

Competency Plan to Improve Nurse Response During Pediatric Trauma Resuscitation

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Background & Introduction

INJURY

The #1 killer of children in the US



- In the United States, pediatric traumas account for over 12,000 deaths per year and an estimated 9.2 million emergency department visits¹.
- Traumas are the leading cause of death and long term disability in children¹.

Introduction

- Trauma certified RN's respond to pediatric trauma resuscitations and must maintain competency in a specialized knowledge and skill set².
- There are no clearly defined practice guidelines or standards for maintaining competency as a trauma certified RN.
- The individual nurse responding to a pediatric trauma changes from shift to shift and time between attending a pediatric trauma can be long. In some cases >1 year can pass between attendance.
- During this gap in time knowledge and skills can be lost.

Purpose

The purpose of this quality improvement project is to improve competency and team performance of trauma certified nurses, by improving communication, situational awareness, collaboration, and skills competency through the use of an evidence based, educational intervention.

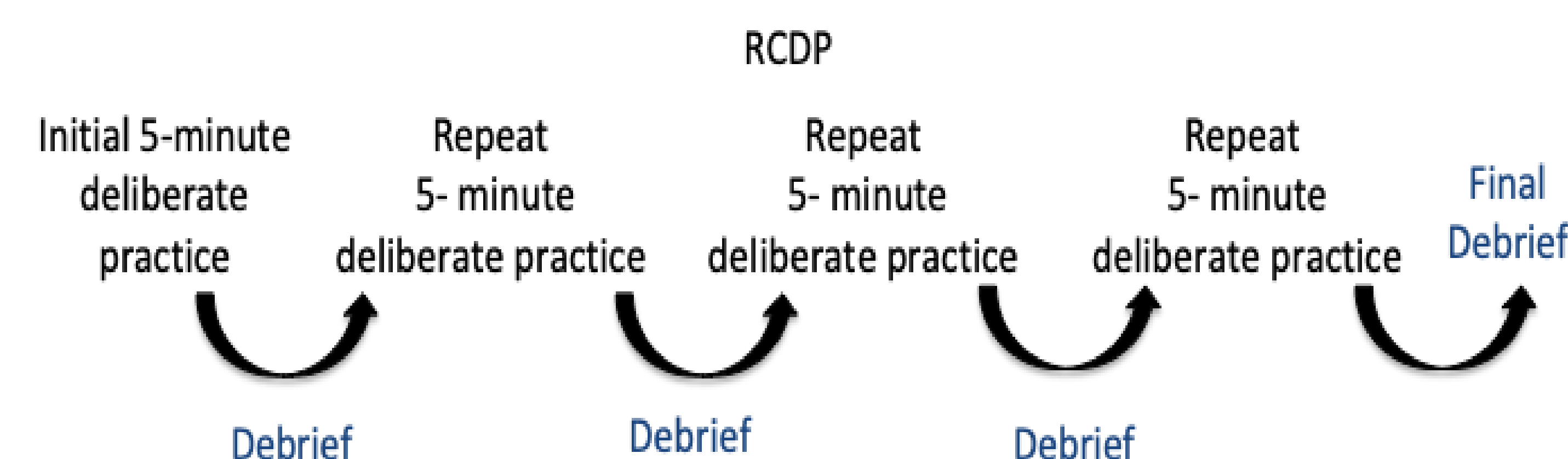
Reference:
1. Center for Disease Control (CDC). (2019). Childhood injury report. <https://bit.ly/3f72EPk>
2. Haley, K., Martin, S., Kilgore, J., Lang, C., Rozzell, M., Coffey, C., Eley, S., Light, A., Hubart, J., Kovach, S., Deppe, S. (2017). Establishing Standards for Trauma Nursing Education: The Central Ohio Trauma System's Approach. *J Trauma Nurs.*24(1):34-41. doi: 10.1097/JTN.0000000000000260. PMID: 28033140.
3. Steinemann, S., Berg, B., DiTullio, A., Skinner, A., Terada, K., Anzelon, K., & Ho, H. C. (2012). Assessing teamwork in the trauma bay: introduction of a modified "NOTECHS" scale for trauma. *American journal of surgery*, 203(1), 69-75. <https://doi-org.proxy1.library.jhu.edu/10.1016/j.amisurg.2011.08.004>
4. Karageorge, N., Muckler, V., Toper, M. & Hueckel, Remi. (2020). Using simulation with deliberate practice to improve pediatric icu nurses knowledge, critical teamwork, and confidence. *Journal of Pediatric Nursing*. (54). <https://doi.org/10.1016/j.pedn.2020.05.020>

AIMs

1. Develop a trauma nurse competency plan based on an evidence based intervention, for all certified trauma nurses in the PICU, in order to maintain trauma competency
Measurement: Time sensitive task completion
2. Following implementation of an evidence based intervention trauma nurse competency will be improved.
Measurement: Time sensitive task completion
3. Following implementation of an evidence based intervention nursing team performance will be improved
Measurement: T-NOTECH 5-point Likert Scale

Methods

Design: pre and post test design
Sample: 46 Pediatric Intensive Care Unit trauma certified RN's
Setting: Large academic hospital with Level 1 trauma center
Intervention: Rapid Cycle Deliberate Practice (RCDP) simulation



- RCDP allows for repetitive learning and feedback and includes four 5- minute, rounds of deliberate practice each followed by concise debrief.
- Round 1= pre-intervention
- Round 4= post-intervention

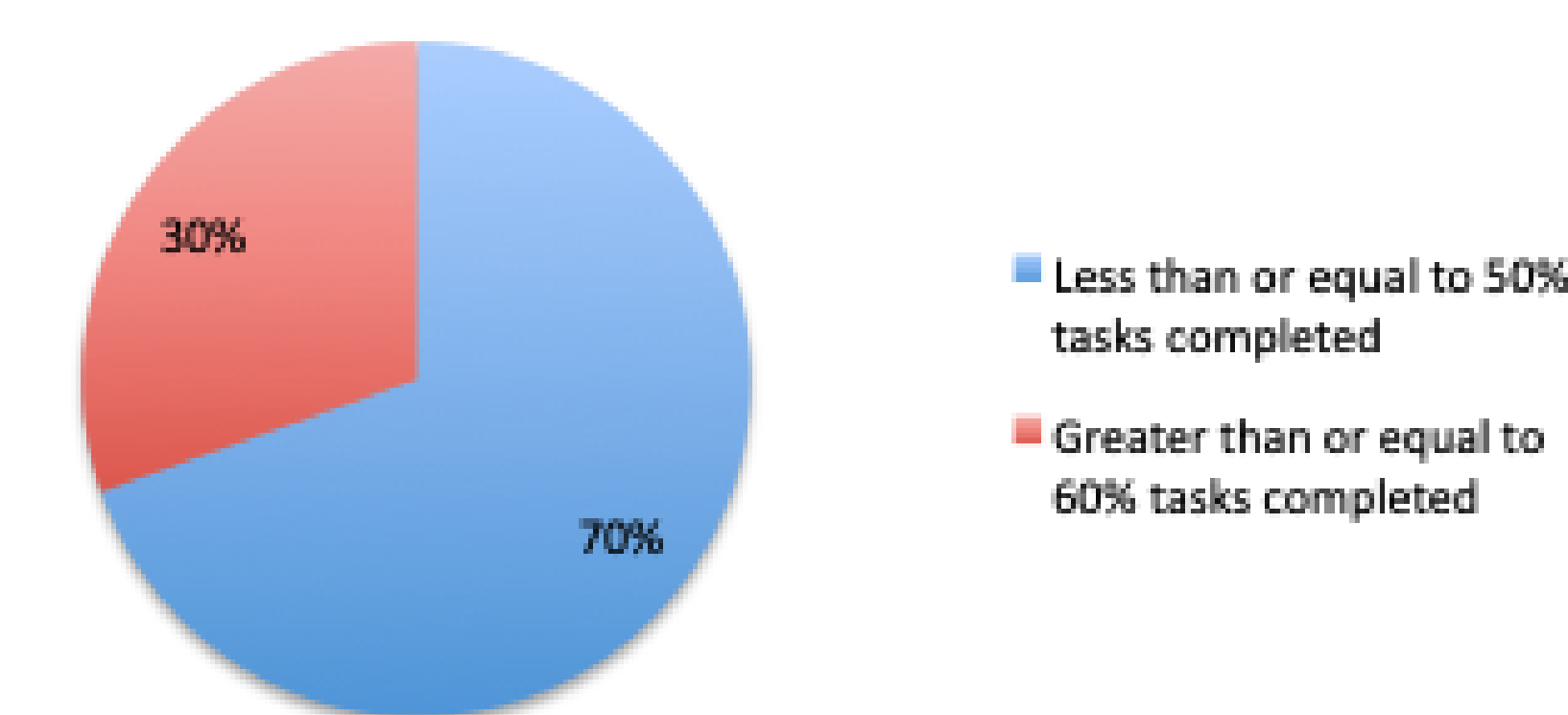
[Disclaimer: all data and analysis is from a learning data set, data does not represent implementation]

Results

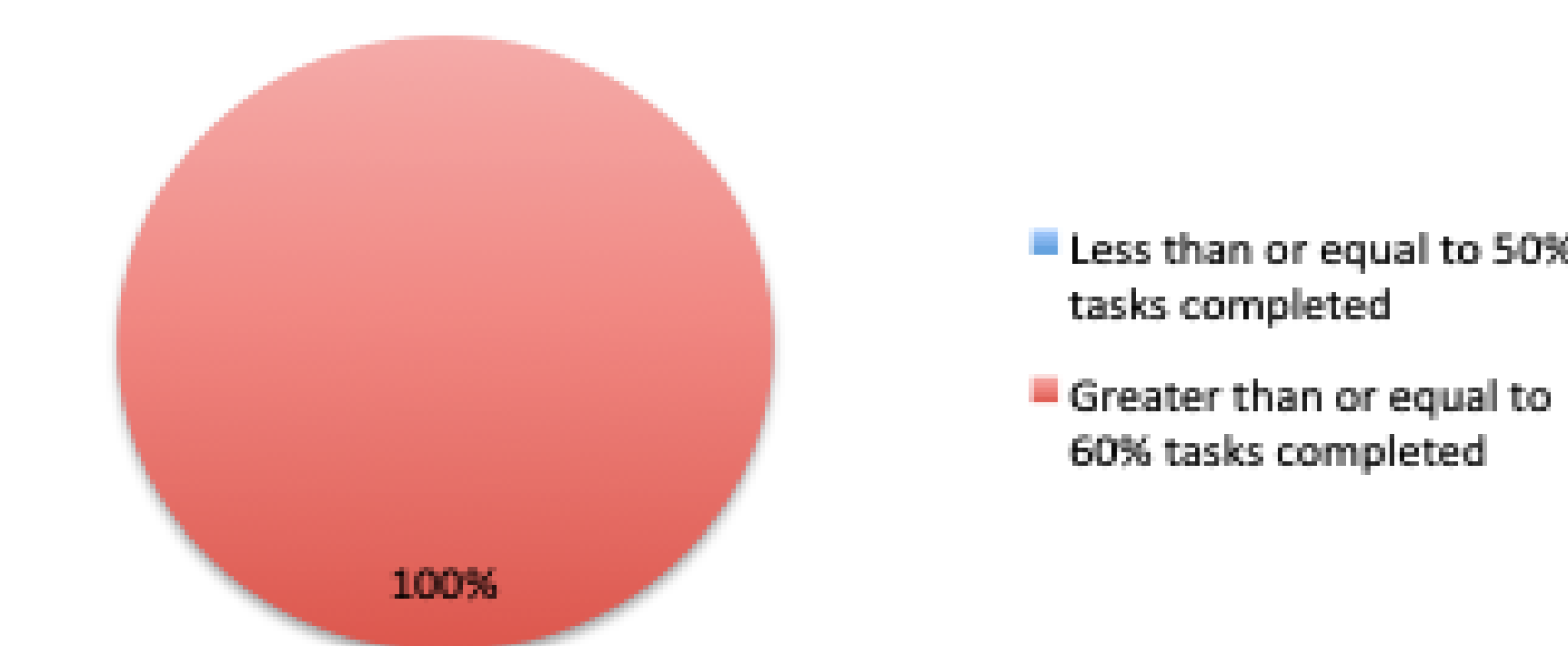
AIM 2

- Pre-intervention: 69.6% of participants had inadequate task completion (50% or less of tasks completed) and 30.4% of participants had adequate task completion (60% or more of tasks completed).
- Post-intervention: 100% of participants had adequate task completion (60% or more of tasks completed) with no participants completing less than 60% of tasks. Mean proportion of tasks complete was 95% .
- These results are significantly significant with a P<0.001.

Pre-Intervention Tasks Completion



Post-Intervention Tasks Completion

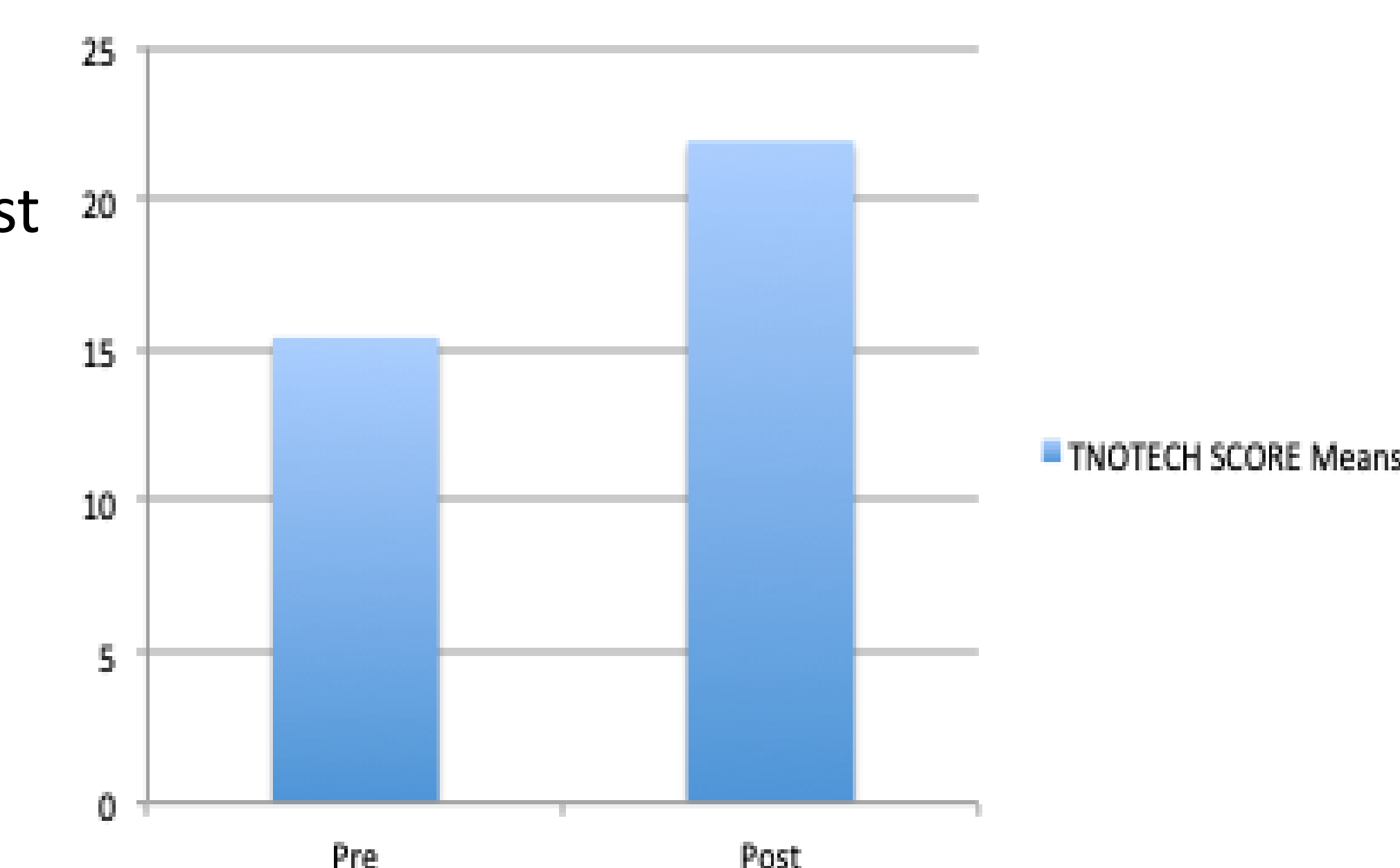


AIM 3

- Pre-intervention mean score= 15
- Post-Intervention mean score=22
- Mean improvement of 7 points from pre to post intervention

These results are significantly significant with a P<0.001.

TNOTECH SCORE Means



Conclusion

- RCDP improved trauma nurse competency and team performance with both clinical and statistical significance and can be utilized to achieve and maintain trauma nurse competency in the PICU.
- Higher T-NOTECH scores indicate better team & clinical performance with decreased resuscitation times during high-risk scenarios³.
- Timely initiation of time sensitive tasks is vitally important for effective trauma resuscitation⁴
- Improving trauma nurse competency could improve pediatric trauma resuscitation and patient outcomes.