

Release Notes: RTI 2096 – In-hospital falls resulting in injury

Data request from applicant

- a) Data in respect of each public hospital in Queensland for the most recent financial year available i.e. 2012/2013 – In-hospital falls resulting in injury.

Data source

- The data used for the calculation of in-hospital falls resulting in patient injury is the Queensland Hospital Admitted Patient Data Collection.

Calculation of In-hospital falls resulting in injury

- The data extracted calculates the rate of Hospital acquired (not present on admission) falls resulting in injury per 10,000 patient days.
- The denominator is the number of patient days for all admitted patients.
- The numerator is the number of In-hospital falls resulting in any types of injury requiring an increase in clinical care or monitoring. These falls resulting in injury are identified as in Appendix A.
- Rate of separations resulting in any types of injury per 10,000 patient days is calculated as

$$\frac{\text{Number of separations of in-hospital falls resulting in any type of injury}}{\text{Number of patient days}} \times 10000$$

Caveats on data extracted

- Differences between hospitals in regards to coding, admission and discharge practices could contribute to differences observed.
- The number of separations resulting in injuries alone should not be used to make any assumption to assess hospitals, as hospitals have a varied number of patient admissions – therefore the rate per 10000 patient days is provided.
- The data provided in this report is presented as an information source only and may be subject to change.
- Given the statewide rate is so low, care should be taken when interpreting data for smaller facilities with a lower number of patient days i.e. those with approximately 10,000 patient days. Each fall impacts on the rate significantly of the smaller hospitals.
- Cells with very small counts (<5) may potentially result in an individual being identified. Consequently, all cells with a value ranging between 1-4 in-hospital falls resulting in injury have the value "<5". Given the lower number of falls, rates for these hospitals have not been calculated.

Date extracted

9 December 2013

2012-13 Queensland public hospital - In-hospital falls resulting in patient injury - results

The below table presents the number of in-hospital falls resulting in injury, total number of patient days and the rate per 10,000 patient days for each hospital for 2012-13.

Statewide, Queensland has a rate of 6.6 in-hospital falls resulting in injury per 10,000 patient days. The majority of these injuries, 89% were non-fracture type injuries.

Table 1 In-hospital falls resulting in injury by Hospital for 2012/13

Facility Name	Number of separations resulting in injury	Total Number of patient days	Rate of separations resulting in injury per 10,000 patient days
Alpha	0	222	0
Atherton	10	15,280	6.5
Augathella	<5	718	xx
Ayr	8	6,519	12.3
Babinda	9	13,422	6.7
Bamaga	0	1,258	0
Baralaba	0	565	0
Barcaldine	0	1,725	0
Beaudesert	12	7,580	15.8
Biggenden	0	1,263	0
Biloela	0	3,474	0
Blackall	0	1,394	0
Blackwater	0	1,607	0
Boonah	7	5,855	12
Bowen	<5	5,059	xx
Bundaberg	30	70,998	4.2
Caboolture	44	71,670	6.1
Cairns	68	156,769	4.3
Caloundra	60	30,769	19.5
Capricorn Coast	6	6,794	8.8
Charleville	<5	2,578	xx
Charters Towers	9	5,177	17.4
Cherbourg	<5	2,554	xx
Childers	0	3,495	0
Chinchilla	<5	2,344	xx
Clermont	<5	1,461	xx
Cloncurry	5	3,337	15
Collinsville	<5	1,413	xx
Cooktown	<5	2,713	xx
Cunnamulla	<5	1,976	xx
Dalby	<5	8,874	xx
Dirranbandi	0	770	0
Doomadgee	0	472	0
Dysart	0	1,029	0
Eidsvold	0	1,161	0
Emerald	<5	6,439	xx

Esk	5	2,748	18.2
Gatton	<5	4,342	xx
Gayndah	0	1,556	0
Gin Gin	0	1,951	0
Gladstone	5	15,326	3.3
Gold Coast	113	185,207	6.1
Goondiwindi	<5	5,097	xx
Gordonvale	13	7,439	17.5
Gympie	24	25,623	9.4
Herberton	0	10,122	0
Hervey Bay	21	47,335	4.4
Home Hill	<5	6,454	xx
Hughenden	0	1,701	0
Ingham	9	5,618	16
Inglewood	0	1,746	0
Injune	0	2,168	0
Innisfail	16	13,395	11.9
Ipswich	80	110,635	7.2
Jandowae	0	2,730	0
Joyce Palmer HS	0	1,807	0
Julia Creek	0	1,007	0
Kilcoy	5	4,301	11.6
Kingaroy	<5	11,629	xx
Laidley	<5	3,660	xx
Logan	65	116,980	5.6
Longreach	<5	2,988	xx
Mackay	22	68,082	3.2
Maleny	12	7,575	15.8
Mareeba	8	14,009	5.7
Maryborough	37	33,458	11.1
Mater Adult Public	24	54,701	4.4
Mater Children's Public	<5	43,626	xx
Mater Mothers' Public	<5	52,508	xx
Miles	<5	1,835	xx
Millmerran	0	1,196	0
Mitchell	<5	1,226	xx
Monto	<5	2,163	xx
Moranbah	5	1,114	44.9
Mornington Island	0	632	0
Mossman	<5	5,313	xx
Mount Isa	10	16,650	6

Mount Morgan	0	8,447	0
Moura	0	1,050	0
Mundubbera	0	1,016	0
Mungindi	0	811	0
Murgon	<5	2,734	xx
Nambour	160	154,493	10.4
Nanango	<5	2,240	xx
Normanton	0	1,531	0
Oakey	0	2,518	0
Princess Alexandra	231	299,980	7.7
Proserpine	<5	8,108	xx
Queen Elizabeth II	34	59,093	5.8
Quilpie	<5	525	xx
Redcliffe	130	101,361	12.8
Redland	42	57,392	7.3
Richmond	0	1,212	0
Robina Hospital	113	119,776	9.4
Rockhampton	44	81,907	5.4
Roma	<5	5,407	xx
Royal Brisbane and Women's	215	335,254	6.4
Royal Children's	19	50,451	3.8
Sarina	0	3,231	0
Springsure	0	935	0
St George	<5	2,794	xx
Stanthorpe	<5	6,370	xx
Surat	0	2,330	0
Tara	<5	1,459	xx
Taroom	0	766	0
Texas	<5	1,310	xx
The Prince Charles Hospital	86	190,652	4.5
Theodore	0	1,047	0
Thursday Island	0	6,967	0
Toowoomba	63	101,377	6.2
Townsville	152	200,106	7.6
Tully	5	4,838	10.3
Warwick	<5	14,611	xx
Weipa	<5	2,924	xx
Winton	0	1,751	0
Wondai	0	1,042	0
Woorabinda	0	583	0

Wynnum	15	6,618	22.7
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RTI Release

Appendix A

In-hospital falls resulting in injury is defined using the following ICD-10-AM codes:

- Falls as an external cause of injury(See table 2)
- Condition onset flag = 2 (condition arising during the episode of care)
- Place of occurrence = Y92.22 (in a health service area)
- Injury (See table 3)

Table 2 List of ICD codes for falls

ICD_CODE	ICD descriptions
W010	Fall on same level from slipping
W011	Fall on same level from tripping
W012	Fall on same level from stumbling
W027	Fall involving baby carriage
W028	Fall involving other and unspecified pedestrian conveyance
W03	Other fall on same level due to collision with, or pushing by, another person
W04	Fall while being carried or supported by other persons
W05	Fall involving wheelchair
W061	Fall involving special purpose bed
W066	Fall involving conventional bed
W068	Fall involving other specified bed
W069	Fall involving unspecified bed
W070	Fall involving rocking chair
W071	Fall involving folding chair
W072	Fall involving revolving chair
W073	Fall involving stool
W075	Fall involving bath chair
W076	Fall involving commode chair
W077	Fall involving lift assistance chair
W078	Fall involving other specified chair
W079	Fall involving unspecified chair
W082	Fall involving table
W088	Fall involving table
W089	Fall involving unspecified furniture
W100	Fall on and from escalator
W101	Fall on and from travelator
W102	Fall on and from ramp
W109	Fall on and from other and unspecified stairs and steps
W130	Fall from or through balcony or verandah
W131	Fall out of or through window
W132	Fall out of or through glass door
W133	Fall from roof
W134	Fall through roof
W135	Fall from or through floor
W138	Fall from, out of or through other specified building or structure
W139	Fall from, out of or through unspecified building or structure
W170	Fall into hole
W171	Fall into quarry
W172	Fall into storm drain
W173	Fall into shaft

ICD_CODE	ICD descriptions
W174	Fall into empty swimming-pool
W178	Other specified fall from one level to another
W179	Unspecified fall from one level to another
W180	Fall from bumping against object
W181	Fall from or off toilet
W182	Fall in or into bath-tub or shower
W188	Other specified fall on same level
W189	Unspecified fall on same level
W19	Unspecified fall

Table 3 List of ICD codes for injuries

ICD_CODE	ICD descriptions
S00-S09	Injuries to the head
S10-S19	Injuries to the neck
S20-S29	Injuries to the thorax
S30-S39	Injuries to the abdomen, lower back, lumbar spine and pelvis
S40-S49	Injuries to the shoulder and upper arm
S50-S59	Injuries to the elbow and forearm
S60-S69	Injuries to the wrist and hand
S70-S79	Injuries to the hip and thigh
S80-S89	Injuries to the knee and lower leg
S90-S99	Injuries to the ankle and foot
T00	Superficial injuries involving multiple body regions
T01	Open wounds involving multiple body regions
T03	Dislocations, sprains and strains involving multiple body regions
T04	Crushing injuries involving multiple body regions
T05	Traumatic amputations involving multiple body regions
T06	Other injuries involving multiple body regions, not elsewhere classified
T07	Unspecified multiple injuries
T08	Fracture of spine, level unspecified
T09	Other injuries of spine and trunk, level unspecified
T10	Fracture of upper limb, level unspecified
T11	Other injuries of upper limb, level unspecified
T12	Fracture of lower limb, level unspecified
T13	Other injuries of lower limb, level unspecified
T14	Injury of unspecified body region

Release Notes: RTI 2096 – Hospital Acquired 3rd or 4th Stage Pressure Injuries

Data request from applicant

- a) Data in respect of each public hospital in Queensland for the most recent financial year available i.e. 2012/2013 – Hospital Acquired 3rd or 4th Stage Pressure Injuries.

Data source

- The data used for the calculation of Hospital Acquired 3rd or 4th Stage Pressure Injuries is the Queensland Hospital Admitted Patient Data Collection.

Calculation of Hospital Acquired 3rd and 4th Stage Pressure Injuries

- The data extracted calculates the rate of Hospital Acquired (not present on admission) 3rd and 4th Stage Pressure Injuries per 10,000 patient days.
- The denominator is the number of patient days for all admitted patients.
- The numerator is the number of Hospital Acquired 3rd or 4th Stage Pressure Injuries. These pressure injuries are identified as condition not present on admission having diagnosis of Stage III or Stage IV decubitus ulcer and pressure area (L89.2 or L89.3).

$$\frac{\text{Number of Hospital Acquired 3}^{\text{rd}} \text{ or 4}^{\text{th}} \text{ Stage Pressure Injuries}}{\text{Number of patient days}} \times 10000$$

Caveats on data extracted

- Differences between hospitals in regards to coding, admission and discharge practices could contribute to differences observed.
- The number of pressure injuries alone should not be used to make any assumption to assess hospitals, as hospitals have a varied number of patient admissions – therefore the rate per 10000 patient days is provided.
- The data provided in this report is presented as an information source only and may be subject to change.
- Given the statewide rate is so low, care should be taken when interpreting data for all facilities. Each pressure injury impacts on the rate significantly.
- Cells with very small counts (<5) may potentially result in an individual being identified. Consequently, all cells with a value ranging between 1-4 3rd or 4th stage pressure injuries have the value "<5". Given the lower number of pressure injuries, rates for these hospitals have not been calculated.

Date extracted

11 November 2013

2012-13 Queensland public hospital - Hospital Acquired 3rd and 4th Stage Pressure Injuries - results

The below table presents the number of Hospital Acquired 3rd or 4th Stage Pressure Injuries, total number of patient days and the rate per 10,000 patient days for each hospital for 2012-13.

Statewide, Queensland has a rate of 0.3 hospital acquired 3rd or 4th stage pressure injuries per 10,000 patient days.

Hospital Acquired 3rd and 4th stage Pressure Injuries by Hospital for 2012/13

Facility Name	Total Number of Stage 3 or 4 Pressure Injuries	Total Number of patient days	Rate of Pressure Injuries per 10,000 patient days
Alpha	0	222	0
Atherton	0	15280	0
Augathella	0	718	0
Ayr	0	6519	0
Babinda	<5	13422	xx
Bamaga	0	1258	0
Baralaba	0	565	0
Barcaldine	0	1725	0
Beaudesert	<5	7580	xx
Biggenden	0	1263	0
Biloela	0	3474	0
Blackall	0	1394	0
Blackwater	0	1607	0
Boonah	0	5855	0
Bowen	0	5059	0
Bundaberg	<5	70998	xx
Caboolture	<5	71670	xx
Cairns	<5	156769	xx
Caloundra	0	30769	0
Capricorn Coast	0	6794	0
Charleville	0	2578	0
Charters Towers	0	5177	0
Cherbourg	0	2554	0
Childers	0	3495	0
Chinchilla	0	2344	0
Clermont	0	1461	0
Cloncurry	0	3337	0
Collinsville	0	1413	0
Cooktown	0	2713	0
Cunnamulla	0	1976	0
Dalby	0	8874	0
Dirranbandi	0	770	0
Doomadgee	0	472	0
Dysart	0	1029	0
Eidsvold	0	1161	0
Emerald	0	6439	0
Esk	0	2748	0
Gatton	0	4342	0

Gayndah	0	1556	0
Gin Gin	0	1951	0
Gladstone	0	15326	0
Gold Coast	7	185207	0.4
Goondiwindi	0	5097	0
Gordonvale	0	7439	0
Gympie	0	25623	0
Herberton	0	10122	0
Hervey Bay	<5	47335	xx
Home Hill	0	6454	0
Hughenden	0	1701	0
Ingham	0	5618	0
Inglewood	0	1746	0
Injune	0	2168	0
Innisfail	<5	13395	xx
Ipswich	<5	110635	xx
Jandowae	0	2730	0
Joyce Palmer HS	0	1807	0
Julia Creek	0	1007	0
Kilcoy	0	4301	0
Kingaroy	0	11629	0
Laldley	0	3680	0
Logan	<5	116980	xx
Longreach	0	2988	0
Mackay	<5	68082	xx
Maleny	0	7575	0
Mareeba	0	14009	0
Maryborough	<5	33458	xx
Mater Adult Public	0	54701	0
Mater Children's Public	0	43626	0
Mater Mothers' Public	0	52508	0
Miles	0	1835	0
Millmerran	0	1196	0
Mitchell	0	1226	0
Monto	0	2163	0
Moranbah	0	1114	0
Mornington Island	0	632	0
Mossman	0	5313	0
Mount Isa	<5	16650	xx
Mount Morgan	0	8447	0
Moura	0	1050	0
Mundubbera	0	1016	0
Mungindi	0	811	0

Murgon	0	2734	0
Nambour	<5	154493	xx
Nanango	0	2240	0
Normanton	0	1531	0
Oakey	0	2518	0
Princess Alexandra	13	299980	0.4
Proserpine	0	8108	0
Queen Elizabeth II	0	59093	0
Quilpie	0	525	0
Redcliffe	<5	101361	xx
Redland	0	57392	0
Richmond	0	1212	0
Robina Hospital	<5	119776	xx
Rockhampton	5	81907	0.6
Roma	0	5407	0
Royal Brisbane and Women's	24	335254	0.7
Royal Children's	0	50451	0
Sarina	0	3231	0
Springsure	0	985	0
St George	0	2794	0
Stanthorpe	0	6870	0
Surat	0	2330	0
Tara	0	1459	0
Taroom	0	766	0
Texas	0	1310	0
The Prince Charles Hospital	10	190652	0.5
Theodore	0	1047	0
Thursday Island	0	6967	0
Toowoomba	<5	101377	xx
Townsville	<5	200106	xx
Tully	0	4838	0
Warwick	<5	14611	xx
Weipa	0	2924	0
Winton	0	1751	0
Wondai	0	1042	0
Woorabinda	0	583	0
Wynnum	0	6618	0

RTI 2096 Terms of application: The following data in respect of each public hospital in Queensland for the most recent financial year available (e.g. 2012 - 2013) - percentage unplanned return to theatre.

Response: Queensland Health has implemented the Operating Room Management Information System (ORMIS) version 7 into Queensland public hospitals over the last few years. There is a data field in ORMIS v7 that indicates whether the operation was an unplanned return to theatre, from which this response has been derived.

It should be noted that ORMIS v7 has functionality that allows variation in the local configuration of the application - either to prompt the user that a new booking matches a medical record number of a patient with a previous procedure, or to disable this prompt. Furthermore, if the prompt is enabled, the user can set the time parameter for the number of days from the initial procedure, up to 3 days. Because of the variation in the functionality of the prompt, and the time parameter for the prompt, there is expected to be variation in the instances of unplanned returns being reported between hospitals.

Because ORMIS v7 was implemented on a rolling schedule, not all hospitals have information available for the full 2012-13 year. The table below shows the unplanned returns to theatre and the date from which 2012-13 data are available.

Percentage of unplanned returns to theatre, Queensland public hospitals with ORMIS v7, 2012-13

Hospital	% Unplanned Theatre Returns	Start Date
Bundaberg Hospital	0.56%	01/07/2012
Cairns Hospital	0.29%	26/11/2012
Caloundra Health Service	0.00%	02/10/2012
Dalby Hospital	0.00%	05/12/2012
Emerald Hospital	0.51%	31/08/2012
Gladstone Hospital	0.09%	26/09/2012
Gold Coast Hospital	0.23%	01/06/2013
Gympie Hospital	0.17%	11/12/2012
Hervey Bay Hospital	0.89%	01/07/2012
Ipswich Hospital	0.24%	13/05/2013
Kingaroy Hospital	0.00%	30/10/2012
Mackay Base Hospital	0.29%	02/07/2012
Maryborough Hospital	0.00%	01/07/2012
Nambour General Hospital	0.49%	06/08/2012
Queen Elizabeth II Jubilee Hospital	0.21%	17/09/2012
Robina Hospital	0.20%	01/06/2013
Rockhampton Base Hospital	0.35%	03/09/2012
Royal Brisbane and Women's	0.35%	15/04/2013
Royal Children's Hospital	0.43%	01/07/2012
Toowoomba Hospital	0.88%	19/11/2012
Warwick Hospital	0.00%	01/07/2012
Total	0.40%	

Data Source: ORMIS v7

- Figures are derived from non-cancelled operations that were performed in the 2012-13 financial year.
- Not all facilities listed have used ORMIS 7 for the scoped financial year
- Percentages are calculated with a numerator of the number of unplanned cases and a denominator of the total number of operations.

Release Notes: RTI2096 – Hospital Standardised Mortality Ratio - HSMR

Data request from applicant

- a) Data in respect of each public hospital in Queensland for the most recent financial year available – Hospital Standardised Mortality Ratio.

Data source

- The data used for the calculation of the HSMRs is the Queensland Hospital Admitted Patient Data Collection and the National Admitted Patient Data Collection.
- The observed values are from the Queensland Hospital Admitted Patient Data Collection
- The expected values are based on the Queensland Hospital Admitted Patient Data Collection and National Admitted Patient Data Collection to enable benchmarking to the National average.

Data extracted

- The HSMR indicator definition is the latest definition from the Australian Commission on Safety and Quality in Health Care obtained in June 2013.
- HSMR is the ratio of observed number of deaths, to the expected number of deaths based on the characteristics of the patients, for hospital separations with diagnosis accounting for 80% of in-hospital mortality.
- Episodes of care that satisfy the following criteria are included in the calculation of the HSMRs:
 - Episodes of care in Queensland public and private hospitals
 - Separations with high-risk diagnosis, accounting for 80% of in-hospital deaths, a list of principal diagnosis is included at the end of this document
 - Age at date of admission: 29 days to 120 years
 - Hospital service care type:
 - Acute care
 - Geriatric Evaluation and Management
 - Maintenance
 - Sex: male, female
 - Length of stay: 1-365 days
 - Admission urgency status:
 - Emergency admission
 - Elective admission

Calculation of expected deaths

- The probability of death for each episode of care is calculated using a logistic regression model. The sum of the probability of death for the episodes of care gives the expected number of deaths.
- The outcome being modelled with the Logistic Regression model is if the mode of separation for the episode of care was died in hospital. The independent variables in the model are: age, sex, principal diagnosis, admission urgency status, length of stay, if admitted patient transferred from another hospital and Charlson index

Calculation of the HSMR

$$HSMR = \frac{\text{count_of_Observed_death}}{\text{sum_of_Probability_of_death}} \times 100$$

Note: the HSMRs are only produced when a facility has a quarter with more than 30 separations and at least 3 expected deaths.

Interpretation of HSMRs

The value of the HSMR and the confidence level must be interpreted together.

Value of HSMR

The value of the HSMR indicates if the hospital's mortality rate is lower, the same or higher than the expected rate (the state rate).

HSMR = 100 - no difference between hospital's mortality rate and the expected rate

HSMR > 100 - hospital's mortality rate is higher than the expected rate

HSMR <100 - hospital's mortality rate is lower than the expected rate

Confidence interval of HSMR

- The confidence interval indicates if the HSMR result is statistically significant i.e. if the hospital is truly different to the expected rate.
- The confidence intervals describe the precision of the HSMR estimate.
- Smaller hospitals with fewer in scope cases have wider confidence intervals representing less precise HSMR estimates.
- The result is considered to be statistically different to the expected if the confidence interval doesn't include 100.

Caveats on data extracted

- The Hospital Standardised Mortality Ratio (HSMR) is an indicator of healthcare quality that measures whether the death rate at a hospital is higher or lower than you would expect.
- Like all statistics, HSMRs are not perfect. If a hospital has a high HSMR, it cannot be said for certain that this reflects failings in the care provided by the hospital. A hospital may have a high ratio due to chance or they may have had a group of patients that were more complex than expected based on the calculated probabilities of death.

Date extracted

12 September 2013

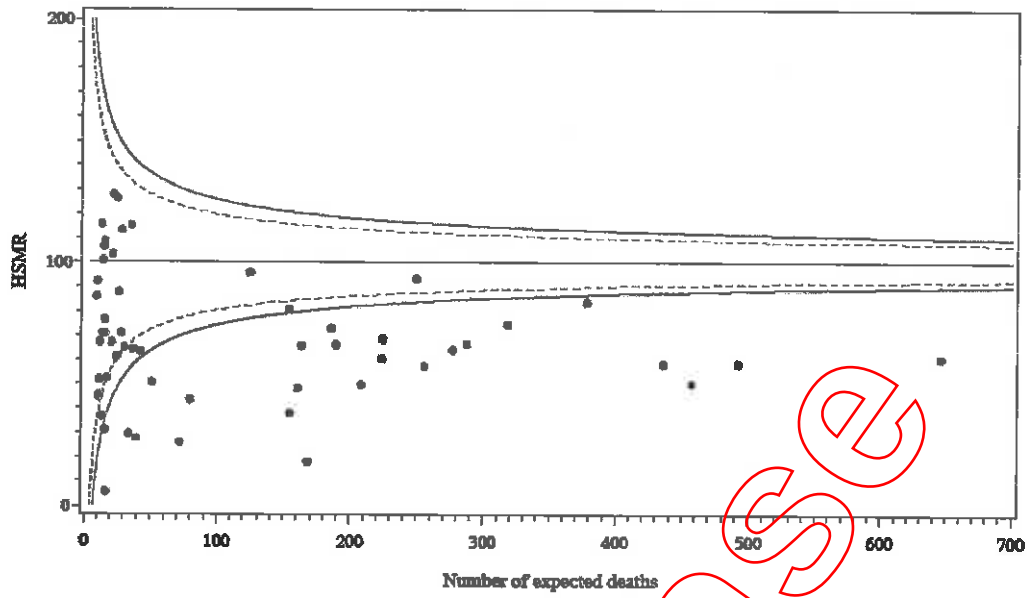
Additional Context

- Queensland Health has monitored the Hospital Standardised Mortality Ratios for the last couple of years.
- Where Hospitals have had a higher mortality rate, they have been required to investigate and rectify any issues.
- As a result the overall hospital mortality rate for Queensland has decreased over the last couple of years.

2012-13 Queensland public hospital HSMRs

- The below graph presents the HSMR results of Queensland public hospitals for the 2012-13 period by the number of expected deaths.
- As presented in the below graph, all Queensland hospitals are within both the 95% and 99% upper control limits, indicating that no Queensland hospital has an annual HSMR value that is statistically significantly higher than the Australian average.
- There are some hospitals that have a HSMR that is higher than 100, but these results are not statistically significant.

All hospitals, period=2012/2013



RTI Released

2012-13 Queensland public hospital HSMRs - results

- The below table presents for each hospital the HSMR value, observed number of deaths, expected number of deaths and number of separations for each hospital.
- Results that are highlighted blue indicate the hospital has an HSMR value which is in line with expected (based on the 95% confidence interval)
- Results that are highlighted green indicate the hospital has a lower HSMR value than expected (based on the 95% confidence interval)
- There are no hospital results that are highlighted as being higher than expected (based on the 95% confidence interval)

Queensland Public Hospitals - 2012-13					95% confidence interval		99% confidence interval	
Facility Name	HSMR	Observed deaths	Expected deaths	Separations	lower limit	upper limit	lower limit	upper limit
Atherton	30	10	34	1083	14	54	11	63
Ayr	88	23	26	621	56	132	48	147
Beauresert	103	22	21	658	65	157	55	175
Biloela	67	8	12	325	29	133	21	157
Boonah	45	5	11	295	14	104	9	127
Bowen	127	31	25	535	86	180	76	198
Bundaberg	50	104	209	5064	41	60	38	64
Caboolture	61	136	224	4817	51	72	48	75
Cairns	93	233	250	6934	82	106	78	110
Caloundra	18	31	169	2976	13	26	11	29
Capricorn Coast	65	20	31	858	40	101	34	113
Charters Towers	128	28	22	488	85	185	74	205
Childers	86	8	9	261	37	170	27	201
Chinchilla	116	15	13	315	65	191	53	218
Cooktown	52	6	12	287	19	113	13	136
Dalby	61	15	25	763	34	101	28	115
Emerald	53	9	17	675	24	100	18	117

Esk	6	1	17	359	0	33	0	45
Gatton	107	16	15	442	61	173	50	197
Gladstone	64	27	43	1448	42	93	36	103
Gold Coast	84	317	379	9467	75	93	72	97
Goondiwindi	101	14	14	461	55	169	45	194
Gympie	44	35	80	1958	30	61	27	67
Hervey Bay	73	136	187	3972	61	86	58	91
Ingham	113	32	28	532	78	160	68	176
Innisfail	51	26	51	1039	33	74	29	83
Ipswich	58	147	256	6351	49	68	46	71
Kilcoy	92	9	10	180	42	175	32	206
Kingaroy	64	24	37	1100	41	96	36	107
Laidley	71	11	16	376	35	127	28	147
Logan	64	178	277	6824	55	74	53	78
Mackay	96	120	125	3963	80	115	75	121
Maleny	37	5	14	349	12	86	8	104
Mareeba	28	11	39	1297	14	50	11	58
Maryborough	26	19	73	1549	16	41	13	46
Mater Adult Public	66	108	164	4323	54	80	51	84
Mossman	109	17	16	621	63	174	53	197
Mount Isa	115	41	36	1293	83	157	74	171
Murgon	45	5	11	328	15	106	10	129
Nambour	59	255	436	9434	52	66	50	69
Princess Alexandra	61	394	647	15418	55	67	53	69
Proserpine	67	14	21	814	37	113	30	129
Queen Elizabeth II	38	59	155	4556	29	49	26	53
Redcliffe	67	192	288	6702	58	77	55	80
Redland	48	78	161	3604	38	60	35	64
Robina Hospital	69	154	225	5949	58	80	55	84
Rockhampton	81	125	155	3986	67	96	64	102
Roma	71	10	14	484	34	131	26	152

Royal Brisbane and Women's	50	230	458	11024	44	57	42	59
Sarina	37	5	14	312	12	86	8	104
Stanthorpe	77	12	16	491	40	134	31	154
The Prince Charles Hospital	58	288	493	13376	52	66	50	68
Toowoomba	66	126	190	4500	55	79	52	83
Townsville	75	238	319	8502	66	85	63	88
Tully	31	5	16	456	10	73	7	88
Warwick	71	20	28	1007	43	110	37	123

RTI Release

Release Notes: RTI 2096 – AMI, Knee Replacement and Hip Replacement Readmissions

Data request from applicant

- a) Data in respect of each public hospital in Queensland for the most recent financial year available i.e. 2012/2013 – Acute Myocardial Infarction (Table 1), Knee Replacement (Table 2) and Hip Replacement Readmissions (Table 3).

Data source

- The data used for the calculation of AMI, Knee Replacement and Hip Replacement Readmissions is the Queensland Hospital Admitted Patient Data Collection.

Definition

- The definition for these indicators is from the VLAD indicator definition. The indicator definition consists of Outcome (Numerator), Inclusion/exclusion criteria (Denominator) and Risk Adjustment Criteria. See attached document.

Calculation of Rates

- The Rate of Readmissions, un-risk adjusted rate, is calculated using the following formulae:

$$\text{Unrisk_adjusted_rate} = \frac{\text{Actual_number_of_readmissions}}{\text{Number_of_separations}} \times 100$$

- The Risk Adjusted Rate of Readmissions is the rate that the facility is expected to have if the patients of this facility has the same risk/severity criteria as the patients in QLD public facilities. Risk adjusted rates are only calculated for AMI and Hip Readmissions as for Knee readmissions risk adjustment was not relevant. The risk adjusted rates were calculated using the following formulae:

$$\text{Risk_adjusted_rate} = \frac{\text{Actual_number_of_readmissions}}{\text{Expected_number_of_readmissions}} \times \text{Rate_QLD_public_facilities} \times 100$$

Rate of Queensland Public Facilities – 2012/13			
Indicators	Total Number of Readmissions	Total Number of Patients	Rate of Readmissions
AMI Readmission	1,037	8,088	12.8
Hip Readmission	96	1,363	7.0

- Expected number of readmissions is the number of readmissions that the facility would expect to have if their patients has the same risk level as the patients from the QLD public facilities. The risk adjustment is calculated from the Logistic Regression based on the previous 12 months of the patient's separation date. See indicator definition for the list of risk adjustment co-morbidities used in risk adjustment.

- For definition of Total Number of Readmissions, see the criteria under "Outcome (Numerator)" of the indicator definition.
- For definition of Total Number of Patients, see the criteria under "Inclusion and Exclusion Criteria (Denominator)" of the indicator definition.

Interpretation of results

- If the confidence interval of the facility overlaps the rate of total QLD public facilities, then there is a no statistically significant difference.
- If the confidence interval of the facility doesn't overlap the rate of total QLD public facilities, then there is statistically significant difference.
 - Results that are highlighted green indicate the hospital has a LOWER readmission rate than expected (based on the 95%)
 - Results that are highlighted amber indicate the hospital has a HIGHER readmission rate than expected (based on the 95%)
 - Results that are NOT highlighted indicate that there is no statistically significant difference between hospital readmission rate and the expected (based on the 95%)
- No results were statistically higher or lower at the 99% confidence interval

Caveats on data extracted

- Differences between hospitals in regards to coding, admission and discharge practices could contribute to differences observed.
- For some facilities the number of readmissions and total number of patients are small, it should be interpreted with caution
- The number of readmissions alone should not be used to make any assumption to assess hospitals, as hospitals have a varied number of patient admissions
- The data provided in this report is presented as an information source only and may be subject to change.

Additional context

- Queensland hospitals currently monitor readmission rates monthly through the Variable Life Adjusted Display (VLAD) methodology.
- If a hospital has a high readmission rate compared to the state the hospital is required to investigate this further to determine the cause.
- The investigation is clinically reviewed and acted upon where necessary.

Date extracted

11 November 2013

2012-13 Queensland public hospital - AMI, Knee Replacement and Hip Replacement Readmissions - results

The below tables 1, 2 and 3 presents the AMI, Knee Replacement and Hip Replacement Readmissions expected number of readmissions, actual number of readmissions and the risk adjusted rate(%) for each hospital with 95% and 99% confidence intervals. There is no risk adjustment criteria for Knee Replacement readmission, the rate of this indicator is not risk adjusted. Only facilities with more than 30 separations are included in these tables.

Table 1 AMI readmissions by Hospital for 2012/13

AMI readmissions -Queensland Public Hospitals – 2012/13								
Facility Name	Expected Number of Readmissions	Actual Number of Readmissions	Number of Separations	Risk Adjusted Rate	95% confidence interval		99% confidence interval	
					lower limit	upper limit	lower limit	upper limit
Atherton	5.9	7	47	15.3	5.6	24.9	2.6	28.0
Ayr	4.2	2	35	6.1	0.0	17.5	0.0	21.0
Bundaberg	34.2	44	275	16.5	12.5	20.5	11.2	21.8
Caboolture	32.2	34	237	13.5	9.4	17.6	8.2	18.9
Cairns	41.7	50	351	15.4	11.7	19.0	10.6	20.2
Caloundra	15.3	16	117	13.4	7.4	19.3	5.6	21.2
Capricorn Coast	5.2	8	41	19.7	9.5	29.9	6.3	33.1
Charters Towers	5.2	7	39	17.3	7.1	27.5	3.9	30.7
Dalby	4.7	5	36	13.5	2.9	24.2	0.0	27.6
Gladstone	9.0	6	81	8.6	0.7	16.5	0.0	19.0
Gold Coast	45.1	46	358	13.1	9.6	16.6	8.5	17.7
Gympie	9.8	14	77	18.3	10.8	25.7	8.5	28.0
Hervey Bay	30.8	24	241	10.0	5.8	14.2	4.5	15.5
Innisfail	5.9	9	45	19.7	10.1	29.3	7.1	32.4
Ipswich	35.5	36	268	13.0	9.1	16.9	7.9	18.1
Kingaroy	8.9	5	76	7.2	0.0	15.1	0.0	17.5
Logan	30.4	43	244	18.1	13.9	22.3	12.6	23.7
Mackay	26.9	29	214	13.8	9.3	18.3	7.9	19.7
Mareeba	6.2	6	51	12.4	3.0	21.8	0.1	24.8
Maryborough	9.7	4	81	5.3	0.0	12.8	0.0	15.2
Mater Adult Public	13.6	14	101	13.2	6.9	19.5	4.9	21.5
Mount Isa	7.9	2	72	3.2	0.0	11.7	0.0	14.3
Nambour	60.8	62	476	13.1	10.1	16.1	9.1	17.0
Princess Alexandra	140.8	133	1163	12.1	10.1	14.1	9.5	14.7
Proserpine	4.3	4	38	12.0	0.6	23.3	0.0	26.9
Queen Elizabeth II	11.2	7	95	8.0	1.0	15.1	0.0	17.3
Redcliffe	24.7	14	189	7.3	2.6	11.9	1.1	13.4
Redland	14.4	17	100	15.2	9.1	21.2	7.2	23.2
Robina Hospital	23.4	29	178	15.9	11.1	20.7	9.6	22.2
Rockhampton	28.4	27	222	12.2	7.8	16.6	6.5	17.9
Royal Brisbane	66.4	53	540	10.2	7.4	13.1	6.5	14.0

AMI readmissions -Queensland Public Hospitals – 2012/13								
Facility Name and Women's	Expected Number of Readmissions	Actual Number of Readmissions	Number of Separations	Risk Adjusted Rate	95% confidence interval		99% confidence interval	
					lower limit	upper limit	lower limit	upper limit
The Prince Charles Hospital	93.9	104	758	14.2	11.8	16.6	11.0	17.4
Toowoomba	23.7	27	180	14.6	9.8	19.4	8.3	20.9
Townsville	49.2	52	386	13.6	10.2	16.9	9.2	17.9
Warwick	6.1	6	46	12.6	3.2	22.0	0.2	25.0

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Table 2 Knee Replacement readmissions by Hospital for 2012/13

Knee Replacement readmissions -Queensland Public Hospitals – 2012/13							
				95% confidence interval		99% confidence interval	
Facility Name	Actual Number of Readmissions	Number of Separations	Unrisk adjusted Rate	lower limit	upper limit	lower limit	upper limit
All QLD Public Facilities	225	2,250	10.0				
Princess Alexandra	2	35	5.7	0.7	19.2	0.3	23.9
Logan	4	47	8.5	2.4	20.4	1.5	24.4
Gold Coast	5	64	7.8	2.6	17.3	1.7	20.6
Hervey Bay	7	66	10.6	4.4	20.6	3.2	24.0
Royal Brisbane and Women's	7	72	9.7	4.0	19.0	2.9	22.2
Mackay	9	76	11.8	5.6	21.3	4.3	24.4
Mater Adult Public	9	79	11.4	5.3	20.5	4.1	23.6
Bundaberg	7	81	8.6	3.5	17.0	2.6	19.9
Toowoomba	16	94	17.0	10.1	26.2	8.4	29.1
Rockhampton	7	108	6.5	2.6	12.9	1.9	15.1
Nambour	12	113	10.6	5.6	17.8	4.5	20.2
Robina Hospital	7	120	5.8	2.4	11.6	1.7	13.7
Redcliffe	15	131	11.5	6.6	18.2	5.4	20.4
Cairns	11	141	7.8	4.0	13.5	3.1	15.5
Townsville	21	147	14.3	9.1	21.0	7.8	23.2
Queen Elizabeth II	16	211	7.6	4.4	12.0	3.7	13.5
Ipswich	22	222	9.9	6.3	14.6	5.4	16.2
The Prince Charles Hospital	37	349	10.6	7.6	14.3	6.8	15.5

Table 3 Hip Replacement readmissions by Hospital for 2012/13

Hip Replacement readmissions -Queensland Public Hospitals – 2012/13								
Facility Name	Expected Number of Readmissions	Actual Number of Readmissions	Number of Separations	Risk Adjusted Rate	95% confidence interval		99% confidence interval	
					lower limit	upper limit	lower limit	upper limit
Bundaberg	2.6	4	41	10.8	2.5	19.0	0.0	21.6
Cairns	4.8	4	77	5.9	0.0	12.0	0.0	13.9
Gold Coast	2.4	2	40	5.8	0.0	14.4	0.0	17.2
Hervey Bay	2.1	2	34	6.7	0.0	15.9	0.0	18.8
Ipswich	5.8	4	92	4.9	0.0	10.4	0.0	12.2
Logan	2.0	5	33	15.7	6.2	27.2	5.2	30.1
Mackay	2.2	1	34	5.2	0.0	12.3	0.0	15.1
Mater Adult Public	3.6	4	60	7.8	0.7	14.8	0.0	17.0
Nambour	4.6	6	73	9.2	3.0	15.5	1.0	17.5
Princess Alexandra	3.0	4	48	9.3	1.6	16.9	0.0	19.3
Queen Elizabeth II	8.5	13	134	10.8	6.2	15.4	4.8	16.9
Redcliffe	4.8	3	78	4.4	0.0	10.6	0.0	12.5
Robina Hospital	7.0	10	113	10.1	5.0	15.1	3.4	16.7
Rockhampton	2.4	2	38	5.8	0.0	14.4	0.0	17.1
Royal Brisbane and Women's	3.1	7	48	16.0	8.4	23.6	6.0	26.0
The Prince Charles Hospital	14.2	12	227	5.9	2.4	9.5	1.3	10.6
Toowoomba	3.6	2	56	3.9	0.0	10.9	0.0	13.1
Townsville	4.6	7	71	10.8	4.6	17.0	2.6	19.0

Variable Life Adjusted Display (VLAD)

Readmission Indicator Definitions

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Table 1 VLAD Acute Myocardial Infarction (AMI) Readmission Indicator Definition

Outcome (Numerator)	
Outcome	AMI patients readmitted to any Queensland hospital within a specified interval since discharge to home / usual residence for a condition that could be considered a consequence of the diagnosis. See Appendix A for relevant ICD codes and readmission intervals. Readmissions were identified using probabilistic matching to allow inclusion of readmissions to a different facility as well as readmissions to the same facility. Episodes were matched using patient name (first name, surname and phonetic version of surname), date of birth, address (street, suburb and postcode), age and sex. Matches required at least four of the eight variables matching including either date of birth, first or second name. Potential matches were checked manually. Readmissions could not be transfers in.
Inclusion and Exclusion Criteria (Denominator)	
Principal Diagnoses Code	I21 (Acute myocardial infarction) For continuum of care: - If the patient is admitted with principal diagnosis (PD) of Chest Pain/Angina and then transferred to another hospital with PD of AMI then the episode of care of Chest Pain/Angina as well as the episode of care with PD of AMI will be included in the VLAD chart. This is to avoid excluding episodes where the AMI diagnosis has not yet been determined. - If the patient is admitted with PD of AMI and then transferred to another hospital with PD of Chest Pain or Angina then this whole continuum of care is excluded from the definition. This is to avoid including patients who admitted due to Chest Pain or Angina but incorrectly diagnosis as AMI in the index hospital.
Episode type	Acute
Age	All ages
Length of stay	All patient days
Elective Status of patient	Emergency admission only
Admission source/referral source	All Admission Sources
Separation mode	The following mode of separation in the last episode of care are included: - Patient discharge to home/usual residence, - Correctional facility - Residential Aged Care Service
Rules applied when patients are transferred to other hospitals	A transferred case is defined as either: - an admission to a subsequent hospital within 12 hours of separation from the previous hospital OR - an admission to a subsequent hospital within 36 hours with indication of either a 'transfer out' or a 'transfer in' Inclusion of patients/Denominator: Include in the hospital where the initial admission occurred and all hospitals with subsequent admissions, where transfers have occurred, and where the patient met the principal diagnosis codes above. Outcome/Numerator: If an adverse event (in-hospital mortality, long stay, readmission) occurs, the adverse event will be included in all hospitals where the patient had been admitted to in that continuum of care.
State of Usual of residence	Queensland
Risk Adjustment Criteria	
Selected co-morbidities	Age Group, Heart Failure, Renal disease

Table 2 VLAD Hip Replacement Readmission Indicator Definition

Outcome (Numerator)	
Outcome	Hip Replacement patients readmitted to any Queensland hospital within a specified interval since discharge to home / usual residence for a condition that could be considered a consequence of the procedure. See Appendix B for relevant ICD codes and readmission intervals. Readmissions were identified using probabilistic matching to allow inclusion of readmissions to a different facility as well as readmissions to the same facility. Episodes were matched using patient name (first name, surname and phonetic version of surname), date of birth, address (street, suburb and postcode), age and sex. Matches required at least four of the eight variables matching including either date of birth, first or second name. Potential matches were checked manually. Readmissions could not be transfers in.
Inclusion and Exclusion Criteria (Denominator)	
Principal Diagnoses Code	Any except the following: • S72.0: Fracture of neck of femur • S72.1: Pertrochanteric fracture • S72.2: Subtrochanteric fracture
Procedure Codes	At least one of the following procedure codes: • 49318-00: Total arthroplasty of hip, unilateral • 49319-00: Total arthroplasty of hip, bilateral
Episode type	All
Elective status	All
Elective status of Readmission	All
Age	All ages
Length of stay	All
Admission source	All
Separation mode	All
Rules applied when patients are transferred to other hospitals	A transferred case is defined as either: • an admission to a subsequent hospital within 12 hours of separation from the previous hospital, OR • an admission to a subsequent hospital within 36 hours with indication of either a 'transfer out' or a 'transfer in'. Inclusion of patients/Denominator: Include in the hospital where the procedure was performed and all hospitals with subsequent admissions where transfers have occurred. Outcome/Numerator: If the patient was readmitted then the readmission will be included in all hospitals where the patient had been admitted to in that continuum of care.
State of usual residence	Queensland
Risk Adjustment Criteria	
Selected co-morbidities	Emergency patient either by elective status or emergency modifier on the ASA score

Table 3 VLAD Knee Replacement Readmission Indicator Definition

Outcome (Numerator)	
Outcome	Knee Replacement patients readmitted to any Queensland hospital within a specified interval since discharge to home / usual residence for a condition that could be considered a consequence of the procedure. See Appendix B for relevant ICD codes and readmission intervals. Readmissions were identified using probabilistic matching to allow inclusion of readmissions to a different facility as well as readmissions to the same facility. Episodes were matched using patient name (first name, surname and phonetic version of surname), date of birth, address (street, suburb and postcode), age and sex. Matches required at least four of the eight variables matching including either date of birth, first or second name. Potential matches were checked manually. Readmissions could not be transfers in.
Inclusion and Exclusion Criteria (Denominator)	
Principal Diagnoses Code	Any
Procedure Codes	At least one of the following procedure codes: • 49518-00: Total arthroplasty of knee, unilateral. • 49519-00: Total arthroplasty of knee, bilateral • 49521-00: Total arthroplasty of knee with bone graft to femur, unilateral • 49521-02: Total arthroplasty of knee with bone graft to tibia, unilateral • 49524-00: Total arthroplasty of knee with bone graft to femur and tibia, unilateral
Episode type	All
Elective status	All
Age	All ages
Length of stay	All
Admission source	All
Separation mode	All
Rules applied when patients are transferred to other hospitals	A transferred case is defined as either: • an admission to a subsequent hospital within 12 hours of separation from the previous hospital, OR • an admission to a subsequent hospital within 36 hours with indication of either a 'transfer out' or a 'transfer in'. <u>Inclusion of patients/Denominator:</u> Include in the hospital where the procedure was performed and all hospitals with subsequent admissions where transfers have occurred. <u>Outcome/Numerator:</u> If the patient was readmitted then the readmission will be included in all hospitals where the patient had been admitted to in that continuum of care.
State of usual residence	Queensland
Risk Adjustment Criteria	
Selected co-morbidities	None

Appendix A – Readmission Principal Diagnoses for AMI

ICD codes	Icd codes and descriptions for AMI readmission	Interval (days)
A047	A04.7 - Enterocolitis due to Clostridium difficile	30
A400	A40.0 - Sepsis due to streptococcus, group A	7
A401	A40.1 - Sepsis due to streptococcus, group B	7
A402	A40.2 - Sepsis due to streptococcus, group D	7
A403	A40.3 - Sepsis due to Streptococcus pneumoniae	7
A408	A40.8 - Other streptococcal sepsis	7
A409	A40.9 - Streptococcal sepsis, unspecified	7
A410	A41.0 - Sepsis due to Staphylococcus aureus	7
A411	A41.1 - Sepsis due to other specified staphylococcus	7
A412	A41.2 - Sepsis due to unspecified staphylococcus	7
A413	A41.3 - Sepsis due to Haemophilus influenzae	7
A414	A41.4 - Sepsis due to anaerobes	7
A415	A41.5 - Sepsis due to other and unspecified Gram-negative organisms	7
A4150	A41.50 - Sepsis due to unspecified Gram-negative organisms	7
A4151	A41.51 - Sepsis due to Escherichia coli [E. Coli]	7
A4152	A41.52 - Sepsis due to Pseudomonas	7
A4158	A41.58 - Sepsis due to other Gram-negative organisms	7
A418	A41.8 - Other specified sepsis	7
A419	A41.9 - Sepsis, unspecified	7
A490	Staphylococcal infection, unspecified site	7
A4900	A49.00 - Staphylococcal infection, unspecified site	7
A4901	A49.01 - Staphylococcus aureus infection, unspecified site	7
A491	A49.1 - Streptococcal infection, unspecified site	7
A492	A49.2 - Haemophilus influenzae infection, unspecified site	7
A493	A49.3 - Mycoplasma infection, unspecified site	7
A498	A49.8 - Other bacterial infections of unspecified site	7
A499	A49.9 - Bacterial infection, unspecified	7
D500	D50.0 - Iron deficiency anaemia secondary to blood loss (chronic)	7
D508	D50.8 - Other iron deficiency anaemias	7
D509	D50.9 - Iron deficiency anaemia, unspecified	7
D62	D62. 0 – Acute post haemorrhagic anaemia	7
D648	D64.8 - Other specified anaemias	7
D649	D64.9 - Anaemia, unspecified	7
D683	D68.3 - Haemorrhagic disorder due to circulating anticoagulants	30
E1002	E10.02 - Type 1 diabetes mellitus with hyperosmolarity with coma	7
E101	E10.1 - Type 1 diabetes mellitus with acidosis	7
E1011	E10.11 - Type 1 diabetes mellitus with ketoacidosis, without coma	7
E1012	E10.12 - Type 1 diabetes mellitus with ketoacidosis, with coma	7
E1013	E10.13 - Type 1 diabetes mellitus with lactic acidosis, without coma	7
E1014	E10.14 - Type 1 diabetes mellitus with lactic acidosis, with coma	7
E1015	E10.15 - Type 1 diabetes mellitus with ketoacidosis, with lactic acidosis, without coma	7
E1016	E10.16 - Type 1 diabetes mellitus with ketoacidosis, with lactic acidosis, with coma	7
E102	E10.2 - Type 1 diabetes mellitus with kidney complication	7
E1021	E10.21 - Type 1 diabetes mellitus with incipient diabetic nephropathy	7
E1022	E10.22 - Type 1 diabetes mellitus with established diabetic nephropathy	7
E1029	E10.29 - Type 1 diabetes mellitus with other specified kidney complication	7
E103	E10.3 - Type 1 diabetes mellitus with ophthalmic complication	7
E1031	E10.31 - Type 1 diabetes mellitus with background retinopathy	7
E1032	E10.32 - Type 1 diabetes mellitus with preproliferative retinopathy	7
E1033	E10.33 - Type 1 diabetes mellitus with proliferative retinopathy	7

ICD codes	ICD codes and descriptions for AMI readmission	Interval (days)
E1034	E10.34 - Type 1 diabetes mellitus with other retinopathy	7
E1035	E10.35 - Type 1 diabetes mellitus with advanced ophthalmic disease	7
E1036	E10.36 - Type 1 diabetes mellitus with diabetic cataract	7
E1039	E10.39 - Type 1 diabetes mellitus with other specified ophthalmic complication	7
E104	E10.4 - Type 1 diabetes mellitus with neurological complication	7
E1040	E10.40 - Type 1 diabetes mellitus with unspecified neuropathy	7
E1041	E10.41 - Type 1 diabetes mellitus with diabetic mononeuropathy	7
E1042	E10.42 - Type 1 diabetes mellitus with diabetic polyneuropathy	7
E1043	E10.43 - Type 1 diabetes mellitus with diabetic autonomic neuropathy	7
E1049	E10.49 - Type 1 diabetes mellitus with other specified neurological complication	7
E105	E10.5 - Type 1 diabetes mellitus with circulatory complication	7
E1051	E10.51 - Type 1 diabetes mellitus with peripheral angiopathy, without gangrene	7
E1052	E10.52 - Type 1 diabetes mellitus with peripheral angiopathy, with gangrene	7
E1053	E10.53 - Type 1 diabetes mellitus with diabetic cardiomyopathy	7
E106	E10.6 - Type 1 diabetes mellitus with other specified complication	7
E1061	E10.61 - Type 1 diabetes mellitus with specified diabetic musculoskeletal and connective tissue complication	7
E1062	E10.62 - Type 1 diabetes mellitus with specified skin and subcutaneous tissue complication	7
E1063	E10.63 - Type 1 diabetes mellitus with specified periodontal complication	7
E1064	E10.64 - Type 1 diabetes mellitus with hypoglycaemia	7
E1065	E10.65 - Type 1 diabetes mellitus with poor control	7
E1069	E10.69 - Type 1 diabetes mellitus with other specified complication	7
E107	E10.7 - Type 1 diabetes mellitus with multiple complications	7
E1071	E10.71 - Type 1 diabetes mellitus with multiple microvascular or other specified nonvascular complications	7
E1073	E10.73 - Type 1 diabetes mellitus with foot ulcer due to multiple causes	7
E108	E10.8 - Type 1 diabetes mellitus with unspecified complication	7
E109	E10.9 - Type 1 diabetes mellitus without complication	7
E110	E11.0 - Type 2 diabetes mellitus with hyperosmolarity	7
E1101	E11.01 - Type 2 diabetes mellitus with hyperosmolarity without nonketotic hyperglycaemic-hyperosmolar coma [NKHHC]	7
E1102	E11.02 - Type 2 diabetes mellitus with hyperosmolarity with coma	7
E111	E11.1 - Type 2 diabetes mellitus with acidosis	7
E1111	E11.11 - Type 2 diabetes mellitus with ketoacidosis, without coma	7
E1112	E11.12 - Type 2 diabetes mellitus with ketoacidosis, with coma	7
E1113	E11.13 - Type 2 diabetes mellitus with lactic acidosis, without coma	7
E1114	E11.14 - Type 2 diabetes mellitus with lactic acidosis, with coma	7
E1115	E11.15 - Type 2 diabetes mellitus with ketoacidosis, with lactic acidosis, without coma	7
E1116	E11.16 - Type 2 diabetes mellitus with ketoacidosis, with lactic acidosis, with coma	7
E112	E11.2 - Type 2 diabetes mellitus with kidney complication	7
E1121	E11.21 - Type 2 diabetes mellitus with incipient diabetic nephropathy	7
E1122	E11.22 - Type 2 diabetes mellitus with established diabetic nephropathy	7
E1129	E11.29 - Type 2 diabetes mellitus with other specified kidney complication	7
E113	E11.3 - Type 2 diabetes mellitus with ophthalmic complication	7
E1131	E11.31 - Type 2 diabetes mellitus with background retinopathy	7
E1132	E11.32 - Type 2 diabetes mellitus with preproliferative retinopathy	7
E1133	E11.33 - Type 2 diabetes mellitus with proliferative retinopathy	7
E1134	E11.34 - Type 2 diabetes mellitus with other retinopathy	7
E1135	E11.35 - Type 2 diabetes mellitus with advanced ophthalmic disease	7

ICD codes	ICD codes and descriptions for AMI readmission	Interval (days)
E1136	E11.36 - Type 2 diabetes mellitus with diabetic cataract	7
E1139	E11.39 - Type 2 diabetes mellitus with other specified ophthalmic complication	7
E114	E11.4 - Type 2 diabetes mellitus with neurological complication	7
E1140	E11.40 - Type 2 diabetes mellitus with unspecified neuropathy	7
E1141	E11.41 - Type 2 diabetes mellitus with diabetic mononeuropathy	7
E1142	E11.42 - Type 2 diabetes mellitus with diabetic polyneuropathy	7
E1143	E11.43 - Type 2 diabetes mellitus with diabetic autonomic neuropathy	7
E1149	E11.49 - Type 2 diabetes mellitus with other specified neurological complication	7
E115	E11.5 - Type 2 diabetes mellitus with circulatory complication	7
E1151	E11.51 - Type 2 diabetes mellitus with peripheral angiopathy, without gangrene	7
E1152	E11.52 - Type 2 diabetes mellitus with peripheral angiopathy, with gangrene	7
E1153	E11.53 - Type 2 diabetes mellitus with diabetic cardiomyopathy	7
E116	E11.6 - Type 2 diabetes mellitus with other specified complication	7
E1161	E11.61 - Type 2 diabetes mellitus with specified diabetic musculoskeletal and connective tissue complication	7
E1162	E11.62 - Type 2 diabetes mellitus with specified skin and subcutaneous tissue complication	7
E1163	E11.63 - Type 2 diabetes mellitus with specified periodontal complication	7
E1164	E11.64 - Type 2 diabetes mellitus with hypoglycaemia	7
E1165	E11.65 - Type 2 diabetes mellitus with poor control	7
E1169	E11.69 - Type 2 diabetes mellitus with other specified complication	7
E117	E11.7 - Type 2 diabetes mellitus with multiple complications	7
E1171	E11.71 - Type 2 diabetes mellitus with multiple microvascular or other specified nonvascular complications	7
E1172	E11.72 - Type 2 diabetes mellitus with features of insulin resistance	7
E1173	E11.73 - Type 2 diabetes mellitus with foot ulcer due to multiple causes	7
E118	E11.8 - Type 2 diabetes mellitus with unspecified complication	7
E119	E11.9 - Type 2 diabetes mellitus without complication	7
E130	E13.0 - Other specified diabetes mellitus with hyperosmolarity	7
E1301	E13.01 - Other specified diabetes mellitus with hyperosmolarity, without nonketotic hyperglycaemic-hyperosmolar coma	7
E1302	E13.02 - Other specified diabetes mellitus with hyperosmolarity, with coma	7
E131	E13.1 - Other specified diabetes mellitus with acidosis	7
E1311	E13.11 - Other specified diabetes mellitus with ketoacidosis, without coma	7
E1312	E13.12 - Other specified diabetes mellitus with ketoacidosis, with coma	7
E1313	E13.13 - Other specified diabetes mellitus with lactic acidosis, without coma	7
E1314	E13.14 - Other specified diabetes mellitus with lactic acidosis, with coma	7
E1315	E13.15 - Other specified diabetes mellitus with ketoacidosis, with lactic acidosis, without coma	7
E1316	E13.16 - Other specified diabetes mellitus with ketoacidosis, with lactic acidosis, with coma	7
E132	E13.2 - Other specified diabetes mellitus with kidney complication	7
E1321	E13.21 - Other specified diabetes mellitus with incipient diabetic nephropathy	7
E1322	E13.22 - Other specified diabetes mellitus with established diabetic nephropathy	7
E1329	E13.29 - Other specified diabetes mellitus with other specified kidney complication	7
E133	E13.3 - Other specified diabetes mellitus with ophthalmic complication	7
E1331	E13.31 - Other specified diabetes mellitus with background retinopathy	7
E1332	E13.32 - Other specified diabetes mellitus with preproliferative retinopathy	7

ICD codes	ICD codes and descriptions for AMI readmission	Interval (days)
E1333	E13.33 - Other specified diabetes mellitus with proliferative retinopathy	7
E1334	E13.34 - Other specified diabetes mellitus with other retinopathy	7
E1335	E13.35 - Other specified diabetes mellitus with advanced ophthalmic disease	7
E1336	E13.36 - Other specified diabetes mellitus with diabetic cataract	7
E1339	E13.39 - Other specified diabetes mellitus with other specified ophthalmic complication	7
E134	E13.4 - Other specified diabetes mellitus with neurological complication	7
E1340	E13.40 - Other specified diabetes mellitus with unspecified neuropathy	7
E1341	E13.41 - Other specified diabetes mellitus with diabetic mononeuropathy	7
E1342	E13.42 - Other specified diabetes mellitus with diabetic polyneuropathy	7
E1343	E13.43 - Other specified diabetes mellitus with diabetic autonomic neuropathy	7
E1349	E13.49 - Other specified diabetes mellitus with other specified neurological complication	7
E135	E13.5 - Other specified diabetes mellitus with circulatory complication	7
E1351	E13.51 - Other specified diabetes mellitus with peripheral angiopathy, without gangrene	7
E1352	E13.52 - Other specified diabetes mellitus with peripheral angiopathy, with gangrene	7
E1353	E13.53 - Other specified diabetes mellitus with diabetic cardiomyopathy	7
E136	E13.6 - Other specified diabetes mellitus with other specified complication	7
E1361	E13.61 - Other specified diabetes mellitus with specified diabetic musculoskeletal and connective tissue complication	7
E1362	E13.62 - Other specified diabetes mellitus with specified skin and subcutaneous tissue complication	7
E1363	E13.63 - Other specified diabetes mellitus with specified periodontal complication	7
E1364	E13.64 - Other specified diabetes mellitus with hypoglycaemia	7
E1365	E13.65 - Other specified diabetes mellitus with poor control	7
E1369	E13.69 - Other specified diabetes mellitus with other specified complication	7
E137	E13.7 - Other specified diabetes mellitus with multiple complications	7
E1371	E13.71 - Other specified diabetes mellitus with multiple microvascular or other specified nonvascular complications	7
E1372	E13.72 - Other specified diabetes mellitus with features of insulin resistance	7
E1373	E13.73 - Other specified diabetes mellitus with foot ulcer due to multiple causes	7
E138	E13.8 - Other specified diabetes mellitus with unspecified complication	7
E139	E13.9 - Other specified diabetes mellitus without complication	7
E140	E14.0 - Unspecified diabetes mellitus with hyperosmolarity	7
E1401	E14.01 - Unspecified diabetes mellitus with hyperosmolarity, without nonketotic hyperglycaemic-hyperosmolar coma	7
E1402	E14.02 - Unspecified diabetes mellitus with hyperosmolarity, with coma	7
E141	E14.1 - Unspecified diabetes mellitus with acidosis	7
E1411	E14.11 - Unspecified diabetes mellitus with ketoacidosis, without coma	7
E1412	E14.12 - Unspecified diabetes mellitus with ketoacidosis, with coma	7
E1413	E14.13 - Unspecified diabetes mellitus with lactic acidosis, without coma	7
E1414	E14.14 - Unspecified diabetes mellitus with lactic acidosis, with coma	7
E1415	E14.15 - Unspecified diabetes mellitus with ketoacidosis, with lactic acidosis, without coma	7
E1416	E14.16 - Unspecified diabetes mellitus with ketoacidosis, with lactic acidosis, with coma	7
E142	E14.2 - Unspecified diabetes mellitus with kidney complication	7
E1421	E14.21 - Unspecified diabetes mellitus with incipient diabetic nephropathy	7
E1422	E14.22 - Unspecified diabetes mellitus with established diabetic	7

ICD codes	ICD codes and descriptions for AMI readmission	Interval (days)
	nephropathy	
E1429	E14.29 - Unspecified diabetes mellitus with other specified kidney complication	7
E143	E14.3 - Unspecified diabetes mellitus with ophthalmic complication	7
E1431	E14.31 - Unspecified diabetes mellitus with background retinopathy	7
E1432	E14.32 - Unspecified diabetes mellitus with preproliferative retinopathy	7
E1433	E14.33 - Unspecified diabetes mellitus with proliferative retinopathy	7
E1434	E14.34 - Unspecified diabetes mellitus with other retinopathy	7
E1435	E14.35 - Unspecified diabetes mellitus with advanced ophthalmic disease	7
E1436	E14.36 - Unspecified diabetes mellitus with diabetic cataract	7
E1439	E14.39 - Unspecified diabetes mellitus with other specified ophthalmic complication	7
E144	E14.4 - Unspecified diabetes mellitus with neurological complication	7
E1440	E14.40 - Unspecified diabetes mellitus with unspecified neuropathy	7
E1441	E14.41 - Unspecified diabetes mellitus with diabetic mononeuropathy	7
E1442	E14.42 - Unspecified diabetes mellitus with diabetic polyneuropathy	7
E1443	E14.43 - Unspecified diabetes mellitus with diabetic autonomic neuropathy	7
E1449	E14.49 - Unspecified diabetes mellitus with other specified neurological complication	7
E145	E14.5 - Unspecified diabetes mellitus with circulatory complication	7
E1451	E14.51 - Unspecified diabetes mellitus with peripheral angiopathy, without gangrene	7
E1452	E14.52 - Unspecified diabetes mellitus with peripheral angiopathy, with gangrene	7
E1453	E14.53 - Unspecified diabetes mellitus with diabetic cardiomyopathy	7
E146	E14.6 - Unspecified diabetes mellitus with other specified complication	7
E1461	E14.61 - Unspecified diabetes mellitus with specified diabetic musculoskeletal and connective tissue complication	7
E1462	E14.62 - Unspecified diabetes mellitus with specified skin and subcutaneous tissue complication	7
E1463	E14.63 - Unspecified diabetes mellitus with specified periodontal complication	7
E1464	E14.64 - Unspecified diabetes mellitus with hypoglycaemia	7
E1465	E14.65 - Unspecified diabetes mellitus with poor control	7
E1469	E14.69 - Unspecified diabetes mellitus with other specified complication	7
E147	E14.7 - Unspecified diabetes mellitus with multiple complications	7
E1471	E14.71 - Unspecified diabetes mellitus with multiple microvascular or other specified nonvascular complications	7
E1472	E14.72 - Unspecified diabetes mellitus with features of insulin resistance	7
E1473	E14.73 - Unspecified diabetes mellitus with foot ulcer due to multiple causes	7
E148	E14.8 - Unspecified diabetes mellitus with unspecified complication	7
E149	E14.9 - Unspecified diabetes mellitus without complication	7
E86	E86 - Volume depletion	7
E870	E87.0 - Hyperosmolality and hypernatraemia	7
E871	E87.1 - Hypo-osmolality and hyponatraemia	7
E872	E87.2 - Acidosis	7
E873	E87.3 - Alkalosis	7
E874	E87.4 - Mixed disorder of acid-base balance	7
E875	E87.5 - Hyperkalaemia	7
E876	E87.6 - Hypokalaemia	7
E877	E87.7 - Fluid overload	7
F050	F05.0 - Delirium not superimposed on dementia, so described	7
F051	F05.1 - Delirium superimposed on dementia	7
F058	F05.8 - Other delirium	7

ICD codes	ICD codes and descriptions for AMI readmission	Interval (days)
F059	F05.9 - Delirium, unspecified	7
G450	G45.0 - Vertebro-basilar artery syndrome	7
G451	G45.1 - Carotid artery syndrome (hemispheric)	7
G452	G45.2 - Multiple and bilateral precerebral artery syndromes	7
G453	G45.3 - Amaurosis fugax	7
G454	G45.4 - Transient global amnesia	7
G458	G45.8 - Other transient cerebral ischaemic attacks and related syndromes	7
G459	G45.9 - Transient cerebral ischaemic attack, unspecified	7
I050	I05.0 - Mitral stenosis	7
I051	I05.1 - Rheumatic mitral insufficiency	7
I052	I05.2 - Mitral stenosis with insufficiency	7
I058	I05.8 - Other mitral valve diseases	7
I059	I05.9 - Mitral valve disease, unspecified	7
I060	I06.0 - Rheumatic aortic stenosis	7
I061	I06.1 - Rheumatic aortic insufficiency	7
I062	I06.2 - Rheumatic aortic stenosis with insufficiency	7
I068	I06.8 - Other rheumatic aortic valve diseases	7
I069	I06.9 - Rheumatic aortic valve disease, unspecified	7
I070	I07.0 - Tricuspid stenosis	7
I071	I07.1 - Tricuspid insufficiency	7
I072	I07.2 - Tricuspid stenosis with insufficiency	7
I078	I07.8 - Other tricuspid valve diseases	7
I079	I07.9 - Tricuspid valve disease, unspecified	7
I080	I08.0 - Disorders of both mitral and aortic valves	7
I081	I08.1 - Disorders of both mitral and tricuspid valves	7
I082	I08.2 - Disorders of both aortic and tricuspid valves	7
I083	I08.3 - Combined disorders of mitral, aortic and tricuspid valves	7
I088	I08.8 - Other multiple valve diseases	7
I089	I08.9 - Multiple valve disease, unspecified	7
I090	I09.0 - Rheumatic myocarditis	7
I091	I09.1 - Rheumatic diseases of endocardium, valve unspecified	7
I092	I09.2 - Chronic rheumatic pericarditis	7
I098	I09.8 - Other specified rheumatic heart diseases	7
I099	I09.9 - Rheumatic heart disease, unspecified	7
I10	I10 - Essential (primary) hypertension	7
I110	I11.0 - Hypertensive heart disease with (congestive) heart failure	30
I119	I11.9 - Hypertensive heart disease without (congestive) heart failure	30
I120	I12.0 - Hypertensive kidney disease with kidney failure	7
I130	I13.0 - Hypertensive heart and kidney disease with (congestive) heart failure	30
I131	I13.1 - Hypertensive heart and kidney disease with kidney failure	7
I132	I13.2 - Hypertensive heart and kidney disease with both (congestive) heart failure and kidney failure	30
I139	I13.9 - Hypertensive heart and kidney disease, unspecified	7
I200	I20.0 - Unstable angina	30
I201	I20.1 - Angina pectoris with documented spasm	30
I208	I20.8 - Other forms of angina pectoris	30
I209	I20.9 - Angina pectoris, unspecified	30
I210	I21.0 - Acute transmural myocardial infarction of anterior wall	30
I211	I21.1 - Acute transmural myocardial infarction of inferior wall	30
I212	I21.2 - Acute transmural myocardial infarction of other sites	30
I213	I21.3 - Acute transmural myocardial infarction of unspecified site	30
I214	I21.4 - Acute subendocardial myocardial infarction	30
I219	I21.9 - Acute myocardial infarction, unspecified	30

ICD codes	Icd codes and descriptions for AMI readmission	Interval (days)
I220	I22.0 - Subsequent myocardial infarction of anterior wall	30
I221	I22.1 - Subsequent myocardial infarction of inferior wall	30
I228	I22.8 - Subsequent myocardial infarction of other sites	30
I229	I22.9 - Subsequent myocardial infarction of unspecified site	30
I230	I23.0 - Haemopericardium as current complication following acute myocardial infarction	30
I231	I23.1 - Atrial septal defect as current complication following acute myocardial infarction	30
I232	I23.2 - Ventricular septal defect as current complication following acute myocardial infarction	30
I233	I23.3 - Rupture of cardiac wall without haemopericardium as current complication following acute myocardial infarction	30
I234	I23.4 - Rupture of chordae tendineae as current complication following acute myocardial infarction	30
I235	I23.5 - Rupture of papillary muscle as current complication following acute myocardial infarction	30
I236	I23.6 - Thrombosis of atrium, auricular appendage, and ventricle as current complications following acute myocardial infarction	30
I238	I23.8 - Other current complications following acute myocardial infarction	30
I240	I24.0 - Coronary thrombosis not resulting in myocardial infarction	30
I241	I24.1 - Dressler's syndrome	30
I248	I24.8 - Other forms of acute ischaemic heart disease	30
I249	I24.9 - Acute ischaemic heart disease, unspecified	30
I250	I25.0 - Atherosclerotic cardiovascular disease, so described	30
I251	I25.1 - Atherosclerotic heart disease	30
I2510	I25.10 - Atherosclerotic heart disease, of unspecified vessel	30
I2511	I25.11 - Atherosclerotic heart disease, of native coronary artery	30
I2512	I25.12 - Atherosclerotic heart disease, of autologous bypass graft	30
I2513	I25.13 - Atherosclerotic heart disease, of nonautologous bypass graft	30
I252	I25.2 - Old myocardial infarction	30
I253	I25.3 - Aneurysm of heart	30
I254	I25.4 - Coronary artery aneurysm	30
I255	I25.5 - Ischaemic cardiomyopathy	30
I256	I25.6 - Silent myocardial ischaemia	30
I258	I25.8 - Other forms of chronic ischaemic heart disease	30
I259	I25.9 - Chronic ischaemic heart disease, unspecified	30
I260	I26.0 - Pulmonary embolism with mention of acute cor pulmonale	30
I269	I26.9 - Pulmonary embolism without mention of acute cor pulmonale	30
I272	I27.2 - Other secondary pulmonary hypertension	30
I279	I27.9 - Pulmonary heart disease, unspecified	7
I300	I30.0 - Acute nonspecific idiopathic pericarditis	30
I301	I30.1 - Infective pericarditis	30
I308	I30.8 - Other forms of acute pericarditis	30
I309	I30.9 - Acute pericarditis, unspecified	30
I310	I31.0 - Chronic adhesive pericarditis	30
I311	I31.1 - Chronic constrictive pericarditis	30
I312	I31.2 - Haemopericardium, not elsewhere classified	30
I313	I31.3 - Pericardial effusion (noninflammatory)	30
I318	I31.8 - Other specified diseases of pericardium	30
I319	I31.9 - Disease of pericardium, unspecified	30
I330	I33.0 - Acute and subacute infective endocarditis	30
I339	I33.9 - Acute endocarditis, unspecified	30
I340	I34.0 - Mitral (valve) insufficiency	7
I341	I34.1 - Mitral (valve) prolapse	7
I342	I34.2 - Nonrheumatic mitral (valve) stenosis	7

ICD codes	ICD codes and descriptions for AMI readmission	Interval (days)
I348	I34.8 - Other nonrheumatic mitral valve disorders	7
I349	I34.9 - Nonrheumatic mitral valve disorder, unspecified	7
I350	I35.0 - Aortic (valve) stenosis	7
I351	I35.1 - Aortic (valve) insufficiency	7
I352	I35.2 - Aortic (valve) stenosis with insufficiency	7
I358	I35.8 - Other aortic valve disorders	7
I359	I35.9 - Aortic valve disorder, unspecified	7
I360	I36.0 - Nonrheumatic tricuspid (valve) stenosis	7
I361	I36.1 - Nonrheumatic tricuspid (valve) insufficiency	7
I362	I36.2 - Nonrheumatic tricuspid (valve) stenosis with insufficiency	7
I368	I36.8 - Other nonrheumatic tricuspid valve disorders	7
I369	I36.9 - Nonrheumatic tricuspid valve disorder, unspecified	7
I370	I37.0 - Pulmonary valve stenosis	7
I371	I37.1 - Pulmonary valve insufficiency	7
I372	I37.2 - Pulmonary valve stenosis with insufficiency	7
I378	I37.8 - Other pulmonary valve disorders	7
I379	I37.9 - Pulmonary valve disorder, unspecified	7
I38	I38 - Endocarditis, valve unspecified	30
I400	I40.0 - Infective myocarditis	30
I401	I40.1 - Isolated myocarditis	30
I408	I40.8 - Other acute myocarditis	30
I409	I40.9 - Acute myocarditis, unspecified	30
I420	I42.0 - Dilated cardiomyopathy	7
I440	I44.0 - Atrioventricular block, first degree	30
I441	I44.1 - Atrioventricular block, second degree	30
I442	I44.2 - Atrioventricular block, complete	30
I443	I44.3 - Other and unspecified atrioventricular block	30
I444	I44.4 - Left anterior fascicular block	30
I445	I44.5 - Left posterior fascicular block	30
I446	I44.6 - Other and unspecified fascicular block	30
I447	I44.7 - Left bundle-branch block, unspecified	30
I450	I45.0 - Right fascicular block	30
I451	I45.1 - Other and unspecified right bundle-branch block	30
I452	I45.2 - Bifascicular block	30
I453	I45.3 - Trifascicular block	30
I454	I45.4 - Nonspecific intraventricular block	30
I455	I45.5 - Other specified heart block	30
I458	I45.8 - Other specified conduction disorders	30
I459	I45.9 - Conduction disorder, unspecified	30
I460	I46.0 - Cardiac arrest with successful resuscitation	30
I461	I46.1 - Sudden cardiac death, so described	30
I469	I46.9 - Cardiac arrest, unspecified	30
I470	I47.0 - Re-entry ventricular arrhythmia	30
I471	I47.1 - Supraventricular tachycardia	30
I472	I47.2 - Ventricular tachycardia	30
I479	I47.9 - Paroxysmal tachycardia, unspecified	30
I48	I48 - Atrial fibrillation and flutter	30
I490	I49.0 - Ventricular fibrillation and flutter	30
I491	I49.1 - Atrial premature depolarisation	30
I492	I49.2 - Junctional premature depolarisation	30
I493	I49.3 - Ventricular premature depolarisation	30
I494	I49.4 - Other and unspecified premature depolarisation	30
I495	I49.5 - Sick sinus syndrome	30
I498	I49.8 - Other specified cardiac arrhythmias	30

ICD codes	Icd codes and descriptions for AMI readmission	Interval (days)
I499	I49.9 - Cardiac arrhythmia, unspecified	30
I500	I50.0 - Congestive heart failure	30
I501	I50.1 - Left ventricular failure	30
I509	I50.9 - Heart failure, unspecified	30
I510	I51.0 - Cardiac septal defect, acquired	30
I511	I51.1 - Rupture of chordae tendineae, not elsewhere classified	30
I512	I51.2 - Rupture of papillary muscle, not elsewhere classified	30
I513	I51.3 - Intracardiac thrombosis, not elsewhere classified	30
I515	I51.5 - Myocardial degeneration	30
I516	I51.6 - Cardiovascular disease, unspecified	30
I517	I51.7 - Cardiomegaly	30
I518	I51.8 - Other ill-defined heart diseases	30
I519	I51.9 - Heart disease, unspecified	30
I600	I60.0 - Subarachnoid haemorrhage from carotid siphon and bifurcation	30
I601	I60.1 - Subarachnoid haemorrhage from middle cerebral artery	30
I602	I60.2 - Subarachnoid haemorrhage from anterior communicating artery	30
I603	I60.3 - Subarachnoid haemorrhage from posterior communicating artery	30
I604	I60.4 - Subarachnoid haemorrhage from basilar artery	30
I605	I60.5 - Subarachnoid haemorrhage from vertebral artery	30
I606	I60.6 - Subarachnoid haemorrhage from other intracranial arteries	30
I607	I60.7 - Subarachnoid haemorrhage from intracranial artery, unspecified	30
I608	I60.8 - Other subarachnoid haemorrhage	30
I609	I60.9 - Subarachnoid haemorrhage, unspecified	30
I610	I61.0 - Intracerebral haemorrhage in hemisphere, subcortical	7
I611	I61.1 - Intracerebral haemorrhage in hemisphere, cortical	7
I612	I61.2 - Intracerebral haemorrhage in hemisphere, unspecified	7
I613	I61.3 - Intracerebral haemorrhage in brain stem	7
I614	I61.4 - Intracerebral haemorrhage in cerebellum	7
I615	I61.5 - Intracerebral haemorrhage, intraventricular	7
I616	I61.6 - Intracerebral haemorrhage, multiple localised	7
I618	I61.8 - Other intracerebral haemorrhage	7
I619	I61.9 - Intracerebral haemorrhage, unspecified	7
I620	I62.0 - Subdural haemorrhage (acute)(nontraumatic)	30
I621	I62.1 - Nontraumatic extradural haemorrhage	30
I629	I62.9 - Intracranial haemorrhage (nontraumatic), unspecified	30
I630	I63.0 - Cerebral infarction due to thrombosis of precerebral arteries	7
I631	I63.1 - Cerebral infarction due to embolism of precerebral arteries	7
I632	I63.2 - Cerebral infarction due to unspecified occlusion or stenosis of precerebral arteries	7
I633	I63.3 - Cerebral infarction due to thrombosis of cerebral arteries	7
I634	I63.4 - Cerebral infarction due to embolism of cerebral arteries	7
I635	I63.5 - Cerebral infarction due to unspecified occlusion or stenosis of cerebral arteries	7
I636	I63.6 - Cerebral infarction due to cerebral venous thrombosis, nonpyogenic	7
I638	I63.8 - Other cerebral infarction	7
I639	I63.9 - Cerebral infarction, unspecified	7
I64	I64 - Stroke, not specified as haemorrhage or infarction	7
I650	I65.0 - Occlusion and stenosis of vertebral artery	7
I651	I65.1 - Occlusion and stenosis of basilar artery	7
I652	I65.2 - Occlusion and stenosis of carotid artery	7
I653	I65.3 - Occlusion and stenosis of multiple and bilateral precerebral arteries	7
I658	I65.8 - Occlusion and stenosis of other precerebral artery	7

ICD codes	ICD codes and descriptions for AMI readmission	Interval (days)
I659	I65.9 - Occlusion and stenosis of unspecified precerebral artery	7
I660	I66.0 - Occlusion and stenosis of middle cerebral artery	7
I661	I66.1 - Occlusion and stenosis of anterior cerebral artery	7
I662	I66.2 - Occlusion and stenosis of posterior cerebral artery	7
I663	I66.3 - Occlusion and stenosis of cerebellar arteries	7
I664	I66.4 - Occlusion and stenosis of multiple and bilateral cerebral arteries	7
I668	I66.8 - Occlusion and stenosis of other cerebral artery	7
I669	I66.9 - Occlusion and stenosis of unspecified cerebral artery	7
I674	I67.4 - Hypertensive encephalopathy	7
I690	I69.0 - Sequelae of subarachnoid haemorrhage	7
I691	I69.1 - Sequelae of intracerebral haemorrhage	7
I692	I69.2 - Sequelae of other nontraumatic intracranial haemorrhage	7
I693	I69.3 - Sequelae of cerebral infarction	7
I694	I69.4 - Sequelae of stroke, not specified as haemorrhage or infarction	7
I698	I69.8 - Sequelae of other and unspecified cerebrovascular diseases	7
I740	I74.0 - Embolism and thrombosis of abdominal aorta	7
I741	I74.1 - Embolism and thrombosis of other and unspecified parts of aorta	7
I742	I74.2 - Embolism and thrombosis of arteries of upper extremities	7
I743	I74.3 - Embolism and thrombosis of arteries of lower extremities	7
I744	I74.4 - Embolism and thrombosis of arteries of extremities, unspecified	7
I745	I74.5 - Embolism and thrombosis of iliac artery	7
I748	I74.8 - Embolism and thrombosis of other arteries	7
I749	I74.9 - Embolism and thrombosis of unspecified artery	7
I800	I80.0 - Phlebitis and thrombophlebitis of superficial vessels of lower extremities	7
I801	I80.1 - Phlebitis and thrombophlebitis of femoral vein	7
I802	I80.2 - Phlebitis and thrombophlebitis of other deep vessels of lower extremities	30
I803	I80.3 - Phlebitis and thrombophlebitis of lower extremities, unspecified	7
I808	I80.8 - Phlebitis and thrombophlebitis of other sites	7
I809	I80.9 - Phlebitis and thrombophlebitis of unspecified site	7
I822	I82.2 - Embolism and thrombosis of vena cava	7
I823	I82.3 - Embolism and thrombosis of renal vein	7
I828	I82.8 - Embolism and thrombosis of other specified veins	7
I829	I82.9 - Embolism and thrombosis of unspecified vein	7
I950	I95.0 - Idiopathic hypotension	30
I951	I95.1 - Orthostatic hypotension	30
I952	I95.2 - Hypotension due to drugs	30
I958	I95.8 - Other hypotension	30
I959	I95.9 - Hypotension, unspecified	30
I970	I97.0 - Postcardiotomy syndrome	30
I971	I97.1 - Other functional disturbances following cardiac surgery	30
I978	I97.8 - Other postprocedural disorders of circulatory system, not elsewhere classified	30
I979	I97.9 - Postprocedural disorder of circulatory system, unspecified	30
J13	J13 - Pneumonia due to Streptococcus pneumoniae	7
J14	J14 - Pneumonia due to Haemophilus influenzae	7
J150	J15.0 - Pneumonia due to Klebsiella pneumoniae	7
J151	J15.1 - Pneumonia due to Pseudomonas	7
J152	J15.2 - Pneumonia due to staphylococcus	7
J153	J15.3 - Pneumonia due to streptococcus, group B	7
J154	J15.4 - Pneumonia due to other streptococci	7
J155	J15.5 - Pneumonia due to Escherichia coli	7
J156	J15.6 - Pneumonia due to other aerobic Gram-negative bacteria	7

ICD codes	Icd codes and descriptions for AMI readmission	Interval (days)
J157	J15.7 - Pneumonia due to Mycoplasma pneumoniae	7
J158	J15.8 - Other bacterial pneumonia	7
J159	J15.9 - Bacterial pneumonia, unspecified	7
J160	J16.0 - Chlamydial pneumonia	7
J168	J16.8 - Pneumonia due to other specified infectious organisms	7
J180	J18.0 - Bronchopneumonia, unspecified	7
J181	J18.1 - Lobar pneumonia, unspecified	7
J182	J18.2 - Hypostatic pneumonia, unspecified	7
J188	J18.8 - Other pneumonia, organism unspecified	7
J189	J18.9 - Pneumonia, unspecified	7
J200	J20.0 - Acute bronchitis due to Mycoplasma pneumoniae	7
J201	J20.1 - Acute bronchitis due to Haemophilus influenzae	7
J202	J20.2 - Acute bronchitis due to streptococcus	7
J22	J22 - Unspecified acute lower respiratory infection	7
J440	J44.0 - Chronic obstructive pulmonary disease with acute lower respiratory infection	7
J441	J44.1 - Chronic obstructive pulmonary disease with acute exacerbation, unspecified	7
J690	J69.0 - Pneumonitis due to food and vomit	7
J691	J69.1 - Pneumonitis due to oils and essences	7
J698	J69.8 - Pneumonitis due to other solids and liquids	7
J81	J81 - Pulmonary oedema	30
J90	J90 - Pleural effusion, not elsewhere classified	7
J91	J91 - Pleural effusion in conditions classified elsewhere	7
J942	J94.2 - Haemothorax	7
J96	J96 - Respiratory failure, not elsewhere classified	7
J960	J96.0 - Acute respiratory failure	7
J961	J96.1 - Chronic respiratory failure	7
J969	J96.9 - Respiratory failure, unspecified	7
J981	J98.1 - Pulmonary collapse	7
K250	K25.0 - Gastric ulcer, acute with haemorrhage	30
K251	K25.1 - Gastric ulcer, acute with perforation	7
K252	K25.2 - Gastric ulcer, acute with both haemorrhage and perforation	7
K253	K25.3 - Gastric ulcer, acute without haemorrhage or perforation	7
K254	K25.4 - Gastric ulcer, chronic or unspecified with haemorrhage	30
K255	K25.5 - Gastric ulcer, chronic or unspecified with perforation	30
K256	K25.6 - Gastric ulcer, chronic or unspecified with both haemorrhage and perforation	7
K257	K25.7 - Gastric ulcer, chronic without haemorrhage or perforation	7
K259	K25.9 - Gastric ulcer, unspecified as acute or chronic, without haemorrhage or perforation	7
K260	K26.0 - Duodenal ulcer, acute with haemorrhage	30
K261	K26.1 - Duodenal ulcer, acute with perforation	7
K262	K26.2 - Duodenal ulcer, acute with both haemorrhage and perforation	30
K263	K26.3 - Duodenal ulcer, acute without haemorrhage or perforation	7
K264	K26.4 - Duodenal ulcer, chronic or unspecified with haemorrhage	30
K265	K26.5 - Duodenal ulcer, chronic or unspecified with perforation	7
K266	K26.6 - Duodenal ulcer, chronic or unspecified with both haemorrhage and perforation	30
K267	K26.7 - Duodenal ulcer, chronic without haemorrhage or perforation	7
K269	K26.9 - Duodenal ulcer, unspecified as acute or chronic, without haemorrhage or perforation	7
K270	K27.0 - Peptic ulcer, acute with haemorrhage	30
K271	K27.1 - Peptic ulcer, acute with perforation	7
K272	K27.2 - Peptic ulcer, acute with both haemorrhage and perforation	30

ICD codes	ICD codes and descriptions for AMI readmission	Interval (days)
K273	K27.3 - Peptic ulcer, acute without haemorrhage or perforation	7
K274	K27.4 - Peptic ulcer, chronic or unspecified with haemorrhage	30
K275	K27.5 - Peptic ulcer, chronic or unspecified with perforation	7
K276	K27.6 - Peptic ulcer, chronic or unspecified with both haemorrhage and perforation	30
K277	K27.7 - Peptic ulcer, chronic without haemorrhage or perforation	7
K279	K27.9 - Peptic ulcer, unspecified as acute or chronic, without haemorrhage or perforation	7
K280	K28.0 - Gastrojejunal ulcer, acute with haemorrhage	30
K282	K28.2 - Gastrojejunal ulcer, acute with both haemorrhage and perforation	30
K284	K28.4 - Gastrojejunal ulcer, chronic or unspecified with haemorrhage	30
K286	K28.6 - Gastrojejunal ulcer, chronic or unspecified with both haemorrhage and perforation	30
K29.7	K29.7 - Gastritis, unspecified	7
K290	K29.0 - Acute haemorrhagic gastritis	30
K293	K29.3 - Chronic superficial gastritis	7
K2930	K29.30 - Chronic superficial gastritis, without mention of haemorrhage	7
K2931	K29.31 - Chronic superficial gastritis, with haemorrhage	7
K295	K29.5 - Chronic gastritis, unspecified	7
K2950	K29.50 - Chronic gastritis, unspecified, without mention of haemorrhage	7
K2951	K29.51 - Chronic gastritis, unspecified, with haemorrhage	7
K296	K29.6 - Other gastritis	7
K2960	K29.60 - Other gastritis, without mention of haemorrhage	7
K2961	K29.61 - Other gastritis, with haemorrhage	7
K2970	K29.70 - Gastritis, unspecified, without mention of haemorrhage	7
K2971	K29.71 - Gastritis, unspecified, with haemorrhage	7
K298	K29.8 - Duodenitis	7
K2980	K29.80 - Duodenitis, without mention of haemorrhage	7
K2981	K29.81 - Duodenitis, with haemorrhage	7
K299	K29.9 - Gastroduodenitis, unspecified	7
K2990	K29.90 - Gastroduodenitis, unspecified, without mention of haemorrhage	7
K2991	K29.91 - Gastroduodenitis, unspecified, with haemorrhage	7
K3182	K31.82 - Angiodysplasia of stomach and duodenum with haemorrhage	30
K5522	K55.22 - Angiodysplasia of colon with haemorrhage	30
K590	K59.0 - Constipation	30
K920	K92.0 - Haematemesis	30
K921	K92.1 - Melaena	30
K922	K92.2 - Gastrointestinal haemorrhage, unspecified	30
L0310	L03.10 - Cellulitis of upper limb	7
L0311	L03.11 - Cellulitis of lower limb	7
L890	L89.0 - Stage I decubitus ulcer and pressure area	7
L891	L89.1 - Stage II decubitus ulcer and pressure area	7
L892	L89.2 - Stage III decubitus ulcer and pressure area	7
L893	L89.3 - Stage IV decubitus ulcer and pressure area	7
L899	L89.9 - Decubitus ulcer and pressure area, unspecified	7
N00	N00 - Acute nephritic syndrome	7
N028	N02.8 - Recurrent and persistent haematuria, other	7
N029	N02.9 - Recurrent and persistent haematuria, unspecified	7
N170	N17.0 - Acute kidney failure with tubular necrosis	30
N171	N17.1 - Acute kidney failure with acute cortical necrosis	30
N172	N17.2 - Acute kidney failure with medullary necrosis	30
N178	N17.8 - Other acute kidney failure	30
N179	N17.9 - Acute kidney failure, unspecified	30
N19	N19 - Unspecified kidney failure	7

ICD codes	ICD codes and descriptions for AMI readmission	Interval (days)
N300	N30.0 - Acute cystitis	7
N303	N30.3 - Trigonitis	7
N308	N30.8 - Other cystitis	7
N309	N30.9 - Cystitis, unspecified	7
N35	N35 - Urethral stricture	7
N350	N35.0 - Post traumatic urethral stricture	7
N351	N35.1 - Postinfective urethral stricture, not elsewhere classified	7
N358	N35.8 - Other urethral stricture	7
N359	N35.9 - Urethral stricture, unspecified	7
N390	N39.0 - Urinary tract infection, site not specified	7
N394	N39.4 - Other specified urinary incontinence	7
N990	N99.0 - Postprocedural kidney failure	7
N991	N99.1 - Postprocedural urethral stricture	7
N998	N99.8 - Other postprocedural disorders of genitourinary system	7
N999	N99.9 - Postprocedural disorder of genitourinary system, unspecified	7
R00	R00 - Abnormalities of heart beat	30
R000	R00.0 - Tachycardia, unspecified	30
R001	R00.1 - Bradycardia, unspecified	30
R002	R00.2 - Palpitations	30
R008	R00.8 - Other and unspecified abnormalities of heart beat	30
R040	R04.0 - Epistaxis	7
R041	R04.1 - Haemorrhage from throat	7
R042	R04.2 - Haemoptysis	7
R073	R07.3 - Other chest pain	7
R074	R07.4 - Chest pain, unspecified	7
R11	R11 - Nausea and vomiting	7
R18	R18 - Ascites	7
R31	R31 - Unspecified haematuria	7
R33	R33 - Retention of urine	7
R410	R41.0 - Disorientation, unspecified	7
R42	R42 - Dizziness and giddiness	7
R509	R50.9 - Fever, unspecified	7
R55	R55 - Syncope and collapse	7
R570	R57.0 - Cardiogenic shock	7
R571	R57.1 - Hypovolaemic shock	7
R579	R57.9 - Shock, unspecified	7
R58	R58 - Haemorrhage, not elsewhere classified	7
S061	S06.1 - Traumatic cerebral oedema	7
S0630	S06.30 - Focal cerebral and cerebellar injury, unspecified	7
S0631	S06.31 - Focal cerebral contusion	7
S0632	S06.32 - Focal cerebellar contusion	7
S0633	S06.33 - Focal cerebral haematoma	30
S0634	S06.34 - Focal cerebellar haematoma	30
S0638	S06.38 - Other focal cerebral and cerebellar injury	7
S064	S06.4 - Epidural haemorrhage	30
S065	S06.5 - Traumatic subdural haemorrhage	7
S066	S06.6 - Traumatic subarachnoid haemorrhage	7
S068	S06.8 - Other intracranial injuries	7
S7200	S72.00 - Fracture of neck of femur, part unspecified	7
S7201	S72.01 - Fracture of intracapsular section of femur	7
S7202	S72.02 - Fracture of upper epiphysis (separation) of femur	7
S7203	S72.03 - Fracture of subcapital section of femur	7
S7204	S72.04 - Fracture of midcervical section of femur	7
S7205	S72.05 - Fracture of base of neck of femur	7

ICD codes	Icd codes and descriptions for AMI readmission	Interval (days)
S7208	S72.08 - Fracture of other parts of neck of femur	7
T444	T44.4 - Predominantly alpha-adrenoreceptor agonists, not elsewhere classified	30
T446	T44.6 - Alpha-Adrenoreceptor antagonists, not elsewhere classified	30
T447	T44.7 - Beta-Adrenoreceptor antagonists, not elsewhere classified	30
T455	T45.5 - Anticoagulants	30
T460	T46.0 - Cardiac-stimulant glycosides and drugs of similar action	7
T461	T46.1 - Calcium-channel blockers	7
T462	T46.2 - Other antidysrhythmic drugs, not elsewhere classified	7
T463	T46.3 - Coronary vasodilators, not elsewhere classified	7
T464	T46.4 - Angiotensin-converting-enzyme inhibitors	7
T465	T46.5 - Other antihypertensive drugs, not elsewhere classified	7
T466	T46.6 - Antihyperlipidaemic and antiarteriosclerotic drugs	7
T467	T46.7 - Peripheral vasodilators	7
T469	T46.9 - Other and unspecified agents primarily affecting the cardiovascular system	7
T500	T50.0 - Mineralocorticoids and their antagonists	7
T501	T50.1 - Loop [high-ceiling] diuretics	7
T502	T50.2 - Carbonic-anhydrase inhibitors, benzothiadiazides and other diuretics	7
T503	T50.3 - Electrolytic, caloric and water-balance agents	7
T800	T80.0 - Air embolism following infusion, transfusion and therapeutic injection	7
T801	T80.1 - Vascular complications following infusion, transfusion and therapeutic injection	7
T802	T80.2 - Infections following infusion, transfusion and therapeutic injection	7
T810	T81.0 - Haemorrhage and haematoma complicating a procedure, not elsewhere classified	7
T812	T81.2 - Accidental puncture and laceration during a procedure, not elsewhere classified	7
T813	T81.3 - Disruption of operation wound, not elsewhere classified	7
T814	T81.4 - Infection following a procedure, not elsewhere classified	7
T815	T81.5 - Foreign body accidentally left in body cavity or operation wound following a procedure	7
T816	T81.6 - Acute reaction to foreign substance accidentally left during a procedure	7
T817	T81.7 - Vascular complications following a procedure, not elsewhere classified	7
T818	T81.8 - Other complications of procedures, not elsewhere classified	7
T819	T81.9 - Unspecified complication of procedure	7
T820	T82.0 - Mechanical complication of heart valve prosthesis	7
T821	T82.1 - Mechanical complication of cardiac electronic device	7
T822	T82.2 - Mechanical complication of coronary artery bypass and valve grafts	7
T823	T82.3 - Mechanical complication of other vascular grafts	7
T825	T82.5 - Mechanical complication of other cardiac and vascular devices and implants	7
T826	T82.6 - Infection and inflammatory reaction due to cardiac valve prosthesis	7
T827	T82.7 - Infection and inflammatory reaction due to other cardiac and vascular devices, implants and grafts	7
T828	T82.8 - Other complications of cardiac and vascular prosthetic devices, implants and grafts	7
T829	T82.9 - Unspecified complication of cardiac and vascular prosthetic device, implant and graft	7
T830	T83.0 - Mechanical complication of urinary (indwelling) catheter	7
T835	T83.5 - Infection and inflammatory reaction due to prosthetic device,	7

ICD codes	Icd codes and descriptions for AMI readmission	Interval (days)
	implant and graft in urinary system	
T887	T88.7 - Unspecified adverse effect of drug or medicament	7
T888	T88.8 - Other specified complications of surgical and medical care, not elsewhere classified	7
T889	T88.9 - Complication of surgical and medical care, unspecified	7
Z450	Z45.0 - Adjustment and management of cardiac device	7

RTI Release

Appendix B – Readmission Principal Diagnoses for Knee and Hip Replacement Readmissions

Principal Diagnoses that are included in only Hip Replacement or Knee Replacement are highlighted.

ICD 10-AM codes for Knee and Hip Replacement readmissions	Interval (0 - n days)	Hip	Knee
A04.7 Enterocolitis due to Clostridium difficile	30	Y	Y
A40 Streptococcal sepsis	7	Y	Y
A41 Other sepsis	7	Y	Y
A49 Bacterial infection of unspecified site	7	Y	Y
D50.0 Iron deficiency anaemia secondary to blood loss (chronic)	15	Y	Y
D50.8 Other iron deficiency anaemias	15	Y	Y
D50.9 Iron deficiency anaemia, unspecified	15	Y	Y
D62 Acute posthaemorrhagic anaemia	7	Y	Y
D64.9 Anaemia, unspecified	7	Y	Y
D68.3 Haemorrhagic disorder due to circulating anticoagulants	7	Y	Y
D68.4 Acquired coagulation factor deficiency	7	Y	Y
D68.5 Primary thrombophilia	7	Y	Y
D68.6 Other thrombophilia	7	Y	Y
D68.8 Other specified coagulation defects	7	Y	Y
D68.9 Coagulation defect, unspecified	7	Y	Y
D69.5 Secondary thrombocytopenia	7	Y	Y
D69.6 Thrombocytopenia, unspecified	7	Y	Y
D69.8 Other specified haemorrhagic conditions	7	Y	Y
D69.9 Haemorrhagic condition, unspecified	7	Y	Y
E10.0 Type 1 diabetes mellitus with hyperosmolarity	7	Y	Y
E10.1 Type 1 diabetes mellitus with acidosis	7	Y	Y
E10.64 Type 1 diabetes mellitus with hypoglycaemia	7	Y	Y
E10.65 Type 1 diabetes mellitus with poor control	7	Y	Y
E11.0 Type 2 diabetes mellitus with hyperosmolarity	7	Y	Y
E11.1 Type 2 diabetes mellitus with acidosis	7	Y	Y
E11.64 Type 2 diabetes mellitus with hypoglycaemia	7	Y	Y
E11.65 Type 2 diabetes mellitus with poor control	7	Y	Y
E13.0 Other specified diabetes mellitus with hyperosmolarity	7	Y	Y
E13.64 Other specified diabetes mellitus with hypoglycaemia	7	Y	Y
E13.65 Other specified diabetes mellitus with poor control	7	Y	Y
E14.0 Unspecified diabetes mellitus with hyperosmolarity	7	Y	Y
E14.1 Unspecified diabetes mellitus with acidosis	7	Y	Y
E14.64 Unspecified diabetes mellitus with hypoglycaemia	7	Y	Y
E14.65 Unspecified diabetes mellitus with poor control	7	Y	Y
E27.2 Addisonian crisis	7	Y	Y
E86 Volume depletion	7	Y	Y
E87 Other disorders of fluid, electrolyte and acid-base balance	7	Y	Y
F05.9 Delirium, unspecified	7	Y	Y
F10.2 Mental and behavioural disorders due to use of alcohol, dependence syndrome	7	Y	Y
F10.5 Mental and behavioural disorders due to use of alcohol, psychotic disorder	7	Y	Y
F11.2 Mental and behavioural disorders due to use of opioids, dependence syndrome	7	Y	Y
F11.5 Mental and behavioural disorders due to use of opioids, psychotic disorder	7	Y	Y
G45 Transient cerebral ischaemic attacks and related syndromes	7	Y	Y
G54.0 Brachial plexus disorders	7	Y	Y
G54.1 Lumbosacral plexus disorders	7	Y	Y
G56 Mononeuropathies of upper limb	7	Y	Y
G57 Mononeuropathies of lower limb	7	Y	Y
G97.0 Cerebrospinal fluid leak from spinal puncture	7	Y	Y

ICD 10-AM codes for Knee and Hip Replacement readmissions	Interval (0 - n days)	Hip	Knee
G97.1 Other reaction to spinal and lumbar puncture	7	Y	Y
G97.8 Other postprocedural disorders of nervous system	7	Y	Y
G97.9 Postprocedural disorder of nervous system, unspecified	7	Y	Y
I20 Angina pectoris	7	Y	Y
I21 Acute myocardial infarction	7	Y	Y
I24 Other acute ischaemic heart diseases	7	Y	Y
I26 Pulmonary embolism	60	Y	Y
I33 Acute and subacute endocarditis	15	Y	Y
I38 Endocarditis, valve unspecified	15	Y	Y
I39 Endocarditis and heart valve disorders in diseases classified elsewhere	15	Y	Y
I45 Other conduction disorders	7	Y	Y
I46 Cardiac arrest	7	Y	Y
I47 Paroxysmal tachycardia	7	Y	Y
I48 Atrial fibrillation and flutter	7	Y	Y
I49 Other cardiac arrhythmias	7	Y	Y
I50 Heart failure	7	Y	Y
I51 Complications and ill-defined descriptions of heart disease	7	Y	Y
I60 Subarachnoid haemorrhage	7	Y	Y
I61 Intracerebral haemorrhage	60	Y	Y
I62 Other nontraumatic intracranial haemorrhage	60	Y	Y
I63 Cerebral infarction	60	Y	Y
I64 Stroke, not specified as haemorrhage or infarction	60	Y	Y
I65 Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction	7	Y	Y
I66 Occlusion and stenosis of cerebral arteries, not resulting in cerebral infarction	7	Y	Y
I74 Arterial embolism and thrombosis	7	Y	Y
I80 Phlebitis and thrombophlebitis	60	Y	Y
I81 Portal vein thrombosis	60	Y	Y
I82.2 Embolism and thrombosis of vena cava	60	Y	Y
I82.8 Embolism and thrombosis of other specified veins	60	Y	Y
I95 Hypotension	7	Y	Y
I97.8 Other postprocedural disorders of circulatory system, not elsewhere classified	15	Y	Y
I97.9 Postprocedural disorder of circulatory system, unspecified	15	Y	Y
J12 Viral pneumonia, not elsewhere classified	7	Y	Y
J13 Pneumonia due to Streptococcus pneumoniae	7	Y	Y
J14 Pneumonia due to Haemophilus influenzae	7	Y	Y
J15 Bacterial pneumonia, not elsewhere classified	7	Y	Y
J16 Pneumonia due to other infectious organisms, not elsewhere classified	7	Y	Y
J17 Pneumonia in diseases classified elsewhere	7	Y	Y
J18 Pneumonia, organism unspecified	7	Y	Y
J20 Acute bronchitis	7	Y	Y
J22 Unspecified acute lower respiratory infection	7	Y	Y
J40 Bronchitis, not specified as acute or chronic	7	Y	Y
J44 Other chronic obstructive pulmonary disease	7	Y	Y
J69.0 Pneumonitis due to food and vomit	7	Y	Y
J81 Pulmonary oedema	7	Y	Y
J95.2 Acute pulmonary insufficiency following nonthoracic surgery	7	Y	Y
J95.4 Mendelson's syndrome	7	Y	Y
J95.5 Postprocedural subglottic stenosis	7	Y	Y
J95.8 Other postprocedural respiratory disorders	7	Y	Y
J95.9 Postprocedural respiratory disorder, unspecified	7	Y	Y
J96.0 Acute respiratory failure	7	Y	Y
J96.9 Respiratory failure, unspecified	7	Y	Y
J98.1 Pulmonary collapse	7	Y	Y

ICD 10-AM codes for Knee and Hip Replacement readmissions	Interval (0 - n days)	Hip	Knee
K59.0 Constipation	7	Y	Y
K91.3 Postprocedural intestinal obstruction	7	Y	Y
L03.10 Cellulitis of upper limb	7	Y	Y
L03.11 Cellulitis of lower limb	7	Y	Y
L23.1 Allergic contact dermatitis due to adhesives	7	Y	Y
L27.0 Generalised skin eruption due to drugs and medicaments	7	Y	Y
L27.1 Localised skin eruption due to drugs and medicaments	7	Y	Y
L89 Decubitus ulcer and pressure area	7	Y	Y
M00.05 Staphylococcal arthritis and polyarthritis, pelvic region and thigh	60	Y	N
M00.06 Staphylococcal arthritis and polyarthritis, lower leg	60	N	Y
M00.25 Other streptococcal arthritis and polyarthritis, pelvic region and thigh	60	Y	N
M00.26 Other streptococcal arthritis and polyarthritis, lower leg	60	N	Y
M00.95 Pyogenic arthritis, unspecified, pelvic region and thigh	60	Y	N
M00.96 Pyogenic arthritis, unspecified, lower leg	60	N	Y
M21.25 Flexion deformity, pelvic region and thigh	60	Y	N
M21.26 Flexion deformity, lower leg	60	N	Y
M21.30 Wrist or foot drop (acquired), multiple sites	60	Y	Y
M21.37 Wrist or foot drop (acquired), ankle and foot	60	Y	Y
M24.45 Recurrent dislocation and subluxation of joint, pelvic region and thigh	60	Y	N
M24.46 Recurrent dislocation and subluxation of joint, lower leg	60	N	Y
M25.05 Haemarthrosis, pelvic region and thigh	60	Y	N
M25.06 Haemarthrosis, lower leg	60	N	Y
M25.45 Effusion of joint, pelvic region and thigh	60	Y	N
M25.46 Effusion of joint, lower leg	60	N	Y
M25.55 Pain in a joint, pelvic region and thigh	60	Y	N
M25.56 Pain in a joint, lower leg	60	N	Y
M25.65 Stiffness of joint, not elsewhere classified, pelvic region and thigh	60	Y	N
M25.66 Stiffness of joint, not elsewhere classified, lower leg	60	N	Y
M25.85 Other specified joint disorders, pelvic region and thigh	60	Y	N
M25.86 Other specified joint disorders, lower leg	60	N	Y
M25.95 Unspecified joint disorder, pelvic region and thigh	60	Y	N
M25.96 Unspecified joint disorder, lower leg	60	N	Y
M79.15 Myalgia, pelvic region and thigh	60	Y	Y
M79.16 Myalgia, lower leg	60	Y	Y
M79.25 Neuralgia and neuritis, unspecified, pelvic region and thigh	60	Y	Y
M79.26 Neuralgia and neuritis, unspecified, lower leg	60	Y	Y
M79.55 Residual foreign body in soft tissue, pelvic region and thigh	60	Y	Y
M79.56 Residual foreign body in soft tissue, lower leg	60	Y	Y
M79.57 Residual foreign body in soft tissue, ankle and foot	60	Y	Y
M79.58 Residual foreign body in soft tissue, other site	60	Y	Y
M79.59 Residual foreign body in soft tissue, site unspecified	60	Y	Y
M79.65 Pain in limb, pelvic region and thigh	60	Y	Y
M79.66 Pain in limb, lower leg	60	Y	Y
M79.67 Pain in limb, ankle and foot	60	Y	Y
M79.69 Pain in limb, site unspecified	60	Y	Y
M84.35 Stress fracture, not elsewhere classified, pelvic region and thigh	60	Y	N
M84.36 Stress fracture, not elsewhere classified, lower leg	60	N	Y
M87.05 Idiopathic aseptic necrosis of bone, pelvic region and thigh	60	Y	N
M87.06 Idiopathic aseptic necrosis of bone, lower leg	60	N	Y
M87.25 Osteonecrosis due to previous trauma, pelvic region and thigh	60	Y	N
M87.26 Osteonecrosis due to previous trauma, lower leg	60	N	Y
M87.85 Other osteonecrosis, pelvic region and thigh	60	Y	N
M87.86 Other osteonecrosis, lower leg	60	N	Y
M87.95 Unspecified osteonecrosis, pelvic region and thigh	60	Y	N
M87.96 Unspecified osteonecrosis, lower leg	60	N	Y
M96.6 Fracture of bone following insertion of orthopaedic implant, joint	60	Y	Y

ICD 10-AM codes for Knee and Hip Replacement readmissions	Interval (0 - n days)	Hip	Knee
prosthesis, or bone plate			
M96.8 Other postprocedural musculoskeletal disorders	60	Y	Y
M96.9 Postprocedural musculoskeletal disorder, unspecified	60	Y	Y
N17 Acute kidney failure	7	Y	Y
N30.0 Acute cystitis	60	Y	Y
N30.3 Trigonitis	60	Y	Y
N30.8 Other cystitis	60	Y	Y
N30.9 Cystitis, unspecified	60	Y	Y
N31.2 Flaccid neuropathic bladder, not elsewhere classified	60	Y	Y
N31.8 Other neuromuscular dysfunction of bladder	60	Y	Y
N31.9 Neuromuscular dysfunction of bladder, unspecified	60	Y	Y
N39.0 Urinary tract infection, site not specified	60	Y	Y
N39.3 Stress incontinence	60	Y	Y
N39.4 Other specified urinary incontinence	60	Y	Y
N99.0 Postprocedural kidney failure	7	Y	Y
N99.1 Postprocedural urethral stricture	60	Y	Y
R00 Abnormalities of heart beat	7	Y	Y
R06.0 Dyspnoea	7	Y	Y
R11 Nausea and vomiting	7	Y	Y
R26.2 Difficulty in walking, not elsewhere classified	60	Y	Y
R26.8 Other and unspecified abnormalities of gait and mobility	60	Y	Y
R30 Pain associated with micturition	7	Y	Y
R30.0 Dysuria	7	Y	Y
R30.1 Vesical tenesmus	7	Y	Y
R30.9 Painful micturition, unspecified	7	Y	Y
R31 Unspecified haematuria	7	Y	Y
R32 Unspecified urinary incontinence	7	Y	Y
R33 Retention of urine	7	Y	Y
R34 Anuria and oliguria	7	Y	Y
R39.1 Other difficulties with micturition	60	Y	Y
R39.8 Other and unspecified symptoms and signs involving the urinary system	60	Y	Y
R41.0 Disorientation, unspecified	7	Y	Y
R42 Dizziness and giddiness	7	Y	Y
R50 Fever of other and unknown origin	7	Y	Y
R53 Malaise and fatigue	7	Y	Y
R55 Syncope and collapse	7	Y	Y
R58 Haemorrhage, not elsewhere classified	60	Y	Y
R79 Other abnormal findings of blood chemistry	7	Y	Y
S06.1 Traumatic cerebral oedema	7	Y	Y
S06.3 Focal brain injury	7	Y	Y
S06.4 Epidural haemorrhage	7	Y	Y
S06.5 Traumatic subdural haemorrhage	7	Y	Y
S06.6 Traumatic subarachnoid haemorrhage	7	Y	Y
S06.8 Other intracranial injuries	7	Y	Y
S30.2 Contusion of external genital organs	7	Y	N
S37.3 Injury of urethra	7	Y	Y
S72.0 Fracture of neck of femur	7	Y	Y
S73 Dislocation, sprain and strain of joint and ligaments of hip	7	Y	N
S74 Injury of nerves at hip and thigh level	7	Y	Y
S75 Injury of blood vessels at hip and thigh level	7	Y	Y
T40.2 Other opioids	7	Y	Y
T40.4 Other synthetic narcotics	7	Y	Y
T40.6 Other and unspecified narcotics	7	Y	Y
T45.5 Anticoagulants	7	Y	Y
T80.1 Vascular complications following infusion, transfusion and therapeutic	7	Y	Y

ICD 10-AM codes for Knee and Hip Replacement readmissions	Interval (0 - n days)	Hip	Knee
injection			
T80.2 Infections following infusion, transfusion and therapeutic injection	7	Y	Y
T81.0 Haemorrhage and haematoma complicating a procedure, not elsewhere classified	60	Y	Y
T81.2 Accidental puncture and laceration during a procedure, not elsewhere classified	60	Y	Y
T81.3 Disruption of operation wound, not elsewhere classified	60	Y	Y
T81.4 Infection following a procedure, not elsewhere classified	60	Y	Y
T81.41 Wound infection following a procedure	60	Y	Y
T81.42 Sepsis following a procedure	60	Y	Y
T81.5 Foreign body accidentally left in body cavity or operation wound following a procedure	60	Y	Y
T81.6 Acute reaction to foreign substance accidentally left during a procedure	60	Y	Y
T81.7 Vascular complications following a procedure, not elsewhere classified	60	Y	Y
T81.8 Other complications of procedures, not elsewhere classified	60	Y	Y
T81.9 Unspecified complication of procedure	60	Y	Y
T83.0 Mechanical complication of urinary (indwelling) catheter	7	Y	Y
T84 Complications of internal orthopaedic prosthetic devices, implants and grafts	60	Y	Y
T85.9 Unspecified complication of internal prosthetic device, implant and graft	60	Y	Y
T88.5 Other complications of anaesthesia	7	Y	Y
T88.7 Unspecified adverse effect of drug or medicament	7	Y	Y
T88.8 Other specified complications of surgical and medical care, not elsewhere classified	60	Y	Y
T88.9 Complication of surgical and medical care, unspecified	60	Y	Y
Z46.6 Fitting and adjustment of urinary device	60	Y	Y
Z74.0 Need for assistance due to reduced mobility	7	Y	Y