RESEARCH ARTICLE

Medicare Compensation Rates for Hand and Shoulder/Elbow Surgery by Operative Time: A Comparative Analysis

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Abstract

Background: There is a high demand for shoulder/elbow experience among hand-fellowship trainees due to the perception that this exposure will improve their professional "marketability" in a subspecialty they perceive as having higher compensation.

Methods: Using Medicare data, we investigated the most common surgeries from these fields and determined which have the highest compensation [work relative value unit (wRVU), payment, charge, and reimbursement (payment-to-charge percentage] rates per operative time. We then determined whether the overall non-weighted and weighted (by surgical frequency/volume) compensation rates of shoulder/elbow surgery are greater than that of hand surgery.

Results: Among 30 shoulder/elbow procedures, arthroplasty and arthroscopic rotator cuff repair had the highest payment and wRVU assignments. Among 83 hand procedures, upper-extremity flaps, carpal stabilization, distal radius open reduction internal fixation (ORIF), both-bone ORIF, and interposition arthroplasty had the greatest wRVU assignments with correspondingly high payments. A non-weighted comparison of the two subspecialties showed that hand surgery has a higher mean payment/min ($10.46±3.22 vs. $7.52±2.89), charge/min ($51.02±17.11 vs. $41.96±11.32), and reimbursement (21±4.7% vs. 18±5.1%) compared with shoulder/elbow surgery (all, *P<0.01*). Non-weighted mean wRVUs/min were similar (0.12±0.03 vs. 0.13±0.03, *P = 0.12*). When weighted by procedure frequency, hand surgery had greater wRVUs/min (0.15±0.036 vs. 0.13±0.032), payments/min ($14.17±4.50 vs. $6.97±2.26), charges/min ($75.68±30.47 vs. $42.61±7.83), and reimbursement (20±5.0% vs. 17±6.0%) (all, *P<0.01*).

Conclusion: According to Medicare compensation, and when weighted by procedure frequency, hand procedures are associated with greater overall mean wRVUs/min, payments/min, charges/min, and reimbursement compared with shoulder and elbow procedures. Hand-surgery fellowship applicants should be aware that subspecialty compensation is complex in nature but should seek shoulder/elbow elective experience to acquire an additional surgical skill-set as opposed to primarily monetary reason.

Level of evidence: III

Keywords: Centers for medicare and medicaid services, Compensation, Hand surgery, Payment, Reimbursement, Shoulder/elbow surgery, wRVU

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Introduction

In an editorial published in 2011, Jupiter discussed the potential advantages of a comprehensive, two-year hand and upper extremity fellowship (1). He wrote that hand surgery fellowship applicants may believe that elective shoulder/elbow experience can expand their future surgical practices and make them more marketable. Indeed, a survey showed that 58% of hand fellowship applicants believed that exposure to shoulder and elbow surgery would be beneficial, and 24% believed it should be require (2). In another survey, 48% of fellowship-trained hand surgeons sought shoulder and elbow training during their fellowship, and 60% would have considered an expanded two-year fellowship (3). Currently, 58 of the 81 fellowship programs listed by the American Society for Surgery of the Hand offer dedicated shoulder/elbow as part of the fellowship or as an elective. Despite this, the two-year fellowship is not mainstream, and those who pursue a second, distinct fellowship in shoulder/elbow training remain the minority (4).

In the face of declining orthopaedic surgery reimbursement rates during the past two decades, providers and hospital systems are adapting their practices to reach and maintain revenue goals (5). We hypothesized that a motivation for the increased demand for shoulder/elbow experience and the presumption of greater "marketability" may be a belief that compensation rates are higher for shoulder/elbow procedures than for hand procedures. Our primary aim was to determine whether the most common surgical shoulder/elbow procedures have higher compensation rates than the most common hand procedures by analyzing the Centers for Medicare & Medicaid Services (CMS) published work relative value unit (wRVUs) assignments, estimated operative times, physician charges, and Medicare payments. Our secondary aim was to determine which types of surgeries within each of the two subspecialites are compensated at a higher rate.

Materials and Methods

We collected the most recently published CMS data (2018 fiscal year) on wRVUs, payments (average allowed Medicare payment and submitted charges), and estimated operative times (from skin incision to closure) for the most common shoulder/elbow and hand procedures (6-8). These data were in aggregate of inpatient and outpatient samples. We used the most recently published CMS data for annual procedure volumes (2015 fiscal year) (7). We analyzed isolated Current Procedural Terminology (CPT) codes tracked by the Accreditation Council for Graduate Medical Education, performed in a facility (non-office) setting with volumes >1,000. After excluding CPT codes uniformly associated with orthopaedic shoulder trauma, we identified 30 shoulder/elbow CPT codes. To identify the most common hand procedures, we included CPT codes for any orthopaedic trauma distal to the elbow and any soft tissue procedures distal to the shoulder, yielding 83 CPT codes.

We divided wRVUs, payments, and charges by operative times to calculate compensation per minute for each procedure. Reimbursement was calculated as a percentage from dividing payment by submitted charges. Linear regression was used to determine the strength of correlations between payments/min and wRVUs/min. Compensation rates were evaluated independently of patient factors, such as comorbidities or any CPT modifier (e.g., 22 modifier for case complexity). Mean wRVU/min, payment/min, charge/min, and reimbursement rates for all surgeries within the two subspecialties were calculated. Weighted means of these four values for the two fields were calculated according to the volume and frequency of each procedure divided by the total volume of all procedures performed [Equation 1]. Non-weighted and weighted Student t-tests were used to determine whether there was a difference in compensation between the two fields.

Equation 1. Weighted Payment/min for 83 Hand Procedures.

$$= Payment/min_{CTR}\frac{No.CTR\ Proc.}{Total\ No.Hand\ Proc.} + Payment/min_{TFR}\frac{No.TFR\ Proc.}{Total\ No.Hand\ Proc.} + Etc.$$

Where CTR = carpal tunnel release, TFR = trigger finger release, Proc = procedure. In this equation, more commonly performed procedures will affect the mean more than less commonly performed procedures. This formula was used for all other weighted mean compensation values for both hand and shoulder/elbow surgery.

Results

Among all 30 shoulder/elbow procedures, shoulder and elbow arthroplasty and arthroscopic rotator cuff repair had the highest payments and wRVU assignments [Appendix A]. Open and arthroscopic biceps tenodesis/tenotomy and epicondyle debridement had the highest rate of wRVUs/min [Appendix B]. Payments/min and wRVUs/min were moderately correlated (r=0.48).

Among the 83 hand and upper extremity procedure codes, upper extremity flaps, carpal stabilization procedures, distal radius open reduction and internal fixation (ORIF), both-bone ORIF, and interposition arthroplasty had the greatest wRVU assignments and correspondingly high payments [Appendix C]. Open carpal tunnel release, thumb/finger phalangeal amputation, and percutaneous distal radius fixation had the highest wRVUs/min [(Appendix D]. There was stronger correlation between payments/min and wRVUs/min (r=0.68) than for shoulder/elbow procedures.

A non-weighted comparison between the 2 fields showed that hand surgery has a higher mean payment/min ($10 vs. $7.5), charge/min ($51 vs. $42), and reimbursement rate (21% vs. 18%) (all, *P<0.01*; Table 1) than does shoulder/elbow surgery. Non-weighted mean wRVUs/min were similar for the two fields (0.12 vs. 0.13, *P=0.12*). When weighted by frequency of procedure, hand procedures had greater mean wRVUs/min (0.15 vs. 0.13), payment/min ($14 vs. $7), charge/min ($76 vs. $44), and reimbursement rate (20% vs. 17%) than does shoulder/elbow procedures (all, *P<0.01*).

Table 1. Non-weighted and Weighted Compensation Rates by Surgical Field

Variable	Non-weighted Mean ± SD			Weighted Mean ± SD		
	Hand	Shoulder/Elbow	*P*	Hand	Shoulder/Elbow	*P*
wRVU/min	0.12 ± 0.03	0.13 ± 0.03	0.12	0.15 ± 0.04	0.13 ± 0.03	<0.01
Payment/min ($)	10.46 ± 3.22	7.52 ± 2.89	<0.01	14.17 ± 4.50	6.97 ± 2.27	<0.01
Charge/min ($)	51.02 ± 17.11	41.96 ± 11.32	<0.01	75.68 ± 30.47	42.61 ± 7.83	<0.01
Reimbursement rate (%)	21 ± 4.7	18 ± 5.1	<0.01	20 ± 5.0	17 ± 6.0	<0.01

SD, standard deviation; wRVU, work relative value unit.

Discussion

We found that weighted CMS compensation/min for hand surgery are higher than those for shoulder/elbow surgery, contrary to our hypothesis. Although shoulder arthroplasty and arthroscopic procedures have high wRVU assignments, when measured by operative time, their wRVUs/min are lower than those of the average hand procedure. In addition, wRVUs/min and payment/min were less strongly correlated for shoulder/elbow procedures than for hand procedures. Reimbursement rates for both fields were low (≤21%). Based on these findings, hand fellowship applicants should pursue shoulder/elbow experience for skill-set diversity as opposed to monetary reasons. These findings may also appeal to practice managers in the creation of equitable pay structures, recruitment of upper extremity surgeons, and facility investment.

In his editorial, Jupiter1 commented on the increasingly diluted surgical experience during fellowships that he attributed to an increase in the number of surgical rotations with multiple attending physicians in programs that are actively expanding their faculty. This problem is compounded when trainees prioritize elective experience in shoulder/elbow procedures during a one-year hand fellowship. With an accurate understanding of compensation by surgical area, applicants may become more inclined to focus exclusively on hand surgery during their fellowships and to seek an additional dedicated year (or 6 months) of shoulder/elbow training if desired. Alternatively, if trainees seek training for a single procedure (e.g., shoulder arthroplasty), fellowship directors could potentially design electives that provide in-depth experience in a single procedure, as opposed to a broader (and shallower) shoulder/elbow experience. This may be a favorable compromise, considering that most hand fellowship directors do not view shoulder experience as "essential" during fellowship (9).

Other studies analyzing the cost-benefit of hand versus shoulder/elbow fellowship training have shown mixed results. One study showed that, compared with practicing as an orthopaedic generalist, practicing as a fellowship-trained shoulder/elbow surgeon decreases net present value by $4,539, compared with a decrease of $366,300 when practicing as a fellowship-trained hand surgeon over an entire career of earning potential (10). Another analysis showed that both hand and shoulder/elbow fellowship training were associated with increases in net present value of 6.7% and 9.4%, respectively, over a lifetime of earning potential (11). The differences in earning potential projections between these two studies are likely the result of different methods and sources for wage data. Our study suggests that, when factoring in surgical time, hand surgeons have the potential for higher compensation, with all other variables held constant. The contrasting findings between our analysis and those of the two studies referenced above may be attributable to lifestyle and surgical practice preferences between the two specialties as well as other revenue streams, such as microvascular call and institutional ownership not included in our analysis.

There are limitations to our study. Average compensation rates may differ if a surgeon focuses on certain procedures, such as shoulder arthroplasty and arthroscopy, or has an exclusively outpatient surgical practice. However, clinical practices with this type of narrow focus are rare. We analyzed CPT codes in isolation only when, in clinical practice, multiple codes may be billed per surgery. However, this limitation is limited by Medicare's multiple procedure rule, where professional fees are reimbursed at decreasing rates for each additional CPT code per surgery. This limitation also becomes less pertinent as CMS continues to bundle more procedures into a single code. For example, prior to 2016, a surgeon could bill for a SLAP repair and rotator cuff debridement. Currently, arthroscopic debridement is included in most arthroscopic procedures without additional reimbursement. Many forms of revenue were not considered in this study, such as patient volume in clinic, nonoperative procedures (e.g., therapeutic and diagnostic injections), imaging, durable medical equipment, and physical/occupational therapy. Given the similarities between the two fields, these factors are unlikely to substantially affect our compensation analyses. Our analysis did not include all procedures performed in each subspecialty, and a few procedures are performed in both specialties. Despite this, we have captured most surgical procedures performed in each subspecialty, and the outliers are likely performed too infrequently to substantially affect

average compensation rates. Operative times vary by surgeon and practice, which may affect compensation rates. WRVUs include physician work during the postoperative global care period. However, variations of postoperative care for each procedure and between the two subspecialties are unlikely to change our results. Finally, the payment mix in surgical practices can vary and these findings are less applicable to primarily non-Medicare populations.

According to Medicare compensation, and when weighted by procedure frequency, isolated hand procedures are associated with greater overall mean wRVUs/min, payments/min, charges/min, and reimbursement compared with shoulder and elbow procedures. Hand-surgery fellowship applicants should be aware that subspecialty compensation is complex in nature but should seek shoulder/elbow elective experience to acquire an additional surgical skill-set as opposed to primarily monetary reason.

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Appendix A. wRVUs, Payments, Operative Times, and Charges for 30 of the Most Common Shoulder/Elbow CPT Codes, According to Centers for Medicare and Medicaid Services

CPT Code	Procedure	wRVUs	Operative Time, min	Submitted Charges, $	Payments, $	No. of Procedures
23474	TSA revision (humerus and glenoid)	27.21	205	4,738	1,196	3,401
23473	TSA revision (humerus or glenoid)	25	180	4,440	1,064	1,778
23472	TSA	22.13	140	4,392	1,014	68,977
24363	Total elbow arthroplasty	22	140	4,737	1,156	1,025
23470	Hemiarthroplasty	17.89	113	3,525	855	4,648
29827	SA: rotator cuff repair	15.59	120	4,578	1,060	114,023
29806	SA: capsulorrhaphy	15.14	100	5,097	1,252	2,144
29807	SA: SLAP repair	14.67	90	4,793	987	4,290
23420	Rotator cuff reconstruction, complete	13.54	120	3,599	807	6,740
29828	SA: biceps tenodesis	13.16	75	3,802	726	23,551
23412	Rotator cuff repair, chronic (open)	11.93	100	4,020	785	28,734
23410	Rotator cuff repair, acute (open)	11.39	90	3,628	745	7,047
24342	Biceps/triceps tendon rupture reinsertion	10.86	101	3,500	843	2,914
23440	Biceps tendon resection	10.64	62	2,688	370	2,691
23430	Tenodesis, biceps	10.17	60	2,861	426	25,312
23020	Capsular contracture release	9.36	81	1,800	264	1,982
24343	Lateral collateral ligament repair	9.16	90	2,613	435	1,029
29824	SA: distal claviculectomy	8.98	60	3,159	537	72,833
23405	Tenotomy, shoulder area (single)	8.54	47	2,173	328	3,900
29823	SA: debridement, extensive	8.36	84	3,229	496	45,835
29821	SA: synovectomy, complete	7.89	82	3,034	305	3,238
29825	SA: adhesion lysis with or without manipulation	7.79	76	3,255	424	5,077
29819	SA: foreign body removal	7.79	61	3,148	509	2,285
23130	Acromioplasty with or without coracoacromial ligament release	7.77	66	3,101	575	3,651
29822	SA: debridement, limited	7.6	69	2,847	300	26,064
23120	Claviculectomy, partial	7.39	45	2,428	342	14,103
29820	SA: synovectomy, partial	7.21	63	3,018	321	1,613
24358	Tenotomy, elbow, debridement (open)	6.66	40	2,931	694	1,153
29826	SA: subacromial decompression	3	40	1,886	133	111,924
23700	Shoulder MUA	2.57	25	1,364	267	4,812

*Procedures are sorted by descending wRVU assignment.
CMS = Centers for Medicare and Medicaid Services; CPT = Current Procedural Terminology; MUA = manipulation under anesthesia; SA = shoulder arthroscopy; SLAP = superior labrum anterior and posterior; TSA = total shoulder arthroplasty; wRVU = work relative value unit.

Appendix B. wRVUs, Payments, Operative Time, and Charges for 30 of the Most Common Shoulder/Elbow CPT Codes, According to Centers for Medicare and Medicaid Services

CPT Code	Procedure	wRVUs/min	Payments ($/min)	Charges ($/min)	Reimbursement Rate, %
23405	Tenotomy, shoulder area (single)	0.18	6.99	46.22	15

Appendix B. Continued					
29828	SA: biceps tenodesis	0.18	9.69	50.70	19
23440	Biceps tendon resection	0.17	5.96	43.36	14
23430	Tenodesis, biceps	0.17	7.09	47.68	15
24358	Tenotomy, elbow, debridement (open)	0.17	17.36	73.28	24
23120	Claviculectomy, partial	0.16	7.60	53.97	14
29807	SA: SLAP repair	0.16	10.97	53.25	21
23470	Hemiarthroplasty	0.16	7.56	31.20	24
23472	TSA	0.16	7.24	31.37	23
24363	Total elbow arthroplasty	0.16	8.26	33.84	24
29806	SA: capsulorrhaphy	0.15	12.52	50.97	25
29824	SA: distal claviculectomy	0.15	8.95	52.64	17
23473	TSA revision (humerus or glenoid)	0.14	5.91	24.66	24
23474	TSA revision (humerus and glenoid)	0.13	5.84	23.11	25
29827	SA: rotator cuff repair	0.13	8.83	38.15	23
29819	SA: foreign body removal	0.13	6.94	53.37	13
23410	Rotator cuff repair, acute (open)	0.13	8.28	40.31	21
23412	Rotator cuff repair, chronic (open)	0.12	7.85	40.20	20
23130	Acromioplasty with or without coracoacromial ligament release	0.12	8.72	46.99	19
29820	SA: synovectomy, partial	0.11	5.10	47.91	11
23420	Rotator cuff reconstruction, complete	0.11	6.72	29.99	22
29822	SA: debridement, limited	0.11	4.34	41.26	11
24342	Biceps/triceps tendon rupture reinsertion	0.11	8.35	34.66	24
23700	Shoulder MUA	0.10	10.66	54.55	20
29825	SA: adhesion lysis with or without manipulation	0.10	6.70	41.41	16
24343	Lateral collateral ligament repair	0.10	4.83	29.03	17
29823	SA: debridement, extensive	0.10	5.90	38.44	15
29821	SA: synovectomy, complete	0.10	3.72	37.00	10
29826	SA: subacromial decompression	0.08	3.32	47.15	7
23020	Capsular contracture release	0.12	3.26	22.22	15

*Procedures are sorted by descending wRVUs/min.
CMS = Centers for Medicare and Medicaid Services; CPT = Current Procedural Terminology; MUA = manipulation under anesthesia; SA = shoulder arthroscopy; SLAP = superior labrum anterior and posterior; TSA = total shoulder arthroplasty; wRVU = work relative value unit.

Appendix C. wRVUs, Payments, Operative Times, and Charges for 83 of the Most Common Procedure CPT Codes According to Centers for Medicare and Medicaid Services (2015).						
CPT Code	**Procedure***	**wRVUs**	**Operative Time, min**	**Submitted Charges, $**	**Payments, $**	**No. of Proc=edures**
15736	Muscle flap, upper extremity	17.04	150	$4,004	$994	1,583
25609	Distal radius IA (>3 fragments) ORIF	14.38	120	$4,043	$1,286	21,878
25320	Carpal stabilization	12.75	120	$3,724	$988	1,180
25575	Radial and ulnar shaft ORIF	12.29	90	$2,719	$798	1,336

Appendix C. Continued						
25447	Arthroplasty, interposition, IC or CMC	11.14	100	$3,906	$989	29,021
25608	Distal radius IA (2 fragments) ORIF	11.07	90	$3,529	$1,154	10,229
26123	Fasciectomy, partial palmar, PIP release	10.88	120	$3,861	$962	12,522
25115	Excision of bursa, flexor tendons, wrist	10.09	90	$3,410	$732	4,802
24666	Radial head or neck ORIF	9.86	85	$2,582	$720	1,236
26746	MCPJ or IPJ ORIF	9.80	83	$3,044	$739	1,207
25825	Arthrodesis, wrist, with autograft	9.69	103	$4,338	$1,194	1,219
25607	Distal radius EA ORIF	9.56	60	$3,139	$1,040	13,066
26356	Repair flexor tendon (zone 2)	9.56	60	$3,914	$891	1,454
24341	Tendon/muscle repair upper arm/elbow	9.49	90	$3,063	$731	1,219
24359	Epicondyle debridement w/ tendon repair	8.98	60	$3,353	$826	1,749
24685	Proximal ulna ORIF	8.37	60	$2,397	$587	9,065
25606	Distal radius CRPP	8.31	45	$2,376	$681	3,971
25215	Proximal row carpectomy	8.14	86	$2,916	$627	1,751
26531	Arthroplasty MCPJ	8.13	62	$2,819	$502	2,838
25310	Tendon transplant/transfer, forearm/wrist	8.08	60	$3,134	$406	11,830
25260	Tendon/muscle repair forearm/wrist	8.04	50	$2,808	$450	1,153
25545	Ulna shaft ORIF	7.94	60	$2,218	$481	1,802
26910	Metacarpal ray amputation	7.79	88	$2,362	$637	1,409
26121	Fasciectomy, palm only	7.73	72	$3,446	$728	2,753
24305	Tendon lengthening, upper arm/elbow	7.62	63	$2,425	$532	1,079
25116	Excision of bursa, wrist/forearm	7.56	60	$3,000	$561	1,391
26735	Phalanx shaft (proximal or middle) ORIF	7.42	60	$2,523	$593	1,932
25280	Lengthening/shortening tendon, forearm/wrist	7.39	53	$2,581	$398	1,678
64718	Ulnar nerve decompression/transposition, elbow	7.26	73	$2,757	$529	30,168
26850	Arthrodesis, MCP	7.14	72	$2,771	$557	1,878
26615	Metacarpal ORIF	7.07	45	$3,006	$825	2,548
26480	Tendon transfer, CMC area or dorsal hand	6.90	60	$3,305	$479	13,601
29846	Arthroscopy, wrist, TFCC repair/excision	6.89	72	$3,532	$566	2,181
25076	Excision tumor, forearm/wrist	6.74	45	$2,192	$482	1,087
26116	Excision, hand/finger, subfascial, <1.5 cm	6.74	45	$2,146	$525	4,468
25295	Tenolysis, forearm/wrist	6.72	48	$2,414	$384	2,295
26540	Collateral ligament repair MCPJ or IPJ	6.60	54	$2,962	$533	1,731
26536	Arthroplasty IPJ	6.56	65	$3,602	$806	1,763
26145	Tenosynovectomy, flexor tendon, palm/finger	6.49	47	$2,482	$412	9,139
26952	Amputation thumb/finger phalanx, w/ local flap	6.48	43	$2,555	$548	2,086
29848	Carpal tunnel release, endoscopic	6.39	45	$3,742	$713	44,295
64702	Neuroplasty, digital	6.26	50	$2,221	$369	1,247
25210	Carpectomy, single bone	6.12	53	$2,104	$401	3,093
25020	Decompression fasciotomy forearm/wrist	6.06	54	$3,970	$730	1,408
26951	Amputation thumb/finger phalanx, direct closure	6.04	30	$2,000	$548	8,011

Appendix C. Continued						
26437	Realignment of extensor tendon, hand	5.99	51	$2,508	$444	2,447
23071	Shoulder, subcutaneous tumor, excision	5.91	45	$1,680	$462	2,163
25071	Forearm/wrist, subcutaneous tumor, excision, <3cm	5.91	45	$2,100	$465	1,677
26765	Distal phalanx ORIF	5.86	45	$2,250	$511	1,506
26045	Fasciotomy, palmar (Dupuytren's), open	5.73	75	$2,579	$565	1,093
24071	Upper arm/elbow, subcutaneous tumor, excision	5.70	45	$1,819	$442	2,624
26608	Metacarpal CRPP	5.55	38	$2,232	$513	1,640
26525	Capsulectomy/capsulotomy IPJ	5.50	44	$2,559	$479	2,044
26593	Release, intrinsic muscles	5.50	68	$2,602	$350	1,234
26520	Capsulectomy/capsulotomy MCPJ	5.47	45	$2,598	$432	1,033
26236	Partial excision, distal phalanx	5.46	36	$2,014	$393	1,124
25290	Tenotomy, forearm/wrist	5.43	35	$2,352	$337	2,994
26111	Excision, hand/finger, subcutaneous, >1.5 cm	5.42	40	$2,350	$531	1,887
26727	Phalanx percutaneous pinning	5.42	47	$2,486	$542	2,896
25028	I&D, forearm/wrist, deep abscess/hematoma	5.39	35	$1,503	$476	1,911
26180	Tendon excision, digital	5.35	42	$2,261	$381	1,032
25240	Excision distal ulna (Darrach)	5.31	46	$2,570	$435	1,655
26440	Tenolysis, flexor tendon, palm/finger	5.16	43	$2,489	$453	2,988
26020	Drainage of tendon sheath, digit/palm	5.08	40	$1,571	$367	2,215
64719	Ulnar nerve decompression/transposition, wrist	4.97	56	$2,223	$285	3,477
64721	Carpal tunnel release, open	4.97	25	$2,463	$484	156,623
26860	Arthrodesis, IP	4.88	45	$2,957	$686	5,285
26410	Extensor tendon hand repair	4.77	43	$2,222	$413	1,629
25118	Synovectomy, extensor, wrist	4.51	40	$2,522	$528	2,627
26080	Arthrotomy, IPJ	4.47	34	$1,844	$365	2,079
26418	Extensor tendon finger repair	4.47	39	$2,411	$437	2,804
26445	Tenolysis extensor tendon, hand or finger	4.45	37	$2,465	$383	2,038
25075	Forearm/wrist, subcutaneous tumor, excision, >3cm	3.96	30	$1,662	$307	2,963
24105	Excision of olecranon bursa	3.78	35	$1,939	$431	5,708
26160	Excision of lesion of tendon sheath/capsule	3.57	20	$2,340	$388	20,691
25000	(Tendon sheath incision (De Quervain's	3.55	33	$2,286	$432	12,383
25111	Excision of ganglion, wrist	3.53	41	$2,165	$432	8,498
23030	Abscess drainage shoulder	3.47	36	$1,173	$238	1,139
26040	Fasciotomy, palmar (Dupuytren's), percutaneous	3.46	33	$2,947	$397	1,477
26055	(Tendon sheath incision (trigger finger	3.11	20	$2,310	$331	117,302
23930	I&D upper arm/elbow, deep abscess	2.99	31	$972	$197	1,836
26011	Drainage of finger abscess, complicated	2.24	29	$1,122	$176	2,472
26010	Drainage of finger abscess, simple	1.59	17	$656	$126	2,969

*Procedures are listed by descending wRVU assignment.
CMC = carpometacarpal; CMS = Centers for Medicare and Medicaid Services; CPT = Current Procedural Terminology; CRPP = closed reduction percutaneous pinning; EA = extra-articular; IA = intra-articular, I&D = incision and debridement; IC = intercarpal; IPJ = interphalangeal joint; MCPJ = metacarpophalangeal joint; ORIF = open reduction and internal fixation, PIP = proximal interphalangeal; TFCC = triangular fibrocartilage complex.

Appendix D. wRVUs, Payments, Operative Times, and Charges for 83 of the Most Common Hand Procedure CPT Codes According to Centers for Medicare and Medicaid Services (2015).

CPT Code	Procedure*	wRVUs/min	Payment ($/min)	Charge ($/min)	Reimbursement Rate (%)
26951	Amputation thumb/finger phalanx, direct closure	0.20	18.27	66.66	27
64721	Carpal tunnel release, open	0.20	19.38	98.52	20
25606	Distal radius CRPP	0.18	15.12	52.80	29
26160	Excision of lesion of tendon sheath/capsule	0.18	19.38	117.01	17
25260	Tendon/muscle repair forearm/wrist	0.16	9.01	56.16	16
25607	Distal radius EA ORIF	0.16	17.33	52.32	33
26356	Repair flexor tendon (zone 2)	0.16	14.85	65.23	23
26615	Metacarpal ORIF	0.16	18.33	66.81	27
26055	Tendon sheath incision (trigger finger)	0.16	16.55	115.52	14
25290	Tenotomy, forearm/wrist	0.16	9.64	67.21	14
25028	I&D, forearm/wrist, deep abscess/hematoma	0.15	13.61	42.95	32
26236	Partial excision, distal phalanx	0.15	10.91	55.94	19
26952	Amputation thumb/finger phalanx, w/ local flap	0.15	12.75	59.41	21
26116	Excision, hand/finger, subfascial, <1.5 cm	0.15	11.67	47.68	24
25076	Excision tumor, forearm/wrist	0.15	10.71	48.71	22
24359	Epicondyle debridement w/ tendon repair	0.15	13.77	55.88	25
26608	Metacarpal CRPP	0.15	13.50	58.74	23
29848	Carpal tunnel release, endoscopic	0.14	15.84	83.15	19
25295	Tenolysis, forearm/wrist	0.14	8.01	50.30	16
24685	Proximal ulna ORIF	0.14	9.79	39.95	24
25280	Lengthening/shortening tendon, forearm/wrist	0.14	7.52	48.69	15
26145	Tenosynovectomy, flexor tendon, palm/finger	0.14	8.76	52.82	17
25575	Radial and ulnar shaft ORIF	0.14	8.86	30.21	29
26111	Excision, hand/finger, subcutaneous, >1.5 cm	0.14	13.29	58.74	23
25310	Tendon transplant/transfer, forearm/wrist	0.13	6.77	52.23	13
25545	Ulna shaft ORIF	0.13	8.01	36.97	22
25075	Forearm/wrist, subcutaneous tumor, excision, >3cm	0.13	10.23	55.39	18
26080	Arthrotomy, IPJ	0.13	10.74	54.23	20
25071	Forearm/wrist, subcutaneous tumor, excision, <3cm	0.13	10.33	46.68	22
23071	Shoulder, subcutaneous tumor, excision	0.13	10.28	37.33	28
26531	Arthroplasty MCPJ	0.13	8.10	45.47	18
26765	Distal phalanx ORIF	0.13	11.36	49.99	23
26180	Tendon excision, digital	0.13	9.06	53.83	17
26020	Drainage of tendon sheath, digit/palm	0.13	9.17	39.27	23
24071	Upper arm/elbow, subcutaneous tumor, excision	0.13	9.82	40.42	24
25116	Excision of bursa, wrist/forearm	0.13	9.35	49.99	19
64702	Neuroplasty, digital	0.13	7.38	44.43	17
26525	Capsulectomy/capsulotomy IPJ	0.13	10.89	58.15	19
26735	Phalanx shaft (proximal or middle) ORIF	0.12	9.88	42.04	23

Appendix D. Continued					
25608	Distal radius IA (2 fragments) ORIF	0.12	12.83	39.21	33
26540	Collateral ligament repair MCPJ or IPJ	0.12	9.87	54.86	18
26520	Capsulectomy/capsulotomy MCPJ	0.12	9.59	57.72	17
24305	Tendon lengthening, upper arm/elbow	0.12	8.45	38.49	22
26445	Tenolysis extensor tendon, hand or finger	0.12	10.34	66.63	16
26440	Tenolysis, flexor tendon, palm/finger	0.12	10.54	57.89	18
25609	Distal radius IA (>3 fragments) ORIF	0.12	10.72	33.69	32
26746	MCPJ or IPJ ORIF	0.12	8.90	36.68	24
26437	Realignment of extensor tendon, hand	0.12	8.71	49.18	18
24666	Radial head or neck ORIF	0.12	8.47	30.38	28
25210	Carpectomy, single bone	0.12	7.56	39.70	19
25240	Excision distal ulna (Darrach)	0.12	9.45	55.87	17
26727	Phalanx percutaneous pinning	0.12	11.53	52.89	22
26480	Tendon transfer, CMC area or dorsal hand	0.12	7.98	55.09	14
26418	Extensor tendon finger repair	0.11	11.19	61.83	18
15736	Muscle flap, upper extremity	0.11	6.62	26.69	25
25118	Synovectomy, extensor, wrist	0.11	13.19	63.06	21
25020	Decompression fasciotomy forearm/wrist	0.11	13.53	73.51	18
25115	Excision of bursa, flexor tendons, wrist	0.11	8.13	37.89	21
25447	Arthroplasty, interposition, IC or CMC	0.11	9.89	39.06	25
26410	Extensor tendon hand repair	0.11	9.61	51.68	19
26860	Arthrodesis, IP	0.11	15.24	65.72	23
24105	Excision of olecranon bursa	0.11	12.31	55.41	22
25000	Tendon sheath incision (De Quervain's)	0.11	13.09	69.26	19
26121	Fasciectomy, palm only	0.11	10.11	47.86	21
25320	Carpal stabilization	0.11	8.23	31.03	27
24341	Tendon/muscle repair upper arm/elbow	0.11	8.12	34.04	24
26040	Fasciotomy, palmar (Dupuytren's), percutaneous	0.10	12.04	89.30	13
26536	Arthroplasty IPJ	0.10	12.40	55.42	22
64718	Ulnar nerve decompression/transposition, elbow	0.10	7.24	37.77	19
26850	Arthrodesis, MCPJ	0.10	7.73	38.49	20
23930	I&D upper arm/elbow, deep abscess	0.10	6.37	31.36	20
23030	Abscess drainage shoulder	0.10	6.61	32.59	20
29846	Arthroscopy, wrist, TFCC repair/excision	0.10	7.86	49.05	16
25215	Proximal row carpectomy	0.09	7.29	33.91	21
25825	Arthrodesis, wrist, with autograft	0.09	11.59	42.11	28
26010	Drainage of finger abscess, simple	0.09	7.41	38.58	19
26123	Fasciectomy, partial palmar, PIP release	0.09	8.01	32.17	25
64719	Ulnar nerve decompression/transposition, wrist	0.09	5.08	39.70	13
26910	Metacarpal ray amputation	0.09	7.24	26.84	27
25111	Excision of ganglion, wrist	0.09	10.53	52.79	20
26593	Release, intrinsic muscles	0.08	5.14	38.27	13

Appendix D. Continued					
26011	Drainage of finger abscess, complicated	0.08	6.08	38.69	16
26045	Fasciotomy, palmar (Dupuytren's), open	0.08	7.53	34.39	22

* Procedures are listed by descending wRVUs/min.

CMC = carpometacarpal; CMS = Centers for Medicare and Medicaid Services; CPT = Current Procedural Terminology; CRPP = closed reduction percutaneous pinning; EA = extra-articular; IA = intra-articular, I&D = incision and debridement; IC = intercarpal; IPJ = interphalangeal joint; MCPJ = metacarpophalangeal joint; ORIF = open reduction and internal fixation, PIP = proximal interphalangeal; TFCC = triangular fibrocartilage complex.