

# Good example of research paper on cardiac arrest prediction in critically ill pat...

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In this study, the aim was to validate a novel ML score HRV for risk stratification in comparison with the MEWS. This clinical process involves screening of the patients undergoing treatment. Risk stratification and other cardiac outcomes play an essential role in treating patients experiencing chest pains. Risk stratification involves the use of MEWS (modified early warning score), which is based on physiological parameters such as systolic blood pressure, pulse rate, respiratory rate, and temperature. Other commonly used methods include HRV (heart rate variation) and ML (machine learning), where HRV is the change of time intervals between heartbeats while ML is based on the way the human brain approaches pattern recognition tasks, providing an artificial intelligence-based approach to solving classification problems. The study was performed in Singapore General Hospital and involved running a few tests on the patients in the hospital. On completion of the experiment, the results showed that an ML score, together with the use of HRV parameters, is more predictive than the MEWS. The study also showed that HRV measured from short-term ECG recordings (5-30 minutes), when combined with vital signs, provides useful tools to risk stratification. There were, however, limitations while this study was being done. The study was done in a single centre: the Singapore General Hospital thus results may not be generalized to other settings. In addition, the use of ML and MEWS on the diverse conditions of the patients may have caused different effects on the latter. Moreover, there may be a need for external validation for the ML (despite the good validation quality show) for clinical use. However, these limitations, and much more, did not fully compromise the research in the end as it did turn out to be successful.

The results of this study can be done on a larger scale of patients, as cardiac arrest within 72 hours or death is rare. Further studies should also be carried out in order to verify the ML score in a different set of patients with different diagnosis groupings. There is also a belief in existence of the possibility of development of bedside devices for monitoring of HRV, which can help doctors to tell patients of high risk of cardiac arrest and death. In conclusion, in predicting cardiac arrest within 72 hours, ML scores were found to be more accurate than the MEWS.

## **Works Cited**

Ong, Marcus Eng Hock, et al. " Prediction of Cardiac Arrest in Critically Ill Patients Presenting to the Emergency Department Using a Machine Learning Score Incorporating Heart Rate Variability Compared with the Modified Early Warning Score." *Critical Care* (2012): 16 (3), 108-109. Print.