

# Opioid study- supplementary section

## Opioid related harm- ICD-10AM codes

Outcome	ICD-10AM code
Mental and behavioural disorders due to use of opioids	F11
Mental and behavioural disorders due to use of opioids, acute intoxication	F110
Mental and behavioural disorders due to use of opioids, harmful use	F111
Mental and behavioural disorders due to use of opioids, dependence syndrome	F112
Mental and behavioural disorders due to use of opioids, withdrawal state	F113
Mental and behavioural disorders due to use of opioids, withdrawal state with delirium	F114
Mental and behavioural disorders due to use of opioids, psychotic disorder	F115
Mental and behavioural disorders due to use of opioids, amnesic syndrome	F116
Mental and behavioural disorders due to use of opioids, residual and late-onset psychotic disorder	F117
Mental and behavioural disorders due to use of opioids, other mental and behavioural disorders	F118
Mental and behavioural disorders due to use of opioids, unspecified mental and behavioural disorder	F119
Neonatal withdrawal symptoms from maternal use of drugs of addiction	P961
Poisoning by opium	T400
Poisoning by heroin	T401
Poisoning by other opioids	T402
Poisoning by methadone	T403
Poisoning by other synthetic narcotics	T404
Poisoning by cocaine	T405
Poisoning by other and unspecified narcotics	T406
Opioids and related analgesics causing adverse effect in therapeutic use	Y450

## Trauma admissions- ICD-10AM codes

Site of Trauma	ICD-10AM code
Head	S00- S09
Neck	S10- S19
Thorax	S20- S29
Abdomen/Lower back, Pelvis	S30- S39
Shoulder/Upper arm	S40- S49
Elbow/Forearm	S50- S59
Wrist/Hand	S60- S69
Hip/Thigh	S70- S79
Knee/Lower leg	S80- S89
Ankle/Foot	S90- S99
Multiple	T00- T07
Unspecified part of trunk, limb, or body region	T08- T14

## M3 Index variables

Condition	Beta coefficient: log (HR) (95% CI)
AIDS	0.45 (-0.18 to 1.08)
Alcohol abuse	0.58 (0.47 to 0.68)
Anemia deficiency	0.18 (0.12 to 0.24)
Anxiety and behavioural disorders	0.12 (0.04 to 0.21)
Aortic and other aneurysms	0.26 (0.14 to 0.38)
Bone disorders	0.13 (0.03 to 0.24)
Bowel disease inflammatory	0.09 (0.03 to 0.14)
Breast Cancer	0.41 (0.26 to 0.56)
Cardiac Arrhythmia	0.17 (0.13 to 0.21)
Cardiac valve	0.26 (0.19 to 0.32)
Cerebrovascular disease	0.10 (0.04 to 0.16)
Chronic pulmonary	0.63 (0.58 to 0.67)
Chronic renal	0.33 (0.28 to 0.39)
Coagulopathy and other blood disorders	0.27 (0.22 to 0.31)
Colorectal cancer	0.37 (0.26 to 0.49)
Congestive heart failure	0.54 (0.49 to 0.59)
Connective tissue disease	0.29 (0.18 to 0.40)
Dementia	1.02 (0.97 to 1.07)
Diabetes (complicated)	0.27 (0.22 to 0.32)
Diabetes (uncomplicated)	0.30 (0.17 to 0.43)
Drug abuse	0.56 (0.38 to 0.74)
Endocrine disorder	0.11 (0.03 to 0.20)
Epilepsy	0.59 (0.47 to 0.72)
Eye problem long term	0.18 (0.12 to 0.24)
Gastrointestinal ulcer or upper GI disease	0.15 (0.07 to 0.23)
Gynecological cancers	0.71 (0.47 to 0.94)
Hepatitis, chronic viral	0.57 (0.42 to 0.72)
Hypertension uncomplicated	0.12 (0.06 to 0.17)
Immune system disorder	0.40 (0.18 to 0.61)
Inner ear disorder	0.06 (-0.02 to 0.14)
Joint or spinal disorder	0.10 (0.02 to 0.18)
Liver disease (Moderate or severe)	0.47 (0.36 to 0.59)
Lung cancer	1.97 (1.85 to 2.09)
Lymphomas and leukaemia	1.19 (1.08 to 1.30)
Major psychiatric disorder	0.21 (0.13 to 0.29)
Malignant melanoma	0.34 (0.21 to 0.47)
Malnutrition and other nutritional disorders	0.33 (0.25 to 0.41)
Mental and behavioural disorders due to brain damage	0.04 (-0.17 to 0.24)
Mental retardation	1.41 (1.21 to 1.60)
Metabolic disorder	0.01 (-0.05 to 0.06)
Metastatic cancer	2.47 (2.42 to 2.51)
Muscular peripheral nerve disorders	0.21 (0.11 to 0.31)
Myocardial infarction	0.20 (0.14 to 0.25)
Obesity	0.25 (0.16 to 0.34)
Osteoporosis (uncomplicated)	0.08 (-0.06 to 0.23)
Other cancers	1.10 (1.02 to 1.18)

Other neurologic disorders (excl. epilepsy)	0.56 (0.50 to 0.63)
Paralysis	0.28 (0.21 to 0.36)
Peripheral vascular disease	0.35 (0.28 to 0.42)
Prostate cancer	0.43 (0.33 to 0.53)
Pulmonary circulation disorders	0.40 (0.31 to 0.48)
Sleep disorder	0.25 (0.12 to 0.37)
Upper gastrointestinal cancer	1.94 (1.82 to 2.07)
Urinary tract problem (chronic)	0.05 (-0.05 to 0.15)
Venous insufficiency	0.21 (0.06 to 0.36)

### Medication and Form ID code

Form ID	Chemical	Formulation
183101	Morphine sulphate	Tab long-acting 10 mg
183102	Morphine sulphate	Tab long-acting 30 mg
183103	Morphine sulphate	Tab long-acting 60 mg
183104	Morphine sulphate	Tab long-acting 100 mg
183119	Morphine sulphate	Cap long-acting 100 mg
183120	Morphine sulphate	Tab immediate-release 10 mg
183121	Morphine sulphate	Tab immediate-release 20 mg
183122	Morphine sulphate	Cap long-acting 10 mg
183126	Morphine sulphate	Cap long-acting 30 mg
183127	Morphine sulphate	Cap long-acting 60 mg
183001	Morphine hydrochloride	Oral liq 1 mg per ml
183002	Morphine hydrochloride	Oral liq 2 mg per ml
183003	Morphine hydrochloride	Oral liq 5 mg per ml
183004	Morphine hydrochloride	Oral liq 10 mg per ml
382225	Oxycodone hydrochloride	Cap immediate-release 5 mg
382226	Oxycodone hydrochloride	Cap immediate-release 10 mg
382227	Oxycodone hydrochloride	Cap immediate-release 20 mg
382228	Oxycodone hydrochloride	Tab controlled-release 10 mg
382229	Oxycodone hydrochloride	Tab controlled-release 20 mg
382230	Oxycodone hydrochloride	Tab controlled-release 40 mg
382231	Oxycodone hydrochloride	Tab controlled-release 80 mg
382232	Oxycodone hydrochloride	Tab controlled-release 5 mg
382233	Oxycodone hydrochloride	Oral liq 5 mg per 5 ml
380132	Fentanyl	Transdermal patch, matrix 100 mcg per hour
380133	Fentanyl	Patch 12.5 mcg per hour
380134	Fentanyl	Patch 25 mcg per hour
380135	Fentanyl	Patch 50 mcg per hour
380136	Fentanyl	Patch 75 mcg per hour
380137	Fentanyl	Patch 100 mcg per hour
133201	Codeine phosphate	Tab 15 mg
133202	Codeine phosphate	Tab 30 mg
133203	Codeine phosphate	Tab 60 mg

242701	Dihydrocodeine tartrate	Tab long-acting 60 mg
390625	Tramadol hydrochloride	Cap 50 mg
390626	Tramadol hydrochloride	Tab sustained-release 100 mg
390627	Tramadol hydrochloride	Tab sustained-release 150 mg
390628	Tramadol hydrochloride	Tab sustained-release 200 mg
195301	Pethidine hydrochloride	Tab 50 mg
195302	Pethidine hydrochloride	Tab 100 mg
179501	Methadone hydrochloride	Tab 5 mg
179505	Methadone hydrochloride	Oral liq 2 mg per ml
179506	Methadone hydrochloride	Oral liq 5 mg per ml
179507	Methadone hydrochloride	Oral liq 10 mg per ml

### Oral Morphine Equivalence conversion factors

Opioid name	Route of administration	Conversion factor
Morphine	Oral	1
Oxycodone	Oral	1.5
Fentanyl	Transdermal	7200*
Methadone	Oral	4.7
Pethidine	Oral	0.4
Dihydrocodeine	Oral	0.1
Codeine	Oral	0.1
Tramadol	Oral	0.1

Usual conversion for transdermal for fentanyl to oral morphine is 100:1, but given the patches dosing are mcg/hr for \*24 over 3 days

### Concurrent medication and Form ID code

Form ID	Chemical	Formulation
181501	Metoclopramide hydrochloride with paracetamol	Tab 5 mg with paracetamol 500 mg
192902	Paracetamol	Oral liq 120 mg per 5 ml
192903	Paracetamol	Oral liq 250 mg per 5 ml
192904	Paracetamol	Suppos 125 mg
192905	Paracetamol	Suppos 250 mg
192906	Paracetamol	Suppos 500 mg
192908	Paracetamol	Tab 500 mg - blister pack
192925	Paracetamol	Tab 500 mg - bottle pack
193101	Paracetamol with codeine	Tab paracetamol 500 mg with codeine phosphate 8 mg
279805	Ibuprofen	Oral liq 20 mg per ml
279801	Ibuprofen	Tab 200 mg
279802	Ibuprofen	Tab 400 mg
279803	Ibuprofen	Tab 600 mg
279804	Ibuprofen	Tab long-acting 800 mg
140109	Diclofenac sodium	Suppos 100 mg

140106	Diclofenac sodium	Suppos 12.5 mg
140107	Diclofenac sodium	Suppos 25 mg
140108	Diclofenac sodium	Suppos 50 mg
140111	Diclofenac sodium	Tab 50 mg dispersible
140101	Diclofenac sodium	Tab EC 25 mg
140102	Diclofenac sodium	Tab EC 50 mg
140112	Diclofenac sodium	Tab long-acting 100 mg
140103	Diclofenac sodium	Tab long-acting 75 mg
278209	Naproxen	Tab 250 mg
278211	Naproxen	Tab 500 mg
278206	Naproxen	Tab long-acting 1 g
278205	Naproxen	Tab long-acting 750 mg
169708	Ketoprofen	Cap long-acting 100 mg
169703	Ketoprofen	Cap long-acting 200 mg
176901	Mefenamic acid	Cap 250 mg
391225	Meloxicam	Tab 7.5 mg
408125	Celecoxib	Cap 100 mg
408126	Celecoxib	Cap 200 mg
219301	Sulindac	Tab 100 mg
219302	Sulindac	Tab 200 mg
253601	Tenoxicam	Tab 20 mg
184901	Nefopam hydrochloride	Tab 30 mg
409727	Pregabalin	Cap 150 mg
409725	Pregabalin	Cap 25 mg
409728	Pregabalin	Cap 300 mg
409726	Pregabalin	Cap 75 mg
106225	Gabapentin	Cap 100 mg
106201	Gabapentin	Cap 300 mg
106202	Gabapentin	Cap 400 mg
106026	Gabapentin (Neurontin)	Tab 600 mg
139701	Diazepam	Tab 2 mg
139702	Diazepam	Tab 5 mg
173004	Lorazepam	Tab 1 mg
173002	Lorazepam	Tab 2.5 mg
222425	Temazepam	Tab 10 mg
186501	Nitrazepam	Tab 5 mg
173101	Lormetazepam	Tab 1 mg
229501	Triazolam	Tab 125 mcg
229502	Triazolam	Tab 250 mcg
263203	Alprazolam	Tab 1 mg
263201	Alprazolam	Tab 250 mcg
263202	Alprazolam	Tab 500 mcg
131603	Clonazepam	Oral drops 2.5 mg per ml
131602	Clonazepam	Tab 2 mg

131601	Clonazepam	Tab 500 mcg
191101	Oxazepam	Tab 10 mg
191102	Oxazepam	Tab 15 mg
119301	Citalopram hydrobromide	Tab 20 mg
119025	Citalopram hydrobromide (Celapram)	Tab 20 mg
392625	Escitalopram	Tab 10 mg
392626	Escitalopram	Tab 20 mg
263601	Fluoxetine hydrochloride	Cap 20 mg
263602	Fluoxetine hydrochloride	Tab dispersible 20 mg, scored
600901	Paroxetine	Tab 20 mg
392726	Sertraline	Tab 100 mg
392725	Sertraline	Tab 50 mg
105901	Amitriptyline	Tab 10 mg
105902	Amitriptyline	Tab 25 mg
105903	Amitriptyline	Tab 50 mg
131501	Clomipramine hydrochloride	Tab 10 mg
131502	Clomipramine hydrochloride	Tab 25 mg
143702	Dosulepin [Dothiepin] hydrochloride	Cap 25 mg
143701	Dosulepin [Dothiepin] hydrochloride	Tab 75 mg
143801	Doxepin hydrochloride	Cap 10 mg
143802	Doxepin hydrochloride	Cap 25 mg
143803	Doxepin hydrochloride	Cap 50 mg
164201	Imipramine hydrochloride	Tab 10 mg
164202	Imipramine hydrochloride	Tab 25 mg
187601	Nortriptyline hydrochloride	Tab 10 mg
187602	Nortriptyline hydrochloride	Tab 25 mg
176001	Maprotiline hydrochloride	Tab 25 mg
176002	Maprotiline hydrochloride	Tab 75 mg
195501	Phenelzine sulphate	Tab 15 mg
228501	Tranlycypromine sulphate	Tab 10 mg
263802	Moclobemide	Tab 150 mg
263803	Moclobemide	Tab 300 mg
390125	Mirtazapine	Tab 30 mg
390126	Mirtazapine	Tab 45 mg
378526	Venlafaxine	Cap 150 mg
378527	Venlafaxine	Cap 37.5 mg
378525	Venlafaxine	Cap 75 mg
378530	Venlafaxine	Tab 150 mg
378531	Venlafaxine	Tab 225 mg
378528	Venlafaxine	Tab 37.5 mg
378529	Venlafaxine	Tab 75 mg
389225	Bupropion hydrochloride	Tab modified release 150 mg
128301	Chlorpromazine hydrochloride	Tab 10 mg
128304	Chlorpromazine hydrochloride	Tab 100 mg

128302	Chlorpromazine hydrochloride	Tab 25 mg
158304	Haloperidol	Oral liq 2 mg per ml
158302	Haloperidol	Tab 1.5 mg
158303	Haloperidol	Tab 5 mg
158301	Haloperidol	Tab 500 mcg
253003	Haloperidol decanoate	Inj 100 mg per ml, 1 ml
253001	Haloperidol decanoate	Inj 50 mg per ml, 1 ml
195002	Pericyazine	Tab 10 mg
195001	Pericyazine	Tab 2.5 mg
601205	Prochlorperazine	Suppos 25 mg
601201	Prochlorperazine	Tab 3 mg buccal
601202	Prochlorperazine	Tab 5 mg
229801	Trifluoperazine hydrochloride	Tab 1 mg
229802	Trifluoperazine hydrochloride	Tab 2 mg
229803	Trifluoperazine hydrochloride	Tab 5 mg
199025	Pimozide	Tab 4 mg
380325	Zuclopenthixol decanoate	Inj 200 mg per ml, 1 ml
389825	Zuclopenthixol hydrochloride	Tab 10 mg
388428	Amisulpride	Oral liq 100 mg per ml
388425	Amisulpride	Tab 100 mg
388426	Amisulpride	Tab 200 mg
388427	Amisulpride	Tab 400 mg
387825	Aripiprazole	Tab 10 mg
387826	Aripiprazole	Tab 15 mg
387827	Aripiprazole	Tab 20 mg
387828	Aripiprazole	Tab 30 mg
387829	Aripiprazole	Tab 5 mg
387830	Aripiprazole	Tablet 5 mg
107827	Clozapine	Suspension 50 mg per ml
107802	Clozapine	Tab 100 mg
107826	Clozapine	Tab 200 mg
107801	Clozapine	Tab 25 mg
107825	Clozapine	Tab 50 mg
114015	Olanzapine	Inj 210 mg vial
114016	Olanzapine	Inj 300 mg vial
114017	Olanzapine	Inj 405 mg vial
114002	Olanzapine	Tab 10 mg
114003	Olanzapine	Tab 2.5 mg
114001	Olanzapine	Tab 5 mg
114028	Olanzapine	Tab orodispersible 10 mg
114027	Olanzapine	Tab orodispersible 5 mg
118302	Quetiapine	Tab 100 mg
118303	Quetiapine	Tab 200 mg
118301	Quetiapine	Tab 25 mg

118325	Quetiapine	Tab 300 mg
101126	Risperidone	Inj 25 mg vial
101127	Risperidone	Inj 37.5 mg vial
101128	Risperidone	Inj 50 mg vial
101105	Risperidone	Oral liq 1 mg per ml
101125	Risperidone	Tab 0.5 mg
101101	Risperidone	Tab 1 mg
101102	Risperidone	Tab 2 mg
101103	Risperidone	Tab 3 mg
101104	Risperidone	Tab 4 mg
101129	Risperidone	Tab orodispersible 0.5 mg
101130	Risperidone	Tab orodispersible 1 mg
101131	Risperidone	Tab orodispersible 2 mg
402528	Paliperidone	Inj 100 mg syringe
402529	Paliperidone	Inj 150 mg syringe
402525	Paliperidone	Inj 25 mg syringe
402526	Paliperidone	Inj 50 mg syringe
402527	Paliperidone	Inj 75 mg syringe
387325	Ziprasidone	Cap 20 mg
387326	Ziprasidone	Cap 40 mg
387327	Ziprasidone	Cap 60 mg
387328	Ziprasidone	Cap 80 mg
153203	Flupenthixol decanoate	Inj 100 mg per ml, 1 ml
153201	Flupenthixol decanoate	Inj 20 mg per ml, 1 ml
153202	Flupenthixol decanoate	Inj 20 mg per ml, 2 ml
153304	Fluphenazine decanoate	Inj 100 mg per ml, 1 ml
153301	Fluphenazine decanoate	Inj 12.5 mg per 0.5 ml, 0.5 ml
153302	Fluphenazine decanoate	Inj 25 mg per ml, 1 ml
153303	Fluphenazine decanoate	Inj 25 mg per ml, 2 ml
246604	Lithium carbonate	Cap 250 mg
246601	Lithium carbonate	Tab 250 mg
246602	Lithium carbonate	Tab 400 mg
246603	Lithium carbonate	Tab long-acting 400 mg
121703	Carbamazepine	Oral liq 20 mg per ml
121704	Carbamazepine	Tab 200 mg
121706	Carbamazepine	Tab 400 mg
121705	Carbamazepine	Tab long-acting 200 mg
121707	Carbamazepine	Tab long-acting 400 mg
216604	Sodium valproate	Oral liq 200 mg per 5 ml
216601	Sodium valproate	Tab 100 mg
216602	Sodium valproate	Tab 200 mg EC
216603	Sodium valproate	Tab 500 mg EC
100228	Lamotrigine	Tab dispersible 100 mg
100230	Lamotrigine	Tab dispersible 2 mg

100226	Lamotrigine	Tab dispersible 25 mg
100225	Lamotrigine	Tab dispersible 5 mg
100227	Lamotrigine	Tab dispersible 50 mg
130801	Clobazam	Tab 10 mg

Procedure list and complexity category- Adapted from 11<sup>th</sup> edition of Australasian Classification of Health Interventions (ACHI)

Procedure	Operation severity
1 Examination of skull, meninges or brain	3
2 Cranial tap or puncture	3
3 Insertion of intracranial cerebrospinal fluid devices	3
4 Removal of intracranial cerebrospinal fluid devices	3
5 Irrigation, insertion or removal of intracranial cerebrospinal fluid shunt	3
6 Other application, insertion or removal procedures on skull, meninges or brain	3
7 Incisional exploration of meninges or brain	4
8 Intracranial drainage	5
9 Intracranial decompression	5
10 Postoperative reopening of craniotomy or craniectomy site	5
11 Destruction of intracranial aneurysm or other vascular lesion	5
12 Biopsy of brain or meninges	4
13 Excision of lesion of skull	3
14 Removal of intracranial haematoma or abscess	5
15 Removal of intracranial lesion	5
16 Other intracranial excision	5
17 Skull base surgery for lesion	5
19 Ventriculostomy	4
20 Repair of dura of brain	4
21 Extracranial to intracranial bypass	5
22 Other repair of meninges or brain	5
23 Cranioplasty	4
24 Revision of intracranial cerebrospinal fluid shunt	4
25 Procedures for skull fracture	4
27 Functional intracranial stereotactic procedure	4
28 Other procedures on skull, meninges or brain	4
29 Examination of spinal canal and spinal cord structures	4
30 Lumbar puncture	2
31 Application, insertion or removal procedures on vertebra or intervertebral disc	3
32 Epidural injection	2
33 Epidural infusion	2
34 Caudal injection	2

35 Caudal infusion	2
36 Spinal injection	2
37 Spinal infusion	2
38 Spinal blood patch	2
39 Insertion of spinal catheter, infusion device or pump	2
40 Removal of spinal catheter, infusion device or pump	2
41 Insertion and removal of spinal cerebrospinal fluid drain	3
42 Insertion and removal of spinal cerebrospinal fluid shunt	3
43 Insertion, replacement or removal of epidural electrodes	2
45 Cordotomy or myelotomy	4
46 Decompression of cervical spinal cord	3
47 Decompression of thoracic and thoracolumbar spinal cord	3
48 Decompression of lumbar spinal canal	3
49 Other incision procedures on spinal canal or spinal cord structures	3
50 Biopsy of spinal cord or spinal meninges	3
51 Discectomy for recurrent disc lesion	3
52 Other discectomy	3
53 Removal of spinal lesion	3
54 Other excision procedures on spinal canal or spinal cord structures	3
55 Repair of spinal canal or spinal cord structures	3
56 Revision procedures on spinal canal or spinal cord structures	3
58 Functional spinal stereotactic procedure	3
59 Other procedures on spinal canal or spinal cord structures	3
60 Administration of anaesthetic agent around cranial nerve	2
61 Administration of neurolytic agent into cranial nerve	2
62 Administration of agent into posterior primary rami of spinal nerve	2
63 Administration of anaesthetic agent around other peripheral nerve	2
64 Administration of neurolytic agent into other peripheral nerve	2
65 Administration of therapeutic agent around sympathetic nervous system	2
66 Administration of neurolytic agent into sympathetic nervous system	2
67 Insertion, replacement or removal of peripheral nerve electrodes	2
68 Exploration of brachial plexus	2
69 Incision of optic nerve meninges	3
70 Trigeminal gangliotomy	2
71 Percutaneous neurotomy of primary posterior rami of spinal nerve	2
72 Percutaneous neurotomy of other peripheral nerve	2

73 Division of intracranial nerve	2
74 Division of peripheral nerve	2
75 Decompression of intracranial nerve	4
76 Release of carpal and tarsal tunnel	2
77 Other neurolysis of peripheral nerve and nerve trunk	2
78 Destruction of nerve	2
79 Biopsy of nerve	2
80 Removal of lesion of nerve	2
81 Surgical sympathectomy	2
82 Other peripheral neurectomy	2
83 Repair of nerve or nerve trunk	2
84 Secondary repair of nerve or nerve trunk	2
85 Reoperation for previous sympathectomy	2
86 Other procedures on nerves	2
110 Application, insertion or removal procedures on thyroid or parathyroid gland	3
111 Incision procedures on thyroid	3
112 Biopsy of parathyroid or thyroid gland	2
113 Parathyroidectomy	3
114 Subtotal thyroidectomy	3
115 Total thyroidectomy	3
116 Other excision procedures on thyroid or parathyroid gland	3
117 Other procedures on thyroid or parathyroid gland	3
118 Biopsy of adrenal gland	3
119 Adrenalectomy	4
121 Other procedures on adrenal gland	4
122 Excision procedures on pineal gland	4
123 Other procedures on pineal gland	4
124 Biopsy of pituitary gland	4
125 Other excision procedures on pituitary gland	4
126 Other procedures on pituitary gland	4
127 Biopsy of thymus	3
128 Removal of thymus	3
129 Other procedures on thymus	3
160 Examination procedures on eyeball	1
161 Excision procedures on eyeball	2
162 Repair of perforating wound of eyeball	2
163 Other repair procedures on eyeball	2
164 Secondary procedures after removal of eyeball	2
165 Other procedures on eyeball	2
166 Application, insertion or removal procedures on cornea	2
167 Incision procedures on cornea	2
168 Destruction procedures on cornea	2

169 Biopsy of cornea	2
170 Keratectomy	2
171 Excision of lesion of limbus	2
172 Other excision procedures on cornea	2
173 Keratoplasty	2
174 Other repair procedures on cornea	2
175 Reoperation procedures on cornea	2
176 Other procedures on cornea	2
177 Application, insertion or removal procedures on sclera	2
178 Incision procedures on sclera	2
179 Destruction procedures on sclera	2
180 Biopsy of sclera	2
181 Other excision procedures on sclera	2
182 Repair procedures on sclera	2
183 Revision procedures on sclera	2
184 Other procedures on sclera	2
185 Application, insertion or removal procedures on iris, ciliary body or anterior chamber	2
186 Division of synechiae	2
187 Other incision procedures on iris, ciliary body or anterior chamber	2
188 Destruction procedures on iris, ciliary body or anterior chamber	2
189 Excision procedures on iris, ciliary body or anterior chamber	2
190 Repair procedures on iris, ciliary body or anterior chamber	2
191 Procedures for glaucoma	2
192 Other procedures on iris, ciliary body or anterior chamber	2
193 Insertion of intraocular lens prosthesis	2
194 Replacement or removal of artificial lens	2
195 Intracapsular crystalline lens extraction	2
196 Extracapsular crystalline lens extraction by aspiration alone	2
197 Extracapsular crystalline lens extraction by phacoemulsification	2
198 Extracapsular crystalline lens extraction by mechanical phacofragmentation	2
199 Other extracapsular crystalline lens extraction	2
200 Other extraction of crystalline lens	2
201 Removal of after cataract	2
202 Other application, insertion or removal procedures on lens	2
203 Other procedures on lens	2
204 Aspiration of aqueous or vitreous	2
205 Other application, insertion or removal procedures on aqueous or vitreous	2
206 Destruction procedures on aqueous or vitreous	2

207 Vitrectomy	2
208 Other procedures on vitreous	2
209 Application, insertion or removal procedures on retina, choroid or posterior chamber	2
210 Incision procedures on retina, choroid or posterior chamber	2
211 Destruction procedures on retina, choroid or posterior chamber	1
212 Repair of retinal detachment	1
213 Revision procedures on retina, choroid or posterior chamber	1
214 Other procedures on retina, choroid or posterior chamber	1
215 Excision procedures on extraocular muscle	2
216 Strabismus repair	2
217 Other repair of extraocular muscle	2
218 Revision procedures on extraocular muscle	2
219 Reoperation procedures on extraocular muscle	2
220 Other procedures on extraocular muscle or tendon	2
221 Application, insertion or removal procedures on orbit	2
222 Orbitotomy	2
223 Other incision procedures on orbit	2
224 Orbitotomy with biopsy or excision	2
225 Exenteration of orbit	2
226 Other excision procedures on orbit	2
227 Orbitotomy with removal and replacement of bone	2
228 Other repair procedures on orbit	2
229 Other procedures on orbit	2
230 Application, insertion or removal procedures on eyelid	2
231 Incision procedures on eyelid	2
232 Biopsy of eyelid	2
233 Other excision procedures on eyelid	2
234 Graft to eyelid	2
235 Canthoplasty	2
236 Other repair procedures on eyelid	2
237 Reconstruction procedure on eyelid	2
238 Procedures for correction of trichiasis	2
239 Procedures for ectropion or entropion	2
240 Other procedures on eyelid	2
241 Probing of lacrimal passages	2
242 Insertion, replacement or removal of nasolacrimal tube	2
243 Other application, insertion or removal procedures on lacrimal system	2
244 Incision procedures on lacrimal system	2
245 Destruction procedures on lacrimal system	2
246 Excision procedures on lacrimal system	2

247 Repair procedures on lacrimal system	2
248 Reoperation procedures on lacrimal passages	2
249 Procedures for establishment of lacrimal patency	2
250 Other procedures on lacrimal system	2
251 Application, insertion or removal procedures on conjunctiva	2
252 Incision procedures on conjunctiva	2
253 Destruction procedures on conjunctiva	2
254 Excision procedures on conjunctiva	2
255 Repair procedures on conjunctiva	2
256 Other procedures on conjunctiva	2
300 Examination procedures on external ear	1
301 Application, insertion or removal procedures on external ear	2
302 Incision procedures on auditory canal	2
303 Excision procedures on external ear	2
304 Repair procedures on external ear	2
305 Reconstruction procedures on external ear	2
306 Other procedures on external ear	2
307 Examination procedures on eardrum or middle ear	1
308 Application, insertion or removal procedures on eardrum or middle ear	1
309 Myringotomy	1
310 Other incision procedures on eardrum or middle ear	1
311 Destruction procedures on eardrum or middle ear	2
312 Excision procedures on eardrum or middle ear	2
313 Myringoplasty	2
314 Other repair procedures on eardrum or middle ear	2
315 Reconstruction procedures on eardrum or middle ear	2
316 Other procedures on eardrum or middle ear	2
317 Excision procedures on ossicles of ear	2
318 Repair procedures on ossicles of ear	2
319 Reconstruction procedures on ossicles of ear	2
320 Other procedures on ossicles of ear	2
321 Application, insertion or removal procedures on mastoid or temporal bone	2
322 Incision procedures on mastoid or temporal bone	2
323 Mastoidectomy	2
324 Other excision procedures on mastoid or temporal bone	2
325 Repair procedures on mastoid or temporal bone	2
326 Reconstruction procedures on mastoid or temporal bone	2
327 Revision procedures on mastoid or temporal bone	2
328 Other procedures on mastoid or temporal bone	2
329 Application, insertion or removal procedures on inner ear	2

330 Incision procedures on inner ear	2
331 Excision procedures on inner ear	2
332 Repair procedures on inner ear	2
333 Other procedures on inner ear	2
370 Examination procedures on nose	1
371 Application, insertion or removal procedures on nose	1
372 Incision procedures on nose	1
373 Arrest of nasal haemorrhage	2
374 Other destruction procedures on nose	2
375 Biopsy of nasal cavity	2
376 Excision procedures on nasal turbinates	2
377 Removal of intranasal lesion	2
378 Other excision procedures on nose	2
379 Repair of nasal septum	2
380 Other repair procedures on nose	2
381 Other procedures on nose	2
382 Application, insertion or removal procedures on nasal sinuses	2
383 Incision procedures on nasal sinuses	2
384 Biopsy of nasal sinuses	2
385 Intranasal removal of polyp from nasal sinuses	2
386 Other excision procedures on nasal sinuses	2
387 Maxillary antrostomy	2
388 Other repair procedures on nasal sinuses	2
389 Other procedures on nasal sinuses	2
390 Incision procedures on tongue	2
391 Destruction procedures on tongue	2
392 Excision procedures on tongue	2
393 Repair procedures on tongue	2
394 Other procedures on tongue	2
395 Incision procedures on salivary gland or duct	2
396 Destruction procedures on salivary gland or duct	2
397 Excision procedures on salivary gland or duct	2
398 Repair procedures on salivary gland or duct	2
399 Other procedures on salivary gland or duct	2
400 Application, insertion or removal procedures on mouth, palate or uvula	2
401 Incision procedures on mouth, palate or uvula	2
402 Biopsy of oral cavity or soft palate	2
403 Excision of lesion of mouth or palate	2
404 Other excision procedures on mouth, palate or uvula	2
405 Uvulopalatopharyngoplasty	2
406 Other repair procedures on mouth, palate or uvula	2

407 Revision procedures on mouth, palate or uvula	2
408 Other procedures on mouth, palate or uvula	2
409 Incision procedures on tonsils or adenoids	2
410 Destruction procedures on tonsils or adenoids	2
411 Biopsy of tonsils or adenoids	2
412 Tonsillectomy or adenoidectomy	2
413 Other excision procedures on tonsils or adenoids	2
414 Other repair procedures on tonsils or adenoids	2
415 Other procedures on tonsils or adenoids	2
416 Examination procedures on pharynx	1
417 Application, insertion or removal procedures on pharynx	2
418 Incision procedures on pharynx	2
419 Destruction procedures on pharynx	2
420 Pharyngectomy	3
421 Other excision procedures on pharynx	3
422 Other procedures on pharynx	2
520 Examination procedures on larynx	1
521 Application, insertion or removal procedures on larynx	2
522 Incision procedures on larynx	2
523 Laryngoscopy with excision	2
524 Laryngectomy	4
525 Other excision procedures on larynx	2
526 Laryngoplasty	3
527 Laryngofissure	3
528 Other repair procedures on larynx	3
529 Reconstruction procedures on larynx	4
530 Reoperation procedures on larynx	3
531 Other procedures on larynx	2
532 Examination procedures on trachea	1
533 Application, insertion or removal procedures on trachea	2
534 Excision procedures on trachea	2
535 Cricothyrostomy	3
536 Tracheostomy	3
537 Resection of endotracheal lesion with repair	3
538 Resection of endotracheal stricture with repair	3
539 Other repair procedures on trachea	4
540 Reconstruction procedures on trachea	5
541 Revision procedures on trachea	5
542 Other procedures on trachea	3
543 Examination procedures on bronchus	1
544 Bronchoscopy with biopsy or removal of foreign body	2
545 Other excision procedures on bronchus	2

546 Repair procedures on bronchus	5
547 Other procedures on bronchus	3
548 Application, insertion or removal procedures on lung or pleura	2
549 Incision procedures on lung or pleura	3
550 Biopsy of lung or pleura	3
551 Partial resection of lung	5
552 Lobectomy of lung	5
553 Pneumonectomy	5
554 Other excision procedures on lung or pleura	5
555 Transplantation of lung	5
556 Other repair procedures on lung or pleura	5
557 Revision procedures on lung or pleura	5
558 Other procedures on lung or pleura	5
559 Examination procedures on chest wall, mediastinum or diaphragm	4
560 Application, insertion or removal procedures on chest wall, mediastinum or diaphragm	4
561 Incision procedures on chest wall, mediastinum or diaphragm	4
562 Destruction procedures on chest wall, mediastinum or diaphragm	4
563 Excision procedures on chest wall, mediastinum or diaphragm	4
564 Repair of pectus carinatum or excavatum	4
565 Thoracoplasty	4
566 Other repair procedures on chest wall, mediastinum or diaphragm	5
567 Other procedures on chest wall, mediastinum or diaphragm	4
568 Airway management	2
569 Ventilatory support	2
570 Noninvasive ventilatory support	2
600 Incision procedures on atrium	5
601 Destruction procedures on atrium	5
602 Excision procedures on atrium	5
603 Repair procedures on atrium	5
604 Reconstruction procedures on atrium	5
605 Revision procedures on atrium	5
606 Other procedures on atrium	5
607 Examination procedures on ventricle	5
608 Application, insertion or removal procedures on ventricle	5
609 Destruction procedures on ventricle	5
610 Ventricular myectomy	5
611 Excision of ventricular aneurysm	5
612 Other excision procedures on ventricle	5

613 Baffle or conduit procedures	5
614 Other repair procedures on ventricle	5
615 Other procedures on ventricle	5
616 Excision procedures on septum	5
617 Closure of atrial septal defect	5
618 Closure of ventricular septal defect	5
619 Other repair procedures on septum	5
620 Other procedures on septum	5
621 Incision procedures on aortic valve	5
622 Repair of aortic valve	5
623 Replacement of aortic valve	5
624 Other procedures on aortic valve	5
625 Incision procedures on mitral valve	5
626 Repair of mitral valve	5
627 Mitral valve annuloplasty	5
628 Replacement of mitral valve	5
629 Reconstruction procedures on mitral valve	5
630 Other procedures on mitral valve	5
631 Incision procedures on tricuspid valve	5
632 Repair of tricuspid valve	5
633 Tricuspid valve annuloplasty	5
634 Replacement of tricuspid valve	5
635 Other procedures on tricuspid valve	5
636 Incision procedures on pulmonary valve	5
637 Repair or replacement of pulmonary valve	5
638 Other procedures on pulmonary valve	5
639 Incision procedures on myocardium	5
640 Excision procedures on myocardium	5
641 Repair procedures on myocardium	5
642 Myocardial preservation	5
643 Drainage of heart	5
644 Other incision procedures on pericardium	4
645 Biopsy of pericardium	4
646 Other excision procedures on pericardium	5
647 Insertion of temporary transvenous electrode for cardiac pacemaker or defibrillator	3
648 Insertion of permanent transvenous electrode for cardiac pacemaker or defibrillator	3
649 Insertion of other electrode or patch for cardiac pacemaker or defibrillator	3
650 Insertion of cardiac pacemaker generator	3
653 Insertion of cardiac defibrillator generator	3
654 Adjustment, replacement or removal of electrode for cardiac pacemaker or defibrillator	3

655 Adjustment, replacement or removal of cardiac pacemaker generator	3
656 Adjustment, replacement or removal of cardiac defibrillator generator	3
657 Other application, insertion or removal procedures on other sites of heart	3
659 Removal of donor heart or lung	999
660 Transplantation of heart or lung	5
661 Other repair procedures on other sites of heart	5
662 Reconstruction procedures on other sites of heart	5
663 Revision procedures on other sites of heart	5
664 Reoperation procedures on other sites of heart	5
665 Electrophysiological studies [EPS]	2
666 Other procedures on other sites of heart	5
667 Cardiac catheterisation	2
668 Coronary angiography	2
669 Excision procedures on coronary arteries	5
670 Transluminal coronary angioplasty	2
671 Transluminal coronary angioplasty with stenting	2
672 Coronary artery bypass - saphenous vein graft	5
673 Coronary artery bypass - other vein graft	5
674 Coronary artery bypass - left internal mammary artery [LIMA] graft	5
675 Coronary artery bypass - right internal mammary artery [RIMA] graft	5
676 Coronary artery bypass - radial artery graft	5
677 Coronary artery bypass - epigastric artery graft	5
678 Coronary artery bypass - other artery graft	5
679 Coronary artery bypass - other material graft	5
680 Reoperation procedures on coronary arteries	5
681 Other procedures on coronary arteries	5
682 Application, insertion or removal procedures on aorta	5
684 Repair of ascending thoracic aorta	5
685 Repair of aortic arch and ascending thoracic aorta	5
686 Repair of descending thoracic aorta	5
687 Replacement of ascending thoracic aorta	5
688 Replacement of aortic arch and ascending thoracic aorta	5
689 Replacement of descending thoracic aorta	5
690 Closure of patent ductus arteriosus	5
691 Closure of cardiac collateral vessel	5
693 Repair procedures on aorta	5
694 Arterial catheterisation	2
695 Exploration of artery	3
696 Other incision procedures on artery	3

697 Interruption of artery	3
698 Other destruction procedures on artery	3
699 Biopsy of peripheral artery	2
700 Endarterectomy	4
701 Endarterectomy to prepare site for anastomosis	4
702 Arterial embolectomy or thrombectomy	4
703 Embolectomy or thrombectomy of an arterial bypass graft	4
704 Arterial atherectomy	4
705 Resection of lesion of carotid artery	4
706 Resection of recurrent lesion of carotid artery	4
707 Patch graft of artery	4
708 Direct closure of artery	4
709 Repair of artery by anastomosis	4
710 Repair of artery by interposition graft	4
711 Arterial bypass graft using vein	4
712 Arterial bypass graft using synthetic material	4
713 Arterial bypass graft using composite, sequential or crossover graft	4
714 Repair of aneurysm of neck, intra-abdominal area or extremities	4
715 Replacement of aneurysm with graft	4
716 Repair of aorto-enteric fistula	5
717 Repair procedures on pulmonary artery for congenital heart disease	5
718 Other repair procedures on arteries	4
719 Intraoperative arteriography	2
720 Other procedures on arteries	3
721 Application of external stent to vein	3
722 Injection of varicose veins	2
723 Other application, insertion or removal procedures on veins	2
724 Exploration of vein	2
725 Other incision procedures on veins	2
726 Interruption of vein	2
727 Interruption of sapheno-femoral or sapheno-popliteal junction varicose veins	2
728 Other destruction procedures on veins	2
729 Venous thrombectomy	2
730 Procurement of vein	2
731 Patch graft of vein	2
732 Direct closure of vein	2
733 Repair of vein by anastomosis	2
734 Repair of vein by interposition graft	2
735 Venous bypass graft using vein or synthetic material	2
736 Other repair procedures on veins	2

737 Reoperation procedures on veins	2
738 Venous catheterisation	2
739 Other procedures on veins	2
740 Examination procedures on other vascular sites	2
741 Surgical peripheral arterial or venous catheterisation	2
742 Other application, insertion or removal procedures on other vascular sites	2
743 Destruction of vascular lesions	3
744 Laser photocoagulation of cutaneous vascular lesion	2
745 Interruption of feeding vessels of arteriovenous fistula	2
746 Other destruction procedures on vascular sites	2
747 Biopsy of blood vessel	2
748 Excision of vascular anomaly	2
750 Excision of arteriovenous fistula of neck	3
751 Excision of arteriovenous fistula of limb	3
752 Excision of arteriovenous fistula of abdomen	3
753 Other excision procedures on vascular sites	3
754 Transluminal balloon angioplasty	2
758 Peripheral laser angioplasty	1
759 Repair of arteriovenous fistula of neck	4
760 Repair of arteriovenous fistula of extremity	4
761 Repair of arteriovenous fistula of abdomen	4
762 Other repair procedures on vascular sites	4
763 Reoperation procedures on other vascular sites	4
764 Procedures for external arteriovenous shunt	4
765 Procedures for surgically created arteriovenous fistula	4
766 Vascular access device	2
768 Transcatheter embolisation of blood vessels	2
777 Other procedures on arteries and veins	2
800 Biopsy of bone marrow	2
801 Other excision procedures on bone marrow	2
802 Bone marrow/stem cell transplantation	2
803 Other procedures on bone marrow	2
804 Incision procedures on lymphatic structure	2
805 Biopsy of lymphatic structure	2
806 Excision procedures on lymph node of neck	2
807 Excision of internal mammary lymph node	2
808 Excision procedures on lymph node of axilla	2
809 Excision procedures on lymph node of groin	2
810 Excision procedures on lymph nodes for gynaecological malignancy	3
811 Excision procedures on lymph node of other sites	2
812 Other procedures on lymphatic structures	2

813 Incision procedures on spleen	4
814 Biopsy of spleen	4
815 Other excision procedures on spleen	4
816 Repair of spleen	4
817 Other procedures on spleen	4
850 Oesophagoscopy	1
851 Endoscopic administration of agent into lesion of oesophagus	2
852 Removal of foreign body from oesophagus	2
853 Other application, insertion or removal procedures on oesophagus	2
854 Oesophagogastric myotomy	3
855 Other incision procedures on oesophagus	3
856 Destruction procedures on oesophagus	4
857 Resection of oesophagus, paediatric	5
858 Oesophagectomy by abdominal and thoracic mobilisation	5
859 Oesophagectomy by abdominal and cervical mobilisation	5
860 Oesophagectomy by abdominal and transthoracic mobilisation	5
861 Other excision procedures on oesophagus	5
862 Dilation of oesophagus	2
863 Oesophagogastric myotomy and repair, laparoscopic	3
864 Oesophagogastric myotomy and repair, abdominal	4
865 Oesophagogastric myotomy and repair, thoracic	5
866 Repair of oesophageal atresia	5
867 Other repair procedures on oesophagus	5
868 Reconstruction procedures on oesophagus	5
869 Other procedures on oesophagus	5
870 Application, insertion or removal procedures on stomach	3
871 Gastrotomy	3
872 Vagotomy	3
873 Other incision procedures on stomach	3
874 Destruction procedures on stomach	4
875 Partial gastrectomy	4
876 Partial gastrectomy following previous procedure for peptic ulcer disease	4
877 Selective vagotomy with partial gastrectomy	4
878 Selective vagotomy with partial gastrectomy following previous procedure for peptic ulcer disease	4
879 Other gastrectomy	4
880 Other excision procedures on stomach	4
881 Gastrostomy or gastro-enterostomy	4
882 Endoscopic dilation of gastric stricture	2
883 Pyloroplasty	3

884 Other vagotomy with repair	3
886 Fundoplasty	3
887 Other repair procedures on stomach	3
888 Reconstruction procedures on stomach	4
889 Procedures for morbid obesity	4
890 Other procedures on stomach	4
891 Exploration of small intestine	4
892 Application, insertion or removal procedures on small intestine	4
893 Enterotomy	4
894 Other incision procedures on small intestine	4
895 Resection of small intestine	4
896 Other excision procedures on small intestine	4
897 Stomas of small intestine	4
898 Reduction procedures on small intestine	4
899 Closure of stoma of small intestine	4
900 Repair of small intestine	4
901 Other repair procedures on small intestine	4
902 Revision of stoma and ileostomy reservoir	4
903 Other procedures on small intestine	4
904 Rigid sigmoidoscopy	1
905 Fibreoptic colonoscopy	1
906 Application, insertion or removal procedures on large intestine	3
907 Incision procedures on large intestine	3
908 Destruction procedures on large intestine	3
909 Biopsy of large intestine	2
910 Rigid sigmoidoscopy with excision	2
911 Fibreoptic colonoscopy with excision	2
913 Colectomy	4
914 Other excision procedures on large intestine	4
915 Other stomas of large intestine	4
916 Reduction procedures on large intestine	4
917 Other repair of large intestine	4
918 Revision procedures on large intestine	4
924 Procedures for exomphalos	4
925 Other procedures on large intestine	4
926 Appendicectomy	3
927 Other procedures on appendix	3
928 Examination procedures on rectum or anus	1
929 Application, insertion or removal procedures on rectum or anus	1
930 Incision procedures on rectum or anus	2

931 Destruction procedures on rectum or anus	2
932 Rectal or anal biopsy	2
933 Excision of lesion or tissue of rectum or anus	1
934 Rectosigmoidectomy or proctectomy	4
935 Anterior resection of rectum	4
936 Total proctocolectomy	4
937 Other excision procedures on rectum or anus	4
938 Anoplasty or anorectoplasty	4
939 Repair of cloacal exstrophy	4
940 Other repair procedures on rectum or anus	4
941 Procedures for haemorrhoids	2
942 Other procedures on rectum or anus	2
951 Application, insertion or removal procedures on liver	3
952 Incision procedures on liver	4
953 Excision procedures on liver	4
954 Repair procedures on liver	5
955 Procedures for hydatid cyst of liver	4
956 Other procedures on liver	4
957 Examination of gallbladder or biliary tract	2
958 Stenting of biliary tract	2
959 Endoscopic and percutaneous removal of calculus	2
960 Removal and replacement of biliary stent	2
961 Other application, insertion or removal procedures on gallbladder or bile ducts	2
962 Destruction procedures on biliary tract and gallbladder	2
963 Incision of gallbladder, biliary tract or sphincter of Oddi	2
964 Biopsy of gallbladder, bile ducts or sphincter of Oddi	2
965 Cholecystectomy	3
966 Resection of hepatic duct or porta hepatis	4
967 Resection of choledochal cyst	3
968 Other excision procedures on gallbladder, bile ducts or sphincter of Oddi	2
969 Stoma of gallbladder or bile duct	2
970 Roux-en-Y bypass	4
971 Other repair of sphincter of Oddi, gallbladder or biliary tract	4
972 Procedures for portal hypertension	4
973 Other procedures on gallbladder or biliary tract	4
974 Examination of pancreas	3
975 Application, insertion or removal procedures on pancreas	3
976 Incision procedures on pancreas	3
977 Biopsy of pancreas	3
978 Pancreatectomy	4
979 Other excision procedures on pancreas or pancreatic duct	4

980 Anastomosis of pancreas	4
981 Other repair procedures on pancreas	4
982 Other procedures on pancreas	4
983 Application, insertion or removal procedures on abdomen, peritoneum or omentum	4
984 Laparoscopy	2
985 Laparotomy	4
986 Division of abdominal adhesions	3
987 Other incision procedures on abdomen, peritoneum or omentum	3
988 Biopsy of abdomen, peritoneum or omentum	2
989 Other excision procedures on abdomen, peritoneum or omentum	3
990 Repair of inguinal hernia	2
991 Repair of femoral hernia	2
992 Repair of umbilical, epigastric or linea alba hernia	2
993 Repair of incisional hernia	3
994 Repair of parastomal hernia	3
996 Repair of other abdominal wall hernia	2
997 Repair of incarcerated, obstructed or strangulated hernia	3
998 Repair of diaphragmatic hernia	4
1000 Other repair procedures on abdomen, peritoneum or omentum	4
1001 Revision procedures on abdomen, peritoneum or omentum	4
1002 Procedures for hydatid cyst of peritoneum or abdominal organs	4
1003 Procedures for gastroschisis	4
1004 Other procedures on abdomen, peritoneum or omentum	4
1005 Panendoscopy	1
1006 Panendoscopy with removal of foreign body	2
1007 Panendoscopy with destruction	2
1008 Panendoscopy with excision	2
1009 Repair procedures on other and multiple sites of digestive system	3
1011 Other procedures on digestive system	2
1040 Examination procedures on kidney	2
1041 Manipulation or extraction of calculus of kidney	2
1042 Other application, insertion or removal procedures on kidney	2
1043 Percutaneous nephroscopy	2
1044 Nephrolithotomy with removal of calculi	2
1045 Other incision procedures on kidney	2
1046 Destruction procedures on kidney	3
1047 Biopsy of kidney	3

1048 Partial nephrectomy	4
1049 Complete nephrectomy	4
1050 Complete nephrectomy for transplantation	4
1051 Complete nephrectomy for removal of transplanted kidney	4
1052 Complete nephrectomy complicated by previous surgery on same kidney	4
1053 Radical nephrectomy	4
1054 Nephroureterectomy	4
1055 Other excision procedures on kidney	2
1056 Nephrostomy or pyelostomy	3
1057 Pyeloplasty	3
1058 Kidney transplantation	4
1059 Other repair procedures on kidney	2
1060 Haemodialysis	1
1061 Peritoneal dialysis	1
1062 Procedures for establishment or maintenance of peritoneal dialysis	2
1063 Other interventions for renal dialysis	1
1064 Other procedures on kidney	1
1065 Examination procedures on ureter	1
1066 Endoscopic ureteric catheterisation	2
1067 Endoscopic insertion, replacement or removal of ureteric stent	2
1068 Endoscopic manipulation or extraction of ureteric calculus	2
1069 Other application, insertion or removal procedures on ureter	2
1070 Exploration of ureter	2
1071 Ureterolysis	2
1072 Ureterolithotomy	2
1073 Other incision procedures on ureter	2
1074 Destruction procedures on ureter	2
1075 Biopsy of ureter	2
1076 Ureterectomy	2
1077 Other excision procedures on ureter	2
1078 Ureterolysis with repositioning of ureter	2
1079 Repair of divided ureter	2
1080 Transplantation of ureter into skin	3
1081 Transplantation of ureter into other ureter	3
1082 Transplantation of ureter into intestine	3
1084 Reimplantation of ureter into bladder	3
1085 Reimplantation of ureter into bladder with repair	3
1086 Other repair procedures on ureter	3
1087 Revision procedures on ureter	3

1088 Other procedures on ureter	3
1089 Examination procedures on bladder	1
1090 Urinary catheterisation	1
1091 Implantation or removal of electronic bladder stimulator	2
1092 Other application, insertion or removal procedures on bladder	1
1093 Cystotomy	2
1094 Cystolithotomy	2
1095 Other incision procedures on bladder	2
1096 Destruction procedures on bladder	2
1097 Endoscopic destruction of bladder lesion or tissue	2
1098 Biopsy of bladder	2
1099 Removal of foreign body from bladder	2
1100 Endoscopic resection of bladder lesion or tissue	2
1101 Endoscopic resection of bladder neck	2
1102 Cystectomy	3
1103 Other excision procedures on bladder	2
1104 Repair of ruptured bladder	3
1105 Closure of fistula of bladder	3
1106 Repair of bladder exstrophy	3
1107 Enlargement of bladder	2
1108 Other repair procedures on bladder	2
1109 Procedures for male stress incontinence	2
1110 Procedures for female stress incontinence	2
1111 Other procedures on bladder	1
1112 Examination procedures on urethra	1
1113 Insertion, replacement or removal of artificial urinary sphincter	2
1114 Other application, insertion or removal procedures on urethra	2
1115 Incision procedures on urethra	2
1116 Destruction procedures on urethra	2
1117 Biopsy of urethra	2
1118 Other excision procedures on urethra	2
1119 Closure of fistula of urethra	2
1120 Repair of laceration of urethra	2
1121 Urethroplasty	2
1122 Other repair procedures on urethra	2
1123 Reconstruction procedures on urethra	2
1124 Revision procedures on urethra	2
1125 Other procedures on urethra	2
1126 Destruction procedures on other sites of urinary system	2
1127 Incision procedures on other sites of urinary system	2

1128 Excision procedures on other sites of urinary system	2
1129 Other procedures on urinary system	2
1162 Destruction of tissue of prostate	2
1163 Closed biopsy of prostate or seminal vesicle	2
1164 Open biopsy of prostate or seminal vesicle	3
1165 Transurethral prostatectomy	3
1166 Other closed prostatectomy	3
1167 Open prostatectomy	4
1168 Other excision procedures on prostate or seminal vesicle	3
1169 Repair procedures on prostate or seminal vesicle	3
1170 Other procedures on prostate or seminal vesicle	3
1171 Application, insertion or removal procedures on scrotum or tunica vaginalis	2
1172 Exploration of scrotum	2
1173 Exploration of scrotal contents with biopsy	2
1174 Other excision procedures on scrotum or tunica vaginalis	2
1175 Repair procedures on scrotum or tunica vaginalis	2
1176 Other procedures on scrotum or tunica vaginalis	2
1177 Application, insertion or removal procedures on testis, vas deferens, epididymis or spermatic cord	2
1178 Incision procedures on testis, vas deferens, epididymis or spermatic cord	2
1179 Destruction procedures on testis, vas deferens, epididymis or spermatic cord	2
1180 Biopsy of testis, vas deferens, epididymis or spermatic cord	2
1181 Excision of lesion of testis, epididymis or spermatic cord	2
1182 Excision of spermatic cord	2
1183 Vasectomy and epididymectomy	2
1184 Orchidectomy	1
1185 Vasovasostomy and vasoepididymostomy	1
1186 Orchidopexy for undescended testis	2
1187 Other repair procedures on testis, vas deferens, epididymis or spermatic cord	1
1188 Revision procedures on testis, vas deferens, epididymis or spermatic cord	2
1189 Other procedures on testis, vas deferens, epididymis or spermatic cord	2
1190 Examination procedures on penis	1
1191 Insertion or removal of artificial erection device	2
1192 Other application, insertion or removal procedures on penis	2
1193 Decompression of priapism	2
1194 Other incision procedures on penis	2
1195 Destruction procedures on penis	2

1196 Excision procedures on penis	2
1197 Correction of chordee of penis	2
1198 Repair of hypospadias	2
1199 Repair of epispadias	2
1200 Other repair procedures on penis	2
1201 Revision of artificial erection device	2
1202 Other procedures on penis	2
1203 Other procedures on male genital organs	2
1240 Application, insertion or removal procedures on ovary	2
1241 Incision procedures on ovary	2
1242 Biopsy of ovary	2
1243 Oophorectomy	2
1244 Other excision procedures on ovary	2
1245 Transposition of ovary	2
1246 Other repair procedures on ovary	2
1247 Other procedures on ovary	2
1248 Application, insertion or removal procedures on fallopian tube	2
1249 Incision procedures on fallopian tube	2
1250 Biopsy of fallopian tube	2
1251 Salpingectomy	2
1252 Salpingo-oophorectomy	2
1253 Salpingoplasty	2
1254 Anastomosis of fallopian tube	2
1255 Other repair procedures on fallopian tube	2
1256 Procedures for management of ectopic pregnancy	2
1257 Procedures for female sterilisation	2
1258 Other procedures on fallopian tube	2
1259 Examination procedures on uterus	1
1260 Insertion or removal of intrauterine device	1
1261 Other application, insertion or removal procedures on uterus	2
1262 Incision procedures on uterus	2
1263 Destruction procedures on uterus	2
1264 Biopsy of endometrium	2
1265 Curettage and evacuation of uterus	2
1266 Excision of lesion of uterus	2
1268 Abdominal hysterectomy	3
1269 Vaginal hysterectomy	3
1270 Other excision procedures on uterus	3
1271 Uterine suspension procedures	3
1272 Reconstruction procedures on uterus and supporting structures	3

1273 Other procedures on uterus	2
1274 Application, insertion or removal procedures on cervix	2
1275 Destruction procedures on cervix	2
1276 Excision procedures on cervix	2
1277 Repair procedures on cervix	2
1278 Other procedures on cervix	2
1279 Examination procedures on vagina	1
1280 Incision procedures on vagina	2
1281 Destruction procedures on vagina	2
1282 Excision procedures on vagina	2
1283 Repair of prolapse of uterus, pelvic floor or enterocele	3
1284 Repair of vaginal fistula	3
1285 Vaginal suspension procedures	3
1286 Other repair procedures on vagina	2
1287 Reconstruction procedures on vagina	2
1288 Other procedures on vagina	2
1289 Destruction procedures on vulva or perineum	2
1290 Incision procedures on vulva or perineum	2
1291 Biopsy of vulva or perineum	2
1292 Vulvectomy	2
1293 Other excision procedures on vulva, perineum or clitoris	2
1294 Repair procedures on vulva or perineum	2
1295 Other procedures on vulva or perineum	2
1296 Examination procedures on other gynaecological sites	1
1297 Procedures for reproductive medicine	2
1298 Procedures for anomalies of genitalia	2
1299 Other procedures on female genital organs	2
1340 Caesarean section	3
1344 Postpartum suture	2
1345 Postpartum evacuation of uterus	2
1346 Correction of inverted uterus	3
1347 Other postpartum procedures	2
1360 Application, insertion or removal procedures of head	2
1361 External fixation of mandible	2
1362 Exploration of temporomandibular joint	2
1363 Other incision procedures on maxilla or mandible	2
1364 Excision procedures on maxilla, mandible or temporomandibular joint	2
1365 Reduction of fracture of nasal bone	2
1366 Reduction of fracture of mandible or maxilla	2
1367 Reduction of fracture of mandibular or maxillary alveolar ridge	2
1368 Reduction of fracture of zygomatic bone	2

1369 Reduction of temporomandibular joint	2
1370 Reduction of fracture or dislocation of other facial bone	2
1371 Repair procedures on maxilla, mandible or temporomandibular joint	2
1373 Application, insertion or removal procedures of neck or thorax	2
1374 Incision procedures on neck or thorax	2
1375 Ostectomy of rib	2
1376 Other excision procedures on neck or thorax	2
1377 Reduction of fracture/dislocation of neck or thorax	3
1378 Repair procedures on neck or thorax	3
1379 Reoperation procedures on neck or thorax	3
1381 Immobilisation of fracture or dislocation of spine	3
1382 Biopsy of intervertebral disc and vertebra	3
1383 Excision of vertebra	3
1384 En bloc resection of lesion of soft tissue involving sacrum or spine	4
1385 Other excision procedures on spine (vertebral column)	4
1386 Manipulation of spine	2
1387 Closed reduction of fracture/dislocation of spine	3
1388 Open reduction of fracture/dislocation of spine	4
1389 Spinal fusion	4
1390 Internal fixation of spine	4
1393 Other spinal procedures	3
1394 Application, insertion or removal procedures on shoulder	3
1395 Incision procedures on shoulder	2
1396 Biopsy of shoulder	2
1397 Synovectomy or debridement of shoulder	2
1398 Ostectomy of clavicle or scapula	2
1399 Amputation of shoulder	3
1400 Other excision on shoulder	2
1401 Reduction of fracture of clavicle or shoulder	2
1402 Reduction of dislocation of clavicle, scapula or shoulder	2
1403 Arthrodesis of shoulder	2
1404 Other repair procedures on shoulder	2
1405 Reconstruction procedures on shoulder	3
1406 Revision procedures on shoulder	3
1408 Immobilisation of fracture of humerus	2
1409 Other application, insertion or removal procedures on humerus or elbow	2
1410 Incision procedures on humerus or elbow	2
1411 Biopsy of elbow	2
1412 Other excision procedures on humerus or elbow	2
1413 Closed reduction of fracture of humerus or elbow	2

1414 Open reduction of fracture of humerus or elbow	3
1415 Closed reduction of dislocation of humerus or elbow	2
1416 Open reduction of dislocation of humerus or elbow	3
1417 Bone graft to humerus	3
1418 Other repair procedures on humerus or elbow	2
1419 Revision procedures on humerus or elbow	2
1421 Immobilisation of fracture of shaft and distal radius or ulna	2
1423 Incision of fascia of forearm	2
1424 Incision of radius or ulna	2
1425 Other incision procedures on forearm	2
1426 Excision procedures on forearm	2
1427 Closed reduction of fracture of radius	2
1428 Closed reduction of fracture of ulna or olecranon	2
1429 Open reduction of fracture of radius	3
1430 Open reduction of fracture of ulna or olecranon	3
1431 Reduction of fracture of shaft of radius and ulna	2
1432 Open reduction of fracture of shaft of radius or ulna with dislocation	3
1433 Reduction of dislocation of radius or ulna	2
1434 Reduction of separated epiphysis of radius or ulna	2
1435 Bone graft to forearm	3
1436 Other repair procedures on forearm	3
1438 Other procedures on forearm	2
1439 Application, insertion or removal procedures on hand or wrist	2
1440 Incision procedures on muscle, tendon or fascia of hand	2
1441 Incision procedures on bone of hand	2
1442 Incision procedures on joint of hand	2
1443 Incision procedures on wrist	2
1444 Biopsy of wrist	2
1445 Synovectomy of joint of hand	2
1446 Synovectomy of tendon of hand or wrist	2
1447 Fasciectomy for Dupuytren's contracture	1
1448 Amputation of wrist, hand or digit	1
1449 Other excision procedures on bone of hand	2
1450 Other excision procedures on hand	2
1451 Other excision procedures on wrist	2
1452 Closed reduction of fracture of carpus	2
1453 Closed reduction of fracture of metacarpus of hand	2
1454 Closed reduction of phalanx of hand	2
1455 Open reduction of fracture of carpus	1
1456 Open reduction of fracture of metacarpus of hand	2

1457 Open reduction of fracture of phalanx of hand	2
1458 Closed reduction of dislocation of joint of hand	2
1459 Open reduction of dislocation of joint of hand	2
1460 Arthrodesis of hand	1
1461 Bone graft of wrist, metacarpus or phalanx of hand	1
1462 Arthroplasty of interphalangeal joint of hand	2
1463 Arthroplasty of metacarpophalangeal joint	2
1464 Other arthroplasty of phalangeal joint of hand	2
1465 Repair of ligament or capsule of phalangeal joint of hand	2
1466 Repair of tendon of hand	2
1467 Other repair procedures on hand	2
1468 Other repair procedures on wrist	2
1469 Reconstruction procedures on hand	1
1470 Reconstruction procedures on wrist	1
1471 Revision procedures on hand or finger	1
1472 Revision procedures on wrist	1
1473 Procedures for mallet finger	2
1474 Procedures for ganglion of hand or wrist	2
1476 Immobilisation or traction of fracture or dislocation of pelvis or hip	2
1478 Osteotomy of pelvis, hip or femur	4
1479 Fixation of fracture of pelvis or femur	3
1480 Release of hip contracture	3
1481 Other incision of hip	3
1482 Biopsy of hip	3
1483 Osteotomy of femur or pelvis	3
1484 Amputation of pelvis or hip	5
1485 Other excision procedures on pelvis or hip	4
1486 Reduction of fracture of pelvis or femur	3
1487 Reduction of dislocation of hip	2
1488 Bone graft to pelvis or hip	2
1489 Arthroplasty of hip	3
1490 Transplantation or transfer of tendon or muscle of pelvis or hip	3
1491 Other repair procedures on pelvis or hip	3
1492 Revision arthroplasty of hip	4
1493 Procedures for slipped capital femoral epiphysis	3
1495 Immobilisation of fracture of fibula, patella or tibia	2
1496 Other application, insertion or removal procedures on knee or leg	2
1497 Decompression fasciotomy of calf	2
1498 Release of knee contracture	2
1499 Osteotomy of distal femur, patella, tibia or fibula	3

1500 Internal fixation of fracture of femoral condyle	3
1501 Other incision procedures on knee	2
1502 Biopsy of knee	1
1503 Arthroscopic excision of knee	2
1504 Excision of bone of knee or leg	3
1505 Other excision procedures on knee or leg	3
1506 Reduction of dislocation of knee or patella	2
1507 Closed reduction of fracture of tibial plateau	2
1508 Open reduction of fracture of tibial plateau	3
1509 Closed reduction of fracture of shaft of tibia	2
1510 Open reduction of fracture of shaft of tibia	3
1511 Removal of loose body of knee with repair	2
1512 Arthrodesis of knee	3
1513 Bone graft to tibia	3
1514 Lateral release of knee with repair	2
1515 Resection of femur and tibia with repair	3
1516 Transfer of tendon, ligament or bone of knee or leg	2
1517 Arthroscopic meniscectomy of knee with repair	2
1518 Arthroplasty of knee	3
1519 Arthroplasty of knee with bone graft to femur or tibia	3
1520 Other repair procedures on knee or leg	2
1521 Internal fixation of fracture of femur or tibia with reconstruction	3
1522 Reconstruction procedures on knee	3
1523 Revision of total arthroplasty of knee with bone graft to femur or tibia	3
1524 Other revision procedures on knee	3
1526 Immobilisation procedures on ankle or foot	2
1528 Osteotomy of ankle or foot	3
1529 Other incision procedures on ankle	2
1530 Other incision procedures on foot	2
1531 Arthroscopic excision procedures on ankle	2
1532 Excision of bone of foot	1
1533 Amputation of ankle or foot	2
1534 Other excision procedures on ankle or foot	1
1536 Closed reduction of fracture of calcaneum, talus or metatarsus	2
1537 Closed reduction of fracture of ankle or toe	2
1538 Open reduction of fracture of calcaneum, talus or metatarsus	3
1539 Open reduction of fracture of ankle or toe	3
1540 Closed reduction of dislocation of ankle or foot	2
1541 Open reduction of dislocation of ankle or foot	3
1542 Repair of tendon or ligament of ankle or foot	2

1543 Arthrodesis of ankle, foot or toe	1
1544 Other repair procedures on ankle or foot	1
1545 Reconstruction procedures on ankle or foot	1
1546 Procedures for talipes equinovarus	2
1547 Procedures for hallux valgus or hallux rigidus	2
1548 Procedures for other toe deformities	2
1550 Application of external fixation devices to other musculoskeletal sites	2
1552 Administration of agent into other musculoskeletal sites	1
1553 Aspiration of other musculoskeletal sites	1
1554 Other application, insertion or removal procedures on other musculoskeletal sites	1
1555 Incision procedures on joint of other musculoskeletal sites	2
1556 Incision procedures on bone of other musculoskeletal sites	2
1557 Incision procedures on tendon or tendon sheath of other musculoskeletal sites	2
1558 Incision of fascia of other musculoskeletal sites	2
1559 Incision procedures on other musculoskeletal sites	2
1560 Biopsy of other musculoskeletal sites	2
1561 Excision procedures on joint of other musculoskeletal sites	2
1562 En bloc resection of lesion of soft tissue affecting long bones	3
1563 Other excision procedures on bone of other musculoskeletal sites	2
1564 Excision procedures on tendon of other musculoskeletal sites	1
1565 Excision procedures on muscle of other musculoskeletal sites	1
1566 Excision procedures on other musculoskeletal sites	2
1567 Reduction procedures on other musculoskeletal sites	2
1568 Suture of other musculoskeletal sites	2
1569 Graft of other musculoskeletal sites	2
1570 En bloc resection of lesion of bone with repair of other musculoskeletal sites	3
1571 Other repair procedures on bone of other musculoskeletal sites	2
1572 Other repair procedures on tendon of other musculoskeletal sites	2
1573 Other repair procedures on muscle of other musculoskeletal sites	2
1574 Other repair procedures of other musculoskeletal sites	2
1575 En bloc resection of lesion of soft tissue affecting long bones with reconstruction	4
1576 Other reconstruction procedures on other musculoskeletal sites	3
1578 Limb reconstruction	3

1579 Other procedures for other musculoskeletal sites	2
1603 Removal of foreign body from skin and subcutaneous tissue	1
1604 Other application, insertion or removal procedures on skin and subcutaneous tissue	1
1605 Removal of foreign body from skin and subcutaneous tissue with incision	1
1606 Incision and drainage of skin and subcutaneous tissue	1
1607 Release of skin and subcutaneous tissue	1
1630 Excision of ulcer or sinus of skin and subcutaneous tissue	2
1631 Excision of fingernail	1
1632 Excision of toenail	1
1633 Excision of sweat glands	2
1634 Other excision procedures on skin and subcutaneous tissue	2
1635 Repair of wound of skin and subcutaneous tissue	1
1636 Repair of nail	1
1640 Allograft, xenograft or synthetic skin graft	2
1641 Split skin graft to granulating burn site	2
1642 Other split skin graft to granulating area	2
1643 Split skin graft to burn of specific sites	2
1644 Split skin graft to burn of other sites	2
1645 Other split skin graft, small	2
1646 Other split skin graft, extensive	2
1647 Split skin graft, inlay	2
1648 Full thickness skin graft to burn	2
1649 Other full thickness skin graft	2
1650 Dermis graft	2
1651 Local skin flap, simple and small, single stage	2
1652 Local skin flap, large or complicated, single stage	2
1653 Distant skin flap, direct	2
1654 Distant skin flap, indirect	1
1655 Other repair procedures on skin and subcutaneous tissue	2
1656 Revision of burn scar or contracture	2
1657 Revision of other scar of skin	2
1658 Revision of skin flap	2
1659 Procedures for pilonidal sinus or cyst	2
1660 Other procedures on skin and subcutaneous tissue	2
1661 Insertion, removal or adjustment of tissue expander or implant	2
1662 Excision, eyelid	2
1663 Excision, ear	1
1664 Excision, lip	2
1665 Excision, tongue	2

1666 Liposuction and lipectomy	2
1667 Excision of lymphoedematous tissue	2
1668 Dermofat or fat graft	2
1669 Composite graft	2
1670 Fascia graft	2
1671 Myocutaneous flap	1
1672 Muscle flap	1
1673 Island flap	2
1674 Free flap	1
1675 Facelift and browlift	2
1676 Graft for symblepharon	2
1677 Repair of blepharoptosis	2
1678 Repair of ear	2
1679 Rhinoplasty	2
1680 Other repair of nose	2
1681 Repair of pharynx	2
1682 Contour reconstruction	2
1683 Contour restoration	2
1684 Reconstruction of eyelid and ear	2
1685 Reconstruction of lip or mouth	2
1686 Revision of free flap and associated procedures	2
1687 Revision of other plastic procedures on soft tissue	2
1688 Reoperation to correct previous ptosis repair of eyelid	2
1689 Procedures for cleft lip	2
1690 Procedures for cleft palate	2
1691 Procedures for cleft lip and anterior palate	2
1692 Procedures for facial nerve paralysis	2
1693 Excision of arteriovenous malformation [AVM]	2
1694 Microsurgical repair for restoration of continuity of blood vessel of distal extremity or digit	3
1695 Microsurgical anastomosis of blood vessel	3
1696 Microsurgical graft of blood vessel	3
1697 Fixation of transcutaneous abutment (osseointegration procedure)	2
1698 Implantation of titanium fixture (osseointegration procedure)	2
1699 Resection of mandible	3
1700 Resection of maxilla	3
1701 Resection of other facial bone	3
1702 Genioplasty	3
1703 Osteotomy or ostectomy of zygoma	3
1704 Osteotomy or ostectomy of zygoma with internal fixation	3
1705 Osteotomy or ostectomy of mandible or maxilla	3

1706 Osteotomy or ostectomy of mandible or maxilla with internal fixation	3
1707 Osteotomy or ostectomy of mandible or maxilla, procedures in combination	3
1708 Osteotomy or ostectomy of mandible or maxilla with internal fixation, procedures in combination	3
1709 Midfacial osteotomies	2
1710 Frontal bone advancement	3
1711 Correction of skull deformity	4
1712 Other repair of skull or facial bone	3
1713 Reconstruction of mandible	3
1714 Reconstruction of maxilla	3
1715 Reconstruction of zygoma	3
1716 Reconstruction of orbital cavity	3
1717 Reconstruction of other skull and facial bones	3
1718 Other procedures for craniostenosis	3
Examination procedures on breast	1
Application, insertion or removal procedures on breast	2
Incision procedures on breast	2
Biopsy of breast	2
Excision of lesion of breast	2
Subcutaneous mastectomy	2
Simple mastectomy	3
Other excision procedures on breast	2
Augmentation mammoplasty	3
Reduction mammoplasty	3
Other repair procedures on breast	3
Reconstruction procedures on breast	3
Reconstruction procedures on nipple and areola	2
Procedures involving removal or adjustment of breast prosthesis or tissue expander	2
Other procedures on breast	2

## Data management Plan

### Persistent opioid use and opioid-related harm after hospital admissions for surgery and trauma in New Zealand

Principal investigator	Jiayi Gong School of Pharmacy University of Auckland <a href="mailto:Jgon014@auckland.ac.nz">Jgon014@auckland.ac.nz</a>
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Version: 4 (15/06/2020)

Initial version: v1 (24/04/2020)

Project start date: 01/10/2020

Project end date: ongoing

### Project abstract:

Opioid use has increased exponentially on a global scale for the management of non-cancer related pain. There are wide concerns regarding the contribution of hospitalisation and death related to persistent opioid use leading to misuse of opioids in many western countries such as the United States (US), Canada, United Kingdom (UK), New Zealand (NZ), and Australia. Hospital admissions related to trauma and surgery have been identified to be a contributing factor to increasing opioid use both within NZ and internationally. We aim to find the incidence of persistent opioid use post hospital admissions related to surgery and trauma, and the health outcomes related to persistent opioid use such as hospitalisation and mortality related to opioid use. We also aim to identify predictors that may lead to persistent opioid use and related adverse health outcomes in the NZ population. This is a retrospective population-based cohort study using linked, routinely collected health data for all patients who have had surgery in hospital and those admitted to hospital with trauma in NZ, between 2006 to 2019. Linked data include surgery performed in hospital, emergency department presentation, medication dispensing, comorbidity (M3 index), mortality and other

related demographics factor. We will calculate the crude incidence rates of adverse outcomes related to both persistent and non-persistent opioid use. To compute the rates, we will divide the total number of adverse outcome events by total follow-up time. Additionally, using a multivariable logistic regression model, we will examine the association between potential predictors and persistent opioid use after surgery/trauma. Multivariable Cox regression models will be used to estimate the risk of all-cause mortality, opioid related adverse outcomes, and hospitalisation associated with persistent use of opioids up to one-year post hospital discharge after surgery and trauma for all patients.

## Field of Research (As per Australian and NZ standard research classification)

111503 Clinical Pharmacy and Pharmacy Practice

111706 Epidemiology

110301 Anaesthesiology

110323 Surgery

110305 Emergency Medicine

## Registration details:

ANZCTR: TBC

## Funding Agencies:

Auckland Academic Health Alliance

University of Auckland- Senior Health Research Scholarship

## Ethics and Privacy:

### **Ethics approval:**

The study was exempt from a Health and Disability Ethics Committee (HDEC) review, it was granted ethics approval by the Auckland Regional Ethics Committee (AHREC) with subsequent locality approval from Auckland District Health Board (ADHB)

AHREC approval: AH1159

Locality approval no.: 8753

### **Ethical issues:**

This is a clinical audit study. Only deidentified data will be used in this study with encryption generated by the ministry of health. The requirement for informed consent has been waived, as this is a retrospective database study and no participants will be actively recruited. Ensuring patient and practitioner confidentiality is paramount to our data analysis approach.

### **Data Privacy and Security issues:**

The original dataset will have the patients' National Health Index (NHI) encrypted by the Ministry of Health and at no time will any co-investigators be able to access directly identifiable data. However, there is the possibility of patients been re-identified through the linkage of data from different data sets and the indirect identifiers contained in the values from the datasets. For example, a patient could be identified from a combination of variables including date of birth, demographic data, hospital admission date, relevant procedure code, medication dispensing and possible dates of death or subsequent hospitalisations.

## Relevant policy

The University of Auckland Research Code of Conduct (particularly section 5.4)

National Ethical Standards for Health and Disability Research and Quality Improvement (particularly 12.1-12.17, 12.26-12.39, 18.16-18.22).

Privacy Act 1993 (particularly Part 2)

Health Information Privacy Code 1994

Health Act 1956 (particularly Sections 22C, 22H)

Health (Retention of Health Information) Regulations 1996

Health Information Privacy Code 1994 (particularly Rules (2)(g)(iii) and (1)(e)(iii))

## Responsibilities and resources

### Data management staff:

Jiayi Gong (PhD candidate), Amy Chan (primary supervisor), Alan Merry (Co-supervisor) and Peter Jones (Co-supervisor) take main responsibility for the management and analysis of the data.

### Required resources:

Secure storage managed by the University of Auckland

## Data organisation

### Description of Digital data:

- Deidentified data from National Minimum Dataset (NMDS) related to hospital admissions
- Deidentified data from NMDS related to surgery and procedures
- Deidentified data from National Non-Admitted Patient Collection (NNPAC) related to emergency department admissions
- Deidentified data from Accident Compensation Corporation (ACC) related to emergency department admissions

- Deidentified data from Pharmaceutical collection related to medication dispensing
- Deidentified data from National Health Index (NHI) related socioeconomic and demographic information
- Deidentified data from Primary Health Organisation (PHO) related to PHO enrolment information
- Deidentified data from the Mortality collection related to cause and dates of death

**Description of non-digital data**

- Password to access deidentified data file

**Collection/Creation method**

All data will be requested from the NZ Ministry of Health and be stored in its original form in multiple files on a secured drive at the University of Auckland.

Data linkage will be completed by an experienced professional to be determined and he/she will need to sign a confidentiality agreement.

**Data organisation:**

The server has a main drive where data in active use will be stored.

Directory schematic of drive arrangement

Data:

- Raw
  - Deidentified raw data

Documents:

- Protocol
- Data Management Plan
- Ethics

- AHREC
- Institutional approval

#### Reports:

- Generated and written reports

#### Other relevant subfolders include:

- Vault:
  - Data no longer in use, with much slower read speed
- Archive:
  - Data archive to comply with storage requirements- slowest read speed

#### Data storage and backup

Digital data will be stored on appropriate failure-robust School of Pharmacy, University of Auckland managed storage system. The server will have password protected access, with access only granted to the research team via the University of Auckland UPI. The password will be held by Jiayi Gong (PhD Candidate) and Amy Chan (PhD primary supervisor). Non-digital data will be stored in a locked cabinet in an access-controlled area of the School of Pharmacy. The keys will be kept by Amy Chan and the School of Pharmacy administrative team. Amy Chan is the primary supervisor and co-investigator for this research and she is a senior clinical research fellow at the School of Pharmacy, University of Auckland.

- Any data collected non-digitally e.g. via paper forms will be scanned electronically and stored digitally

## Sharing and Access Control

#### Description of sensitive data

Encrypted patient data, which may allow indirect identifiers to identify patients.

#### Access Control and Security measures

The linked data will be stored in a secure password protected storage site on the University of Auckland server, with no copies made and access restricted to the research team. Linked data may be copied to password protected computers used by investigators for the purpose of analysis. It will be securely deleted as soon as reasonably possible when the assigned task is completed.

#### **Description of accompanying metadata**

A file named readme.md will be stored in each directory describing the directories and files therein (including variables from respective dataset dictionary).

#### **Coverage of Data**

Patients admitted to any hospital in New Zealand, due to surgery or a trauma event and subsequently filled an opioid prescription on discharge. See protocol (pg. 5-6) for inclusion/exclusion criteria.

#### **Temporal extent of data**

01/01/2006 to 01/01/2019

## **Data publication and reporting**

#### **Data ownership:**

Data will be owned by the University, as per the University of Auckland Research Code of Conduct Section 5.4

#### **Data publication**

No approval has been granted by the ethics committee to share research data from the project outside of the research team. The research team may consider publication of metadata.

#### **Data retention period**

Data will be retained for at least 10 years on appropriate University managed storage as per Health Information Privacy Code.

**Method of disposal**

If the data needs to be destroyed, it will be done so securely in concordance with University of Auckland protocols.

**Archiving and preservation Plan**

Standard University of Auckland data preservation policies will be followed