# Improve Early Intervention to Prevent Clinical Deterioration Prior to Cardiopulmonary Arrest for Patients Outside Intensive Care Units

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## Introduction

Cardiopulmonary resuscitation occurs at a high rate on inpatient units. Previous studies have shown that between 370,000 and 750,000 in-hospital resuscitation attempts are made in the United States each year. In-hospital cardiac arrests affect more than 200 000 inpatients in the United States annually. However, over half of all In-hospital cardiac arrests occur in the ICU.

Unfortunately, the majority of patients who are resuscitated successfully after an in-hospital cardiac arrest die before hospital discharge. There is a growing body of literature that recognises the importance of initiating a Rapid response Team (RRT).

## JHAH Background

The JHAH Cardiopulmonary Resuscitation (CPRC) is responsible for managing deteriorating patients including creating early warning scores, staffing the RRT and providing resuscitation services (Code Blue), and overseeing implementation of operational policies regarding cardiopulmonary resuscitation and RRT practice in accordance with the American Heart Association (AHA) guidelines. The CPRC is a multidisciplinary team with representatives from all stakeholder groups.
The committee reports to the JHAH Clinical Leadership Council.



The committee is concerned with having a system in place to achieve optimal care for the deteriorating patients outside ICUs by establishing key performance indicators that ensure that the organization is meeting its quality improvement and patient safety goals.

## Aim and Objectives

- Increase early intervention and stabilization to prevent clinical deterioration of individuals prior to a cardiopulmonary arrest or other life-threating event.
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- Increase the number of RRT calls per month
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- Decrease the number of cardiopulmonary arrests that occur outside ICUs.
- Decrease the hospital mortality rate
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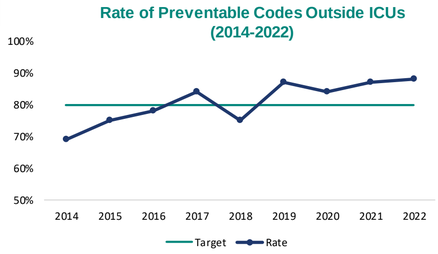
- Increase patient, family and staff satisfaction

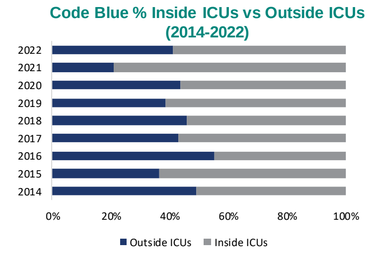
## Methodology

A multidisciplinary team was established, and the team walked the process of pre and post implementation of the initiatives, conducted a workshop to identify barriers to improve compliance, sought solutions and conducted educational sessions to train staff members and increase awareness to activate an RRT.

## Results

The number of RRT calls increased with a corresponding decrease in cardiopulmonary arrests outside the ICUs. This was an early sign of the team reaching its goal. In 2014, the baseline for stabilizing and transporting patients who had a cardiopulmonary arrest outside an ICU was 69%.
During implementation of the quality improvement initiatives in 2017, the rate increased to 84%. This exceeded the goal of 80%. Due to the rollout of Epic in 2018, the rate decreased but preliminary data show the rate is once again increasing. The rate for the year 2022 is 88%.




## Conclusion

Following the interventions, a significant improvement in baseline compliance was achieved. The following played a pivotal role in optimizing patient's chances of survival and timely access to provide a quick intervention:

- Education staff on early warning signs of a deteriorating patient.
- Intervention before the patient arrests or required transfer to a critical care unit
- Standardization of clinical practice guidelines to activate Rapid Response Team

### References:


Beitler, J. R., Link, N., Bails, D. B., Hurdle, K., & Chong, D. H. (2011). Reduction in hospital-wide mortality after implementation of a rapid response team: a long-term cohort study. Critical Care, 15(6), R269.

Institute for Clinical Systems Improvement (2011) Health Care Protocol: Rapid Response Team

Institute for Healthcare Improvement (2017): Rapid Response Team

Hatler, C., Mast, D., Bedker, D., Johnson, R., Corderella, J., Torres, J., ... & Plueger, M. (2009). Implementing a rapid response team to decrease emergencies outside the ICU: one hospital's experience. MedSurg Nursing, 18(2), 84-91.

Offner, P. J., Heit, J., & Roberts, R. (2007). Implementation of a rapid response team decreases cardiac arrest outside of the intensive care unit. Journal of Trauma and Acute Care Surgery, 62(5), 1223-1228.

Winters, B. D., Weaver, S. J., Pfoh, E. R., Yang, T., Pham, J. C., & Dy, S. M. (2013). Rapid-response systems as a patient safety strategy: a systematic review. Annals of internal medicine, 158(5_Part_2), 417-425.