



Background

- Respiratory therapy (RT) staffing is driven by the American Association for Respiratory Care's Safe and Effective Staffing Guide (SESG).
- Our pediatric hospital (244 beds, Level 1 Trauma Center, Level IV NICU) utilized time standards (WLUs) driven by the SESG for respiratory care services collected manually twice per day to determine strategic staffing for operations (Figure 1).

1 WLU = 15 minutes

- Manual calculation of respiratory services in WLUs can be time consuming and has risk for human error.
- Since manual calculation takes coordination and time it is unable to adjust to rapid changes in workload or staffing

Objective

- We aim to assess the impact of transition from manual calculation of WLUs to automated electronic medical record (EMR) calculation on respiratory therapy non-clinical time and missing order rate.

Figure 1

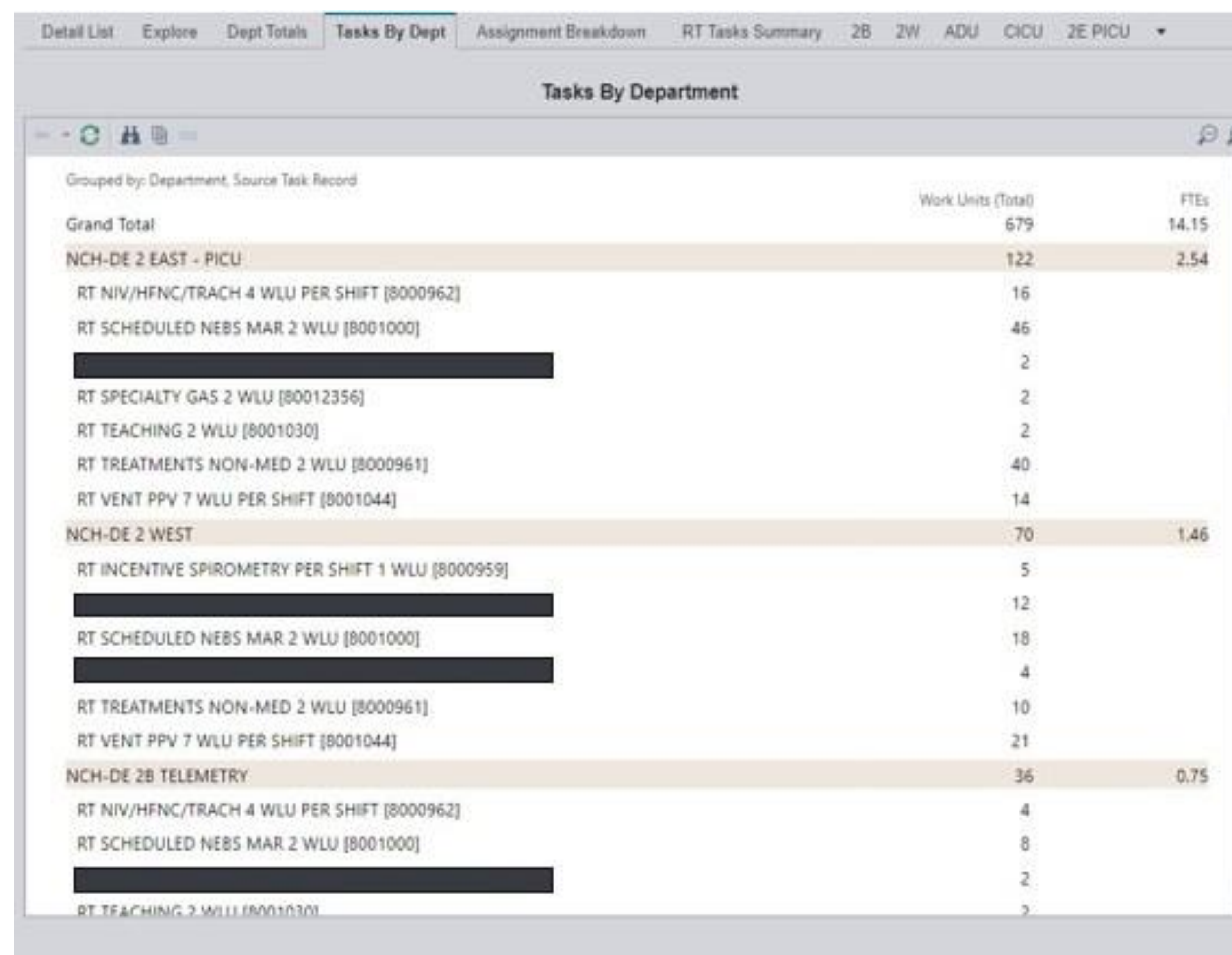
	NICU (North)		2B		CICU		NICU (South)		PICU		2W		3W		3E		4E		4W		ED Holds		CICU Annex		PICU Annex		NICU Annex		TOTALS				
	Qty	W/U	Qty	W/U	Qty	W/U	Qty	W/U	Qty	W/U	Qty	W/U	Qty	W/U	Qty	W/U	Qty	W/U	Qty	W/U	Qty	W/U	Qty	W/U	Qty	W/U	Qty	W/U	Qty	W/U			
Total Patients	10	2	2	10	2	7	13	10	10	8	5	5	6	7	7	6	20	38	76	27	54	0	1	2	0	0	0	0	267	534			
Treatments	2	1	2	1	2	40	80	2	4	56	112	51	102	40	80	10	20	38	76	27	54	0	0	1	2	0	0	0	0	267	534		
Cont. Neb	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	6	
Heliox/Nitric/Nitrogen	2	0	0	0	1	2	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	
NIV/HFNC/Trachs	4	2	8	0	1	4	1	4	4	16	1	4	1	4	2	8	0	0	0	0	0	0	0	2	8	0	0	0	0	0	14	56	
Ventilator	7	2	14	0	6	42	1	7	7	49	7	49	4	28	0	0	0	0	0	0	0	1	7	0	0	0	0	0	0	0	28	196	
Oscillator/Jet	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Wean	1	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	
Transcutaneous	2	2	4	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	6	
Teaching	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	1	2	0	0	
In Pt Transport (<1hr)	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
In Pt Transport (>1hr)	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
W/U Sub-Total		28		2		130		19		177		155		112		28		78		60		0		17		0		0		0		806	
	Needed	Actual	Needed	Actual																													
	FTE	FTE	FTE	FTE																													
NICU North	0.58	1.00	2W	3.23	1.33																												
2B	0.04	0.00	3W	2.33	1.33																												
CICU	2.71	2.00	3E	0.58	0.00																												
CICU Annex	0.35	0.00	4E	1.63	1.00																												
NICU South	0.40	1.00	4W	1.25	1.00																												
PICU	3.69	2.00	ED**	1.50	1.00																												
PICU Annex	0.00	0.00	1A Hold(s)*	0.00	0.00																												
NICU Annex	0.00	0.00	FlowSup or Float TIC***	0.00	0.00																												
			TOTAL	18.29	11.7																												

Figure 1 Shows the utilized time standards (WLUs) driven by the SESG for respiratory care services collected manually twice per day to determine strategic staffing for operations

Method

- A team of RT leaders met with EMR analysts to design a report driven from RT Orders and RT Tasks that associated each service with WLUs to determine how many RTs were needed per shift per area.
- The team met weekly for 3 months and began by validating WLUs per ordered RT service and validating calculations and reports (Figure 2).
- In an IRB approved retrospective review, missing orders and non-clinical time savings were evaluated 60 days before and after implementation of the EMR automated report on 3/1/2023.
- The analyst team met with RT leaders weekly after implementation to review discrepancies between manual count and the automated EMR report

Figure 2



Grand Total	Work Units (Total)	FTEs
NCH-DE 2 EAST - PICU	122	2.54
RT NIV/HFNC/TRACH 4 WLU PER SHIFT [8000962]	16	
RT SCHEDULED NEBS MAR 2 WLU [8001000]	46	
RT SPECIALTY GAS 2 WLU [80012356]	2	
RT TEACHING 2 WLU [8001030]	2	
RT TREATMENTS NON-MED 2 WLU [8000961]	40	
RT VENT PPV 7 WLU PER SHIFT [8001044]	14	
NCH-DE 2 WEST	70	1.46
RT INCENTIVE SPIROMETRY PER SHIFT 1 WLU [8000959]	5	
RT SCHEDULED NEBS MAR 2 WLU [8001000]	18	
RT TREATMENTS NON-MED 2 WLU [8000961]	10	
RT VENT PPV 7 WLU PER SHIFT [8001044]	21	
NCH-DE 2B TELEMETRY	36	0.75
RT NIV/HFNC/TRACH 4 WLU PER SHIFT [8000962]	4	
RT SCHEDULED NEBS MAR 2 WLU [8001000]	8	
RT TEACHING 2 WLU [8001030]	2	

Figure 2 Shows the validating WLUs per ordered RT service and validating calculations and reports

Results

- On average the RT department staffs 16 RTs per day in 10 pediatric inpatient hospital units, inclusive of 1 Charge Therapist.
- On average, RTs utilized 14 minutes (staff RTs) and 44 minutes (charge RT) for manual WLU calculation (254 minutes (about 4 hours)/shift).
- The EMR report of time standards took an average of 4 minutes to run, and the Charge RT utilized 29 minutes on average to format data and adjust staffing for the next shift.
- Staff RTs do not review WLUs in the automated process.
- Incidence of "No Orders" for RT services decreased from 78 pre EMR Report to 67 post report.
- 17 discrepancies were found during report validation and all, but one was able to be resolved (combination therapy).
- The manual count and automated report were within 5% accuracy prior to going live.

Conclusion

- Transition from a manual WLU report for RT staffing to a manual report from the EMR saves 450 minutes (about 7 and a half hours) per day in RT non-clinical time.
- Additionally, the number of RTs order errors decreased 14% in the study period.
- This change allowed more time at the bedside for RTs without impact on strategic daily staff management. Further research must be done to support combination treatments in automated EMR reports.

References

- AARC. (2012). *Guidance Document: Best Practices in Respiratory Care Productivity and Staffing*. Irving: American Association for Respiratory Care.
- Boston, D. G., Good, J. A., & Pavlichko, M. S. (2019, October). Utilization of a Quantifiable Assignment Tool With Predictive Elements to Match Labor Resources to Work Volume. *Respiratory Care*, 64(Suppl 10).
- Hummel, C., Laabs, L. A., Tyczkowski, B., Teuteberg, B., Franzen, K., & Pelkola, J. (2020, August). Using the Electronic Medical Record to Engage Staff in Equitable Workload and Justify Staffing Levels. *Nurse Leader*, 376-380.