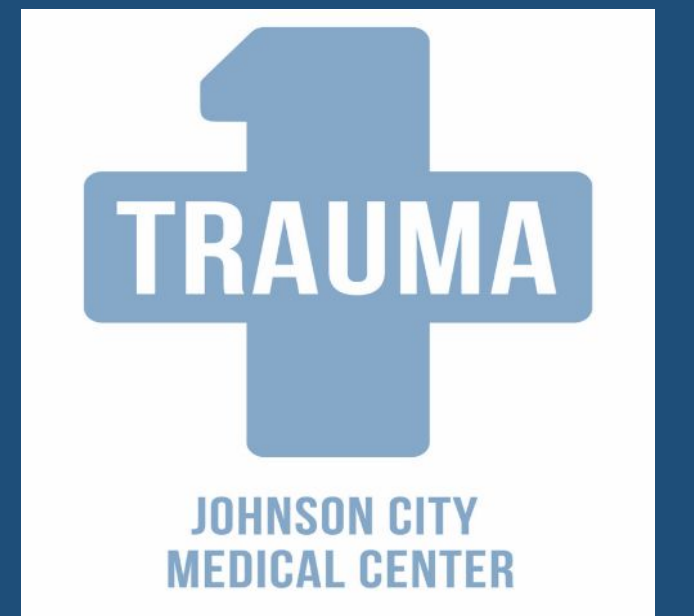


# Effects on trauma activations after implementation of trauma resuscitation and emergency care nurse



Holder W, Leonard M, Wheeler H, Brogan A, Burns JB\*  
 Ballad Health, Johnson City Medical Center  
 \*ETSU Department of Surgery

## INTRODUCTION

- Many emergency departments (ED) and trauma centers across the country are facing staffing challenges.
- Johnson City Medical Center instituted a trauma resuscitation emergency care (TREC) nurse role to help establish continuity in early trauma resuscitation at a level 1 rural trauma center.
- The TREC role is ideally in addition to the primary and secondary nurse.
- TREC nurse duties include obtaining IV access, labs, administration of fluids/medications/blood, manage massive transfusion protocol and run rapid infuser.
- TREC nurse also follows patient to operating room (OR), interventional radiology (IR) and computed tomography (CT) to free up primary nurse and continue with resuscitation.

## OBJECTIVES

- The aim of this study is to determine if additional support in the ED decreases time to CT and time to OR.

## METHODS

- Single institution, retrospective study with data extracted from the trauma registry between 8/1/2018 and 7/31/2020.
- **Pre TREC Period:** 8/1/2018 to 7/31/2019
- **Implementation of TREC:** 8/1/2019 to 7/31/2020
- **Study Population:** patients ≥ 18 years who presented to trauma department in need of trauma services.
- **Patient Data Collected:** age, hospital days, intensive care unit (ICU) days, ventilator days, time to first CT scan, time to first OR visit, injury severity score (ISS) and mortality.
- Data analyzed with paired t-test and Chi-square in JASP (version 0.14.1.0) and Excel (version 2016)
- Significance set with a p-value ≤ 0.05

## SOURCES

1. Murao S, Yamakawa K, Kabata D, et al. Effect of Earlier Door-to-CT and Door-to-Bleeding Control in Severe Blunt Trauma: A Retrospective Cohort Study. *J Clin Med.* 2021;10(7):1522. Published 2021 Apr 6. doi:10.3390/jcm10071522  
 2. V. Kristen Peters, Ellen M. Harvey, Andi Wright, Jennifer Bath, Dan Freeman, Bryan Collier, Impact of a TeamSTEPPS Trauma Nurse Academy at a Level 1 Trauma Center, *Journal of Emergency Nursing*, Volume 44, Issue 1, 2018, Pages 19-25, ISSN 0099-1767, <https://doi.org/10.1016/j.jen.2017.05.007>

## RESULTS

### Patient Demographics:

- 1153 patients treated prior to implementation of TREC and 1441 treated after implementation.

### Patient Outcomes:

- Patients treated after the implementation of TREC were significantly older in age.
- Patients treated after implementation of TREC had a higher ISS.
- No difference in mortality between groups.

### CT Scan/OR

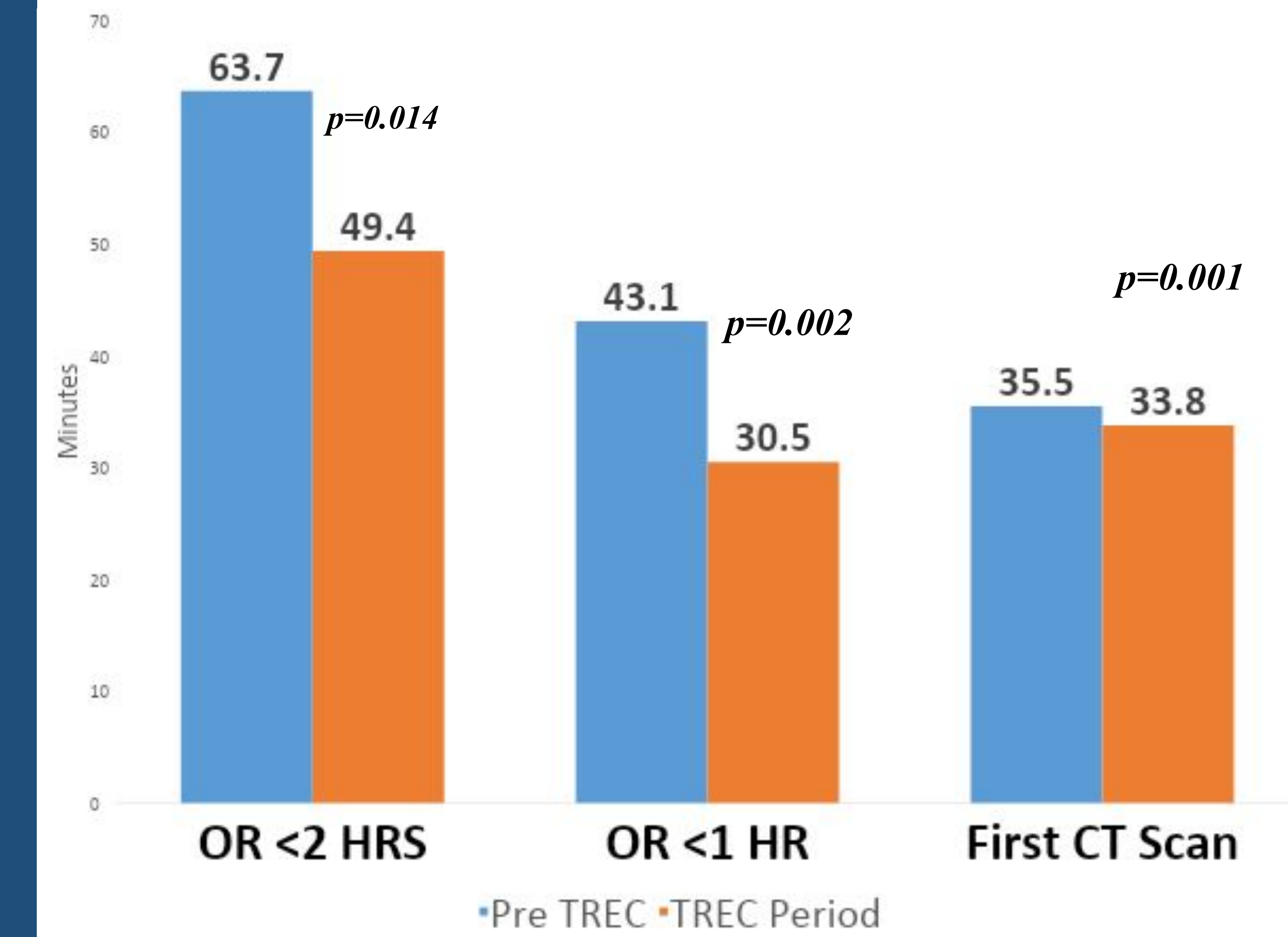
- Average time to first CT significantly decreased after implementation of TREC.
- There was a significant decrease in time to OR within the first and second hour after arrival to ED.

Table 1. Comparison of patient data outcomes between 8/1/2018 to 7/31/2020 at a rural Level 1 Trauma Center. Patients were significantly older after implementation of TREC compared to before TREC. Hospital days and ISS were significantly higher after implementation of TREC compared to before TREC.

Variable	Pre TREC (n=1153)	TREC Period (n=1441)	p-value
Age	44.7 years	47.1 years	≤ 0.05
Mean Hospital Days	3.7 days	4.4 days	<0.05
Mean ICU Days	4.5 days	4.7 days	0.57
Mean Ventilator Days	4.5 days	5.5 days	0.13
Mean ISS	7.2	9.3	≤ 0.05
Mortality	4%	6%	0.17

\*Significant at P≤0.05. Abbreviations: TREC, Trauma Resuscitation Emergency Care; ICU, Intensive Care Unit; ISS, Injury Severity Score

Figure 1. Comparison of time to first CT, time to OR at < 1 hour and < 2 hour after arrival to emergency room.



## DISCUSSION

- Despite higher ISS and older age after implementation of TREC we saw decreased time to CT and quicker times to the OR within the first and second hour.
- A study by Murao et al, demonstrated that decreased time to CT and decreased time to bleeding control is associated with decreased mortality in patients with severe blunt trauma.<sup>1</sup>
- The significant reductions in access to CT and OR were seen during a time of significantly increased activations as we were consolidating two level 1 centers into one.
- Staffing shortages were occurring during the TREC period along with a COVID-19 surge that affected both staffing and access.
- Based on the literature, a specific nursing role like the TREC nurse has not been studied.
- A study by Peters et al, demonstrated that nurses undergoing training in a Trauma Nurse Academy helped improve team performance, patient outcomes and quality of care.<sup>2</sup>

## CONCLUSION

- Despite barriers that that could have shown increased time to access CT and OR, the implementation of the TREC role showed significant reductions in time.
- TREC nurses play an important role in improving trauma resuscitation.