

Supplementary Table 1 Diagnostic codes of shoulder disorders following the Korean Standard Classification of Diseases, 6th revision (KCD-6) adapted from the International Classification of Diseases, 10th revision (ICD-10)

Code	Diagnosis	Number of patients	Total expense [¶]	Days of treatment [†]	Number of visits [‡]	Number of surgeries
M75.*	Shoulder lesions	30,586	300644.7 (262.8)	8.1	6.7	1,957
M75.0	Adhesive capsulitis of shoulder	10,447	173,977 (152.1)	6.3	5.7	267
M75.1	Rotator cuff syndrome	9,689	428,066 (374.2)	8.4	6.1	1,069
M75.2	Bicipital tendinitis	1,338	92,448 (80.8)	3.7	3.6	7
M75.3	Calcific tendinitis of shoulder	2,441	210,008 (183.6)	6.1	5.3	129
M75.4	Impingement syndrome of shoulder	7,328	221,294 (193.4)	5.8	4.6	415
M75.5	Bursitis of shoulder	1,520	110,740 (96.8)	3.9	3.6	15
M75.8	Other shoulder lesion	1,953	130,886 (114.4)	4.0	3.5	39
M75.9	Shoulder lesion, unspecified	2,614	99,784 (87.2)	4.0	3.5	18
S40.*	Superficial injury of shoulder and upper arm	1,895	71024.1 (62.1)	2.2	1.9	27
S41.*	Open wound of shoulder and upper arm	276	142376.2 (124.5)	3.1	2.9	42
S42.*	Fracture of shoulder and upper arm	3,059	983199.8 (859.4)	14.8	11.4	1,354
S43.*	Dislocation, sprain and strain of joints and ligaments of shoulder girdle	12,222	106268.0 (92.9)	3.5	3.2	456
S44.*	Injury of nerves at shoulder and upper arm level	50	417977.6 (365.4)	9.4	8.3	6
S45.*	Injury of blood vessels at shoulder and upper arm level	1	24780.0 (21.7)	2.0	2.0	-
S46.*	Injury of muscle and tendon at shoulder and upper arm level	3,498	655046.9 (572.6)	11.7	8.8	641
S47.*	Crushing injury of shoulder and upper arm	6	297721.7 (260.2)	5.3	4.2	2
S48.*	Traumatic amputation of shoulder and upper arm	5	2280370.0 (1,993.3)	8.6	8.6	2

S49.*	Other and unspecified injuries of shoulder and upper arm	118	228292.0 (199.6)	6.6	4.1	7
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[¶]Displayed in KRW; 1 USD=1,144 KRW (as of October 31st, 2016); approximate USD equivalents are given beneath in brackets

[†]Total days of treatment per patient as indicated in the claims statement which includes drug prescription days without medical treatment.

[‡]Total number of visits or number of hospitalized days per patient as indicated in the claims statement.

Supplementary Table 2 Definition of medical care codes for surgery, injection, and physiotherapy

Code	Code name	Type of care
Surgery		
N0935	Acromioplasty	Acromioplasty
N0936	Acromioplasty and repair of ruptured shoulder rotator cuff, primary repair	
N0937	Acromioplasty and repair of ruptured shoulder rotator cuff, with myoplasty and tendoplasty	Acromioplasty and repair of ruptured shoulder rotator cuff
N0938	Acromioplasty and repair of ruptured shoulder rotator cuff, complex	
N2071	Total replacement arthroplasty, shoulder	
N2076	Complex total replacement arthroplasty, shoulder	Replacement arthroplasty - Total arthroplasty
Injection		
KK010	Subcutaneous or intramuscular injection	Subcutaneous or intramuscular injection
KK090	Intra-articular injection	Intra-articular injection
Physiotherapy		
MM010	Superficial heat therapy	Superficial heat therapy
MM015	Superficial heat therapy (in combination with deep heat therapy on the same day)	
MM020	Deep heat therapy	Deep heat therapy
MM080	Interferential current therapy	Interferential current therapy
MM070	Transcutaneous electrical nerve stimulation	Transcutaneous electrical nerve stimulation
M131	Myofascial trigger point injection therapy	Myofascial trigger point injection therapy
M132	Myofascial trigger point injection therapy (multiple points on the same day)	
MM085	Laser therapy	Laser therapy
MM101	Simple therapeutic exercise	Simple therapeutic exercise
MM102	Therapeutic exercise, complex	Therapeutic exercise, complex
MM103	Therapeutic exercise, isokinetic	Therapeutic exercise, isokinetic

Supplementary Table 3 Total medications, including non-narcotics and narcotics, in adhesive capsulitis of the shoulder, rotator cuff syndrome, and shoulder impingement syndrome as assessed at the 5th ATC level

ATC code	Total						Inpatient						Outpatient					
	ACS		RCS		SIS		ACS		RCS		SIS		ACS		RCS		SIS	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Non-narcotics																		
Aceclofenac	3,517	33.67	3,093	31.92	2,267	30.94	174	37.50	527	36.80	272	39.14	3,428	33.17	2,840	30.25	2,197	30.79
Diclofenac	1,558	14.91	1,645	16.98	1,003	13.69	171	36.85	661	46.16	278	40.00	1,418	13.72	1,076	11.46	782	10.96
Tramadol, combinations	1,490	14.26	1,270	13.11	1,037	14.15	57	12.28	218	15.22	109	15.68	1,451	14.04	1,141	12.16	980	13.74
Tramadol	1,693	16.21	1,327	13.70	764	10.43	104	22.41	518	36.17	192	27.63	1,598	15.46	876	9.33	611	8.56
Loxoprofen sodium hydrate*	1,599	15.31	1,222	12.61	854	11.65	46	9.91	168	11.73	108	15.54	1,564	15.13	1,094	11.65	772	10.82
Talniflumate*	1,563	14.96	1,113	11.49	859	11.72	58	12.50	173	12.08	76	10.94	1,522	14.73	982	10.46	810	11.35
Paracetamol	774	7.41	859	8.87	425	5.80	46	9.91	262	18.30	90	12.95	736	7.12	624	6.65	347	4.86
Zaltoprofen*	436	4.17	393	4.06	349	4.76	13	2.80	51	3.56	32	4.60	428	4.14	362	3.86	334	4.68
Propofol	103	0.99	606	6.25	221	3.02	98	21.12	606	42.32	220	31.65	5	0.05	-	-	1	0.01
Chlorphenesin carbamate*	358	3.43	264	2.72	200	2.73	4	0.86	12	0.84	12	1.73	356	3.44	253	2.70	188	2.63
Celecoxib	172	1.65	464	4.79	168	2.29	7	1.51	110	7.68	8	1.15	168	1.63	401	4.27	164	2.30
Piroxicam	300	2.87	210	2.17	126	1.72	11	2.37	40	2.79	11	1.58	290	2.81	175	1.86	116	1.63
Dexibuprofen	196	1.88	143	1.48	89	1.21	-	-	5	0.35	3	0.43	196	1.90	139	1.48	86	1.21
Ketorolac	65	0.62	246	2.54	79	1.08	34	7.33	221	15.43	70	10.07	31	0.30	25	0.27	10	0.14
Nabumetone	78	0.75	121	1.25	97	1.32	4	0.86	23	1.61	10	1.44	76	0.74	106	1.13	90	1.26
pelubiprofen*	87	0.83	96	0.99	49	0.67	2	0.43	12	0.84	6	0.86	86	0.83	87	0.93	44	0.62
Etodolac	42	0.40	56	0.58	73	1.00	1	0.22	4	0.28	3	0.43	41	0.40	53	0.56	71	1.00
Meloxicam	51	0.49	43	0.44	55	0.75	-	-	6	0.42	2	0.29	51	0.49	37	0.39	53	0.74
Morniflumate	50	0.48	53	0.55	25	0.34	1	0.22	6	0.42	2	0.29	49	0.47	50	0.53	23	0.32
Naproxen	43	0.41	16	0.17	25	0.34	-	-	-	-	1	0.14	43	0.42	16	0.17	24	0.34
Ibuprofen	39	0.37	20	0.21	10	0.14	-	-	4	0.28	2	0.29	39	0.38	16	0.17	8	0.11
Mefenamic acid	30	0.29	25	0.26	9	0.12	1	0.22	8	0.56	3	0.43	29	0.28	17	0.18	7	0.10
Nimesulide	30	0.29	25	0.26	2	0.03	-	-	2	0.14	-	-	30	0.29	23	0.25	2	0.03
Propacetamol	7	0.07	39	0.40	3	0.04	5	1.08	39	2.72	2	0.29	2	0.02	-	-	1	0.01
Proglumetacin	20	0.19	12	0.12	14	0.19	-	-	-	-	-	-	20	0.19	12	0.13	14	0.20
Sulindac	6	0.06	27	0.28	3	0.04	-	-	6	0.42	-	-	6	0.06	24	0.26	3	0.04
Thiopental	-	-	30	0.31	1	0.01	-	-	30	2.09	1	0.14	-	-	-	-	-	-
Cyclobenzaprine	11	0.11	9	0.09	10	0.14	-	-	3	0.21	-	-	11	0.11	6	0.06	10	0.14
Hydroxocobalamin	4	0.04	9	0.09	8	0.11	3	0.65	9	0.63	3	0.43	1	0.01	-	-	5	0.07
Nalbufine	2	0.02	9	0.09	10	0.14	1	0.22	9	0.63	10	1.44	1	0.01	-	-	-	-
Dexamethasone	5	0.05	5	0.05	4	0.05	1	0.22	-	-	1	0.14	4	0.04	5	0.05	3	0.04
Butorphanol	-	-	9	0.09	4	0.05	-	-	9	0.63	4	0.58	-	-	-	-	-	-
Acetylsalicylic acid	2	0.02	7	0.07	2	0.03	-	-	4	0.28	2	0.29	2	0.02	3	0.03	-	-
Lornoxicam	3	0.03	3	0.03	4	0.05	1	0.22	-	-	1	0.14	2	0.02	3	0.03	3	0.04
Ketoprofen, combinations	5	0.05	3	0.03	1	0.01	1	0.22	1	0.07	-	-	4	0.04	2	0.02	1	0.01
Oxaprozin	6	0.06	-	-	-	-	-	-	-	-	-	-	6	0.06	-	-	-	-
Acemetacin	2	0.02	1	0.01	-	-	-	-	-	-	-	-	2	0.02	1	0.01	-	-
Etomidate	1	0.01	1	0.01	-	-	1	0.22	1	0.07	-	-	-	-	-	-	-	-

Ketamine	-	-	2	0.02	-	-	-	-	2	0.14	-	-	-	-	-	-	-
Diclofenac, combinations	1	0.01	-	-	-	-	-	-	-	-	-	-	1	0.01	-	-	-
Salsalate	1	0.01	-	-	-	-	-	-	-	-	-	-	1	0.01	-	-	-
Narcotics																	
Fentanyl	56	0.54	374	3.86	110	1.50	56	12.07	372	25.98	110	15.83	-	-	2	0.02	-
Pethidine	43	0.41	299	3.09	67	0.91	37	7.97	299	20.88	67	9.64	7	0.07	-	-	-
Remifentanyl	22	0.21	299	3.09	50	0.68	22	4.74	299	20.88	50	7.19	-	-	-	-	-
Codeine, combinations excl. psycholeptics	39	0.37	106	1.09	36	0.49	15	3.23	75	5.24	15	2.16	26	0.25	47	0.50	24
Morphine	11	0.11	60	0.62	18	0.25	10	2.16	55	3.84	16	2.30	2	0.02	5	0.05	2
Oxycodone	14	0.13	53	0.55	3	0.04	9	1.94	51	3.56	2	0.29	5	0.05	3	0.03	1
Hydromorphone	4	0.04	36	0.37	7	0.10	2	0.43	34	2.37	5	0.72	2	0.02	2	0.02	2
Codeine	2	0.02	8	0.08	5	0.07	-	-	5	0.35	4	0.58	2	0.02	7	0.07	1
Alfentanil	1	0.01	9	0.09	-	-	1	0.22	9	0.63	-	-	-	-	-	-	-

*Chemical name of medicine with no corresponding 5th level ATC codes

ATC, anatomical therapeutic chemical; ACS, adhesive capsulitis of the shoulder; RCS, rotator cuff syndrome; SIS, shoulder impingement syndrome