99	528	1,610	32.80	530	1,874	28.28
12.7	Second degree perineal laceration	753	2,427	31.03	860	2,772	31.02	1130	3,967	28.49	1,229	4,720	26.04
12.8	Third degree and fourth degree perineal laceration	80	331	24.17	122	417	29.26	150	546	27.47	156	636	24.53

## 5. Conclusion

From the analysis of the quality of the Condition Present on Admission variable, there are common data issues which are apparent for expected 'present on admission' conditions as well as expected complications. Overall, it does not appear that coding of the CPoA variable has improved with maturity of implementation, but it is still a relatively new collection.

This analysis has highlighted a number of areas where there is an apparent lack of clarity regarding the ACS0048 guidelines. Particularly:

- There is an issue for private facilities regarding the CPoA coding of morphology codes.
- There is an issue for both facility types regarding the CPoA coding of overnight related conditions.
- There is an issue for both facility types regarding the CPoA coding for transferred patients and patients undergoing an episode change.
- There is a particular issue regarding the CPoA coding of pregnancy related conditions.
- Overall, there is a much higher CPoA error rate for expected complications than for expected 'present on admission' conditions.

For improvement in the quality of the CPoA variable, it is suggested that the ACS0048 coding standard be expanded with further examples to illustrate the flag's correct assignment for chronic conditions and obstetrics codes. Additionally, targeted communication to clinical coders on the standard and appropriate coding of the flag is also recommended to address the issues raised in this report.

## 6. References

1. Data Collections Unit. 2008-2009 Queensland Hospital Admitted Patient Data Collection Manual of instructions and procedures for the reporting of QHAPDC data: Queensland Health, 2008.
2. National Centre for Classification in Health. Australian Coding Standards Sixth Edition, 2008:5-8.
3. Jackson TJ, Michel JL, Roberts R, Shephard J, Cheng D, Rust J, et al. Development of a validation algorithm for 'present on admission' flagging. BMC Medical Informatics and Decision Making 2009;9(48).
4. Jackson TJ, Michel JL, Roberts RF, Jorm CM, Wakefield JG. A classification of hospital-acquired diagnoses for use with routine hospital data. Med J Aust 2009;191(10):544-548.

7. Appendix

Table A1 CPoA potential error rates by chapter heading of ICD-10-AM, Queensland.

ICD Chapter		2006/07			2007/08			2008/09			2009/10		
		PoA Diagnoses coded as non-PoA	Expected PoA Diagnoses	Percent Error	PoA Diagnoses coded as non-PoA	Expected PoA Diagnoses	Percent Error	PoA Diagnoses coded as non-PoA	Expected PoA Diagnoses	Percent Error	PoA Diagnoses coded as non-PoA	Expected PoA Diagnoses	Percent Error
AB	Certain infectious and parasitic diseases	134	4,054	3.31	106	3,828	2.77	115	3,677	3.13	115	4,253	2.70
C/D	Neoplasms	502	257,546	0.19	247	277,036	0.09	301	288,509	0.10	263	306,667	0.09
part D	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	27	1,580	1.71	14	1,536	0.91	12	1,156	1.04	13	1,384	0.94
E	Endocrine, nutritional and metabolic diseases	1,570	196,167	0.80	1,421	215,599	0.66	1,480	150,270	0.98	1,819	155,864	1.17
F	Mental and behavioural disorders	325	49,829	0.65	251	51,781	0.48	172	50,264	0.34	212	53,297	0.40
G	Diseases of the nervous system	126	16,434	0.77	113	16,482	0.69	109	15,434	0.71	128	16,776	0.76
H	Diseases of the ear and mastoid process	182	7,707	2.36	125	8,213	1.52	160	6,245	2.56	176	5,767	3.05
I	Diseases of the circulatory system	2,289	216,687	1.06	1,917	224,004	0.86	2,020	174,742	1.16	2,450	175,029	1.40
J	Diseases of the respiratory system	544	27,540	1.98	437	28,011	1.56	468	26,240	1.78	541	27,157	1.99
K	Diseases of the digestive system	1,247	111,743	1.12	936	118,725	0.79	895	121,895	0.73	1,193	128,637	0.93
L	Diseases of the skin and subcutaneous tissue	166	9,111	1.82	101	9,765	1.03	108	9,319	1.16	125	9,750	1.28
M	Diseases of the musculoskeletal system and connective tissue	551	43,054	1.28	514	46,148	1.11	585	45,926	1.27	631	50,404	1.25
N	Diseases of the genitourinary system	714	150,976	0.47	622	160,581	0.39	400	135,718	0.29	618	119,351	0.52
O	Pregnancy, childbirth and the puerperium	1,983	49,052	4.04	2,011	49,925	4.03	1,859	46,084	4.03	2,367	44,611	5.31

ICD Chapter		2006/07			2007/08			2008/09			2009/10		
		PoA Diagnoses coded as non-PoA	Expected PoA Diagnoses	Percent Error	PoA Diagnoses coded as non-PoA	Expected PoA Diagnoses	Percent Error	PoA Diagnoses coded as non-PoA	Expected PoA Diagnoses	Percent Error	PoA Diagnoses coded as non-PoA	Expected PoA Diagnoses	Percent Error
P	Certain conditions originating in the perinatal period	356	6,292	5.66	290	6,259	4.63	307	6,159	4.98	393	6,167	6.37
Q	Congenital malformations, deformations and chromosomal abnormalities	111	14,845	0.75	77	14,528	0.53	42	13,177	0.32	106	12,778	0.83
R	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	22	1,509	1.46	12	1,579	0.76	11	1,236	0.89	10	1,157	0.86
ST	Injury, poisoning and certain other consequences of external causes	0	38	0.00	2	39	5.13	2	44	4.55	1	65	1.54
U-Y	External causes of morbidity and mortality	514	188,719	0.27	419	197,570	0.21	449	211,684	0.21	550	212,154	0.26
Z	Factors influencing health status and contact with health services	8,462	690,709	1.23	7,602	747,283	1.02	4,918	726,317	0.68	5,377	764,971	0.70
Morphology		-	-	-	-	-	-	5,035	383,336	1.31	5,219	400,703	1.30
<b>QLD Total</b>		<b>19,825</b>	<b>2,043,592</b>	<b>0.97</b>	<b>17,217</b>	<b>2,178,892</b>	<b>0.79</b>	<b>19,448</b>	<b>2,417,432</b>	<b>0.80</b>	<b>22,307</b>	<b>2,496,942</b>	<b>0.89</b>

Table A2 CPOA potential error rates by chapter heading of ICD-10-AM, Australia (unpublished data provided by AIHW).

ICD Chapter		2008/09			2009/10		
		PoA Diagnoses coded as non-PoA	Expected PoA Diagnoses	Percent Error	PoA Diagnoses coded as non-PoA	Expected PoA Diagnoses	Percent Error
AB	Certain infectious and parasitic diseases	479	18,314	2.62	503	19,425	2.59
C/D	Neoplasms	1,015	947,178	0.11	1,313	997,888	0.13
part D	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	53	4,265	1.24	53	4,253	1.25
E	Endocrine, nutritional and metabolic diseases	6,769	499,724	1.35	7,834	485,982	1.61
F	Mental and behavioural disorders	675	193,737	0.35	808	201,247	0.40
G	Diseases of the nervous system	563	56,972	0.99	626	59,257	1.06
H	Diseases of the ear and mastoid process	578	17,545	3.29	577	17,547	3.29
I	Diseases of the circulatory system	9,369	57,6037	1.63	10,763	574,764	1.87
J	Diseases of the respiratory system	1,729	88,419	1.96	1,906	91,650	2.08
K	Diseases of the digestive system	4,510	379,633	1.19	5,295	405,293	1.31
L	Diseases of the skin and subcutaneous tissue	608	30,144	2.02	651	31,061	2.10
M	Diseases of the musculoskeletal system and connective tissue	2,664	173,262	1.54	3,020	190,776	1.58
N	Diseases of the genitourinary system	2,261	481,419	0.47	2,650	460,191	0.58
O	Pregnancy, childbirth and the puerperium	6,677	162,154	4.12	7,157	158,258	4.52
P	Certain conditions originating in the perinatal period	1,122	23,632	4.75	1,248	24,093	5.18
Q	Congenital malformations, deformations and chromosomal abnormalities	201	42,323	0.47	266	39,695	0.67
R	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	114	7,034	1.62	196	6,783	2.89
ST	Injury, poisoning and certain other consequences of external causes	5	383	1.31	4	231	1.73
U-Y	External causes of morbidity and mortality	1,492	637,192	0.23	1,780	647,062	0.28
Z	Factors influencing health status and contact with health services	13,814	2,382,319	0.58	16,889	2,501,900	0.68
Morphology		5,376	1,088,069	0.49	5,494	1,137,562	0.48
<b>AIHW Total</b>		<b>60,074</b>	<b>7,809,755</b>	<b>0.77</b>	<b>69,033</b>	<b>8,054,918</b>	<b>0.86</b>

Table A3 Frequency and percentage of principal diagnosis chapter that appears with an expected 'present on admission' condition that was coded as 'not present on admission', Queensland.

ICD Chapter		2006/07			2007/08			2008/09			2009/10		
		PDs with Error	Total PDs	Percent with Error	PDs with Error	Total PDs	Percent with Error	PDs with Error	Total PDs	Percent with Error	PDs with Error	Total PDs	Percent with Error
AB	Certain infectious and parasitic diseases	185	12,277	1.51	158	12,380	1.28	218	16,158	1.35	224	17,863	1.25
C/D	Neoplasms	1,032	82,071	1.26	1,040	86,264	1.21	2,734	125,063	2.19	2,938	128,717	2.28
part D	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	125	11,912	1.05	98	13,666	0.72	127	13,520	0.94	164	13,673	1.20
E	Endocrine, nutritional and metabolic diseases	441	21,684	2.03	415	25,433	1.63	410	25,423	1.61	492	26,425	1.86
F	Mental and behavioural disorders	461	41,327	1.12	477	40,322	1.18	499	40,789	1.22	564	44,354	1.27
G	Diseases of the nervous system	203	18,859	1.08	184	19,497	0.94	169	20,063	0.84	220	20,614	1.07
H	Diseases of the ear and mastoid process	112	21,412	0.52	117	23,947	0.49	114	24,640	0.46	125	24,633	0.51
I	Diseases of the circulatory system	1,495	75,654	1.98	1,392	78,692	1.77	1,485	76,186	1.95	1,515	76,396	1.98
J	Diseases of the respiratory system	608	41,158	1.48	610	48,435	1.26	611	48,601	1.26	693	50,799	1.36
K	Diseases of the digestive system	1,120	111,639	1.00	1,089	116,180	0.94	1,089	111,452	0.98	1,270	115,430	1.10
L	Diseases of the skin and subcutaneous tissue	196	14,819	1.32	230	16,423	1.40	225	17,001	1.32	269	18,564	1.45
M	Diseases of the musculoskeletal system and connective tissue	554	47,522	1.17	779	51,015	1.53	684	52,241	1.31	786	54,316	1.45
N	Diseases of the genitourinary system	616	47,484	1.30	577	48,732	1.18	622	48,183	1.29	811	50,863	1.59
O	Pregnancy, childbirth and the puerperium	5,487	95,831	5.73	3,871	98,596	3.93	2,143	99,148	2.16	2,702	97,860	2.76
P	Certain conditions originating in the perinatal period	757	9,984	7.58	642	10,067	6.38	379	10,104	3.75	413	10,214	4.04
Q	Congenital malformations, deformations and chromosomal abnormalities	125	3,177	3.93	156	3,025	5.16	65	2,948	2.20	84	2,922	2.87

ICD Chapter		2006/07			2007/08			2008/09			2009/10		
		PDs with Error	Total PDs	Percent with Error	PDs with Error	Total PDs	Percent with Error	PDs with Error	Total PDs	Percent with Error	PDs with Error	Total PDs	Percent with Error
R	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	507	66,024	0.77	491	71,062	0.69	478	75,148	0.64	646	79,857	0.81
ST	Injury, poisoning and certain other consequences of external causes	1,176	100,163	1.17	1,225	105,058	1.17	1,231	113,440	1.09	1,387	113,489	1.22
Z	Factors influencing health status and contact with health services	1,332	260,097	0.51	1,385	276,596	0.50	2,777	265,198	1.05	2,885	258,367	1.12
<b>QLD Total</b>		<b>16,532</b>	<b>1,083,094</b>	<b>1.53</b>	<b>14,936</b>	<b>1,145,390</b>	<b>1.30</b>	<b>16,060</b>	<b>1,185,306</b>	<b>1.35</b>	<b>18,188</b>	<b>1,205,356</b>	<b>1.51</b>