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A Community Assessment of Rapid Response Team Events Preceding Cardiopulmonary Arrest: Does it Improve Outcomes?

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PURPOSE: The rapid response team (RRT) is designed to capture patients with early deterioration and allow for early intervention to prevent cardiopulmonary arrest (CPA). It has been widely adopted by most hospital systems as a targeted approach to improve hospital mortality. Currently, in hospital CPA outcomes demonstrate a 60% rate of return of spontaneous circulation (ROSC) and a 20% survival to discharge rate. The American Heart Association (AHA) identifies factors which lead to improved CPA outcomes including early identification of distress, chest compressions and defibrillation. Studies to date have been inconsistent in determining improved mortality. We aim to identify if CPA events that were preceded by an RRT event improved survival outcomes, as these patients would have had early identification of their distress and chest compressions.

METHODS: A retrospective chart review over between January 2015 – December 2019 was conducted at our 660 bed university affiliated community hospital. 206 patients were included in the study. 103 CPAs preceded by an RRT and 103 without an RRT event on general medical floors. Patient data including age, gender, time of event, time of last assessment, last vital signs and laboratory abnormalities was collected. Data was analyzed with parametric and non parametric testing by SPSS.

RESULTS: While the number of RRTs have increased by 1.5x per month (72 to 110) over the study period, the number of CPAs have not. The rate of ROSC and survival to discharge for CPA preceded by an RRT compared to those not preceded by an RRT were similar (60% vs 64%, 20% vs 20%, $p=0.57$, 1.0). There was no significant age ($p=0.95$), gender ($p=0.78$) or initial rhythm difference between the two groups. Patients with ROSC were found to have a shorter time since last assessment (1:53 vs 2:53, $p=0.02$) when preceded by an RRT. Shorter CPA durations were demonstrated between those with and without ROSC in both groups independently ($p<0.001$). No other analyses were significant including number of SIRS criteria, vital signs and time of arrest between the two groups.

CONCLUSIONS: The AHA identifies early identification and chest compressions as keys to successful ROSC in CPA events. While early identification of deterioration was determined via the RRT event and early compressions initiated as the RRT event transitioned into a cardiopulmonary arrest, the rates of ROSC and survival to discharge were not significantly different than CPAs not preceded by RRTs.

CLINICAL IMPLICATIONS: As RRT events have increased over the years, current outcomes have not drastically improved leading us to believe that we are not identifying the appropriate patient population. Potentially by the time of the RRT event, a patient may be past a point of decompensatory return. Further studies regarding the appropriate utilization of RRTs is warranted to evaluate in which patient population they may improve outcomes for.