

Outcomes of Traumatically Injured Patients Following Resident Rotation Turnover

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Intro:

- Staff turnover creates potential for suboptimal clinical care. While turnover and handoffs between daily work shifts have been investigated thoroughly, there is less information regarding the effect of entire groups of providers rotating on and off a particular service, as commonly occurs with resident physicians every 1-2 months.
- Better characterizing this relationship would serve to improve our understanding of times in which patients are most vulnerable to potential harm.

Methods

- We conducted a retrospective review of all trauma activations at our level-one trauma center over a 12-month period to investigate differences in patient outcomes in the time periods following resident rotation changes, including complete turnover (CT) and partial turnover (PT) of the resident team.
- Data was collected regarding patient demographics, injury mechanism and severity, emergency room disposition, final discharge disposition, and mortality (both trauma bay and overall admission).
- Initially we compared patients presenting within 7 days of resident turnover to those presenting outside that window. Secondly we narrowed the window to the initial 48 hours following turnover.

	All		No Trans		All Trans		Partial Trans		Complete Trans	
Patients	1836		1431		405		209		196	
Age										
mean	39.3		39.2		39.8		38.3		41.4	
SD	24.6		24.5		24.8		23.5		26.0	
Median	36		35		36		38		36	
Gender	n	%								
Male	1270	69.2	987	69.0	283	69.9	148	70.8	135	68.9
Female	565	30.8	443	31.0	122	30.1	61	29.2	61	31.1
ISS										
Mean	11.2		11.2		11.4		11.3		11.4	
SD	10.5		10.3		11.3		11.4		11.1	
Median	9		9		9		9		9	

	All		No Trans		All Trans		Partial Trans		Complete Trans	
ED Dispo	n	%	n	%	n	%				
Died	51	2.8	39	2.7	12	3.0	3	1.4	9	4.6
OR	228	12.4	185	12.9	43	10.6	22	10.5	21	10.7
ICU	252	13.7	194	13.6	58	14.3	25	12.0	33	16.8
PICU	119	6.5	93	6.5	26	6.4	15	7.2	11	5.6
NICU	148	8.1	113	7.9	35	8.6	21	10.0	14	7.1
MICU	13	0.7	12	0.8	1	0.2	1	0.5	0	0.0
CICU	7	0.4	4	0.3	3	0.7	2	1.0	1	0.5
Trans	1	0.1	1	0.1	0	0.0	0	0.0	0	0.0
Floor	809	44.1	630	44.0	179	44.2	97	46.4	82	41.8
OBS	155	8.4	118	8.2	37	9.1	17	8.1	20	10.2
AMA	10	0.5	7	0.5	3	0.7	3	1.4	0	0.0
*BL	21	1.1	19	1.3	2	0.5	2	1.0	0	0.0
Other	8	0.4	6	0.4	2	0.5	1	0.5	1	0.5
*NA	12	0.7	9	0.6	3	0.7	0	0.0	3	1.5
Tele	2	0.1	1	0.1	1	0.2	0	0.0	1	0.5

Results

- In the first analysis, 1,431 patients presented in the non-turnover period, with 405 presenting in the week following at least PT. Of these, 196 presented in the weeks following CT. There were no differences between groups in patient age, gender, injury severity score (ISS), or mechanism of injury (MOI). Trauma bay mortality was 2.7% in the non-turnover group as compared to 3.0% in the turnover group. In the 6 weeks involving CT, trauma bay mortality was 4.6%. This difference did not reach statistical significance.
- In the second analysis, 510 patients presented on weekends without resident turnover and 133 presented on a turnover weekend, with 54 patients presenting on a CT weekend. Again, there were no differences in patient demographics, ISS, or MOI. The trauma bay mortality for the non-turnover cohort was 3.3%, as compared to 4.5% on turnover weekends and 5.6% on CT weekends. This difference also did not attain statistical significance.

Conclusions

- Traumatically injured patients presenting after resident rotational turnover had a slightly elevated mortality rate compared to those presenting outside of this turnover window, though this small difference did not reach the threshold for statistical significance.
- Further study with larger sample sizes is needed. Training institutions should be aware of this potential risk and implement systems to mitigate the prospect of adverse outcomes related to trainee experience.

Key Takeaways:

The risk of patient mortality may be elevated in the periods following resident turnover, though further research is needed to prove this relationship



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