



Physician Work Relative Value Units Do Not Adequately Account for Operative Time in Pediatric Urology

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Background

- Physician work Relative Value Units (wRVU) are the measure of value used by Medicare and nearly all health maintenance organizations (HMOs) to calculate physician reimbursement
- Work RVU for surgical procedures are determined by a volunteer group of physicians called the Relative Value Update Committee (RUC)

Work RVU are meant to reflect:

- TECHNICAL SKILL AND EFFORT
- MENTAL EFFORT AND JUDGEMENT
- STRESS
- **OPERATIVE TIME**

Work RVU per unit time should be similar across
procedures of varying lengths

Methods

- Data set: American College of Surgeons National Surgery Quality Improvement Program Pediatric Participant User File (NSQIPP-PUF)
- Study period: 2012-2017
- Inclusion: Single pediatric urology procedures
- Exclusion: Procedures less than 2 wRVU, less than 50 reported total cases, shorter than 10min or greater than 600min
- Primary objective:
 - Is wRVU/hr similar across procedures of varying lengths?

Results

- 25,432 patients in the included final population
- Across 45 procedures
- Median wRVU = 17 (IQR 9-20)
- Median operative time = 79 min (IQR 42-125)
- Median wRVU/hr = 12 (IQR 9-14)

Procedure	wRVU	Median Operative time	wRVU/hr
Meatoplasty	6.77	14 min	29.0
Endoscopic injection for VUR	5.18	17 min	18.3
ESWL	9.77	33.5 min	17.5
Cystoscopy + stent placement	2.82	25 min	6.8
Excision of varicocele	5.75	60 min	5.8
Enterocystoplasty including intestinal anastomosis	25.4	273 min	5.6

**Highest three
wRVU/hr**

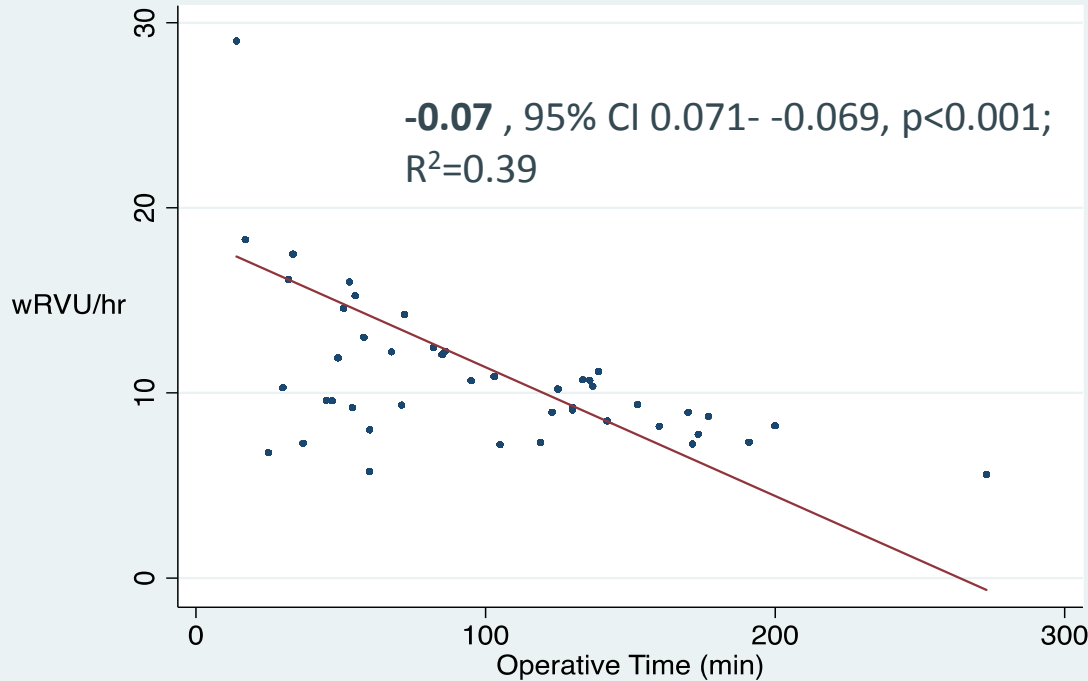
**Lowest three
wRVU/hr**



Longer op time associated with lower wRVU/hr

		N	wRVU/hr	P
Operative Time	≤ 79 minutes	12,771	14.5	< 0.001
	> 79 minutes	12,661	10.5	

Scatter plot with linear regression



Each additional hour of operative time associated with decrease in wRVU/hr by **4.2**

Does wRVU/hr account for complexity?

Procedure	wRVU	Median Operative time	wRVU/hr
Reimplant of single ureter	19.95	130 min	9.2
Reimplant of duplicated ureter	19.66	130 min	9.1
Reimplant with extensive tailoring	20.7	171.5 min	7.2

Limitations

- Procedures with multiple CPT were excluded
- Does not account for global fees which are structured into the payment and doesn't account for TOTAL RVU
- NSQIPP participation and is voluntary, not representative nationally
- NSQIPP does not track every procedure in pediatric urology.

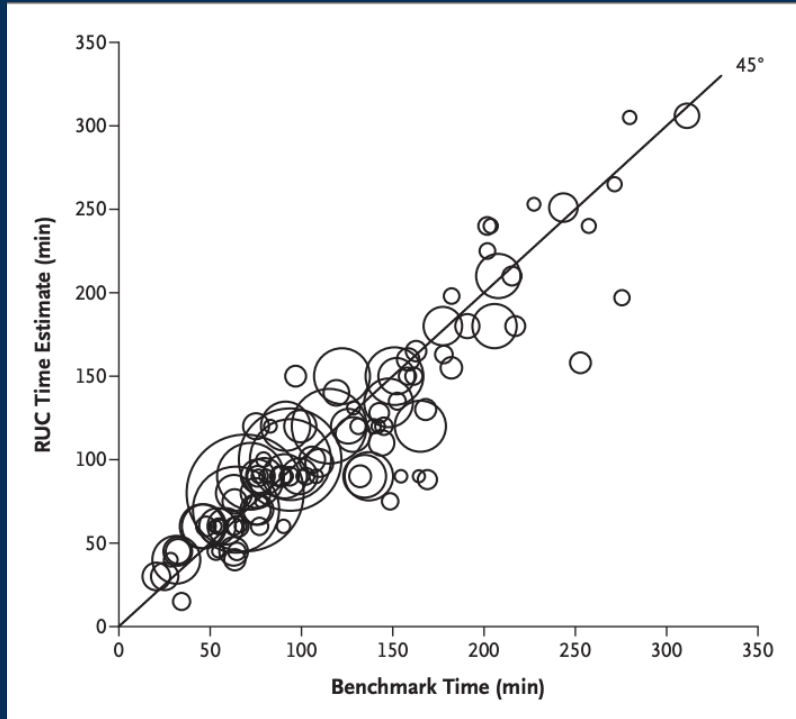
Conclusion

- In the current system, wRVU favors *shorter* and *less complicated* procedures
- Pediatric urologists performing procedures with longer median operative times are not adequately compensated

Thank You



RUC time estimates and Benchmarks from NSQIP



- Mean absolute discrepancy between RUC time estimates and benchmark times was $\sim 20\%$
- RUC estimates were not systematically shorter or longer than benchmark times overall

CPT	Procedure	N	wRVU	Median Op Time (min)	Any complications (%)	wRVU/hr
53450	Urethromeatoplasty with mucosal advancement	1584	6.77	14	0.5%	29.0
52327	Deflux	942	5.18	17	1.6%	18.3
50590	Extracorporeal shockwave lithotripsy (ESWL)	198	9.77	33.5	3.0%	17.5
14040	Adjacent tissue transfer (eg. Byars' flaps)	651	8.6	16.1	0.6%	16.1
53400	Urethroplasty first stage	79	14.13	53	2.5%	16.0
54322	1-stage distal hypospadias with simple meatal advancement (eg. Magpi, V-flap)	1878	13.98	55	0.7%	15.3
54650	Orchiopexy, abdominal	425	12.39	51	1.6%	14.6
54344	Hypospadias complications requiring flaps (fistula, stricture)	846	17.06	72	3.0%	14.2
51980	Cutaneous vesicostomy	365	12.57	58	14.8%	13.0
54326	1-stage distal hypospadias, with local flap urethroplasty, mobilization of urethra	1221	17.02	82	1.2%	12.5
54324	1-stage distal hypospadias, (local flaps, flip flap, etc)	3124	17.55	86	1.2%	12.2
54692	Laparoscopic orchiopexy	1768	13.74	67.5	1.2%	12.2
50860	Cutaneous ureterostomy	92	17.08	85	14.1%	12.1
54340	Repair of hypospadias complications by closure, incision, or excision simple	659	9.71	49	1.5%	11.9
50405	Pyeloplasty, open, complicated	776	25.86	139	5.0%	11.2
50220	Open nephrectomy	269	18.68	103	6.7%	10.9
50948	Laparoscopic ureteral reimplant without cystoscopy and stent	138	23.82	133.5	2.2%	10.7
50240	Open partial nephrectomy	181	24.21	136	5.5%	10.7
54328	1-stage distal hypospadias, (with chordee correction)	701	16.89	95	1.1%	10.7
51565	Partial cystectomy with reimplant	71	23.68	137	10.0%	10.4
49320	Diagnostic laparoscopy	358	5.14	30	0.8%	10.3
50400	Pyeloplasty, open, simple	698	21.27	125	3.2%	10.2
55550	Laparoscopic ligation of spermatic veins	251	7.2	45	0.8%	9.6
52353	Ureteroscopic lithotripsy, no stent	182	7.5	47	6.6%	9.6
50230	Open nephrectomy with lymphadenectomy and/or vena caval thrombectomy	58	23.81	152.5	15.5%	9.4
51500	Excision of urachal cyst	149	11.05	71	2.7%	9.3
50780	Open reimplant of single ureter	2723	19.95	130	3.6%	9.2
50727	Revision of urinary-cutaneous anastomosis	98	8.28	54	8.2%	9.2
50782	Open reimplant of duplicated ureter	341	19.66	130	4.4%	9.1
54332	1-stage proximal or penoscrotal, extensive chordee correction	678	18.37	123	2.9%	9.0
50548	Laparoscopic nephroureterectomy	109	25.36	170	3.7%	9.0
50947	Laparoscopic reimplant with cystoscopy and stent	81	25.78	177	8.6%	8.7
50760	Ureteroureterostomy	135	20.07	142	8.1%	8.5
50543	Laparoscopic partial nephrectomy	73	27.41	200	4.1%	8.2
50546	Laparoscopic nephrectomy	405	21.87	160	4.2%	8.2
52356	Ureteroscopic lithotripsy with stent	412	8	60	4.1%	8.0
50845	Cutaneous appendicovesicostomy	216	22.46	173.5	14.4%	7.8
50544	Laparoscopic pyeloplasty	509	23.37	191	7.3%	7.3
54312	Urethroplasty for second stage repair	227	14.51	119	5.3%	7.3
51040	Suprapubic cystotomy	77	4.49	37	18.2%	7.3
50783	Ureteroneocystotomy with extensive ureteral tailoring	258	20.7	171.5	8.5%	7.2
54308	Second stage hypospadias urethroplasty, < 3cm	255	12.62	105	3.1%	7.2
52332	Cystoscopy and stent placement	828	2.82	25	10.3%	6.8
55530	Excision of varicocele	264	5.75	60	0.8%	5.8
51960	Enterocystoplasty, including intestinal anastomosis	79	25.4	273	21.5%	5.6