Time to Defibrillation After Onset of Ventricular Fibrillation and Ventricular Tachycardia Cardiac Arrest at Thomas Jefferson University Hospital and Jefferson Hospital for Neurosciences.

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Background

-According to the American Heart Association's Get With the Guidelines database and initiative, prompt defibrillation within 2 minutes of onset of a shockable rhythm has been shown to improve rates of survival to discharge and 5 year survival after discharge.
-As a result, prompt defibrillation has become a part of evidence based resuscitative practice for ventricular fibrillation (VFib) and pulseless ventricular tachycardia (pVTach) cardiac arrest.

Problem Identification

Our quality improvement project sought to identify how often our institution delivered defibrillation to patients who experience VFib/pVTach within 2 minutes

Methods

-Quantitative analysis

- Our institution's code blue data was obtained from January 2018 to September 2019. Approximately 360 code events were reviewed to isolate 26 Vfib/pVTach cardiac arrests. Time to defibrillation was calculated by identifying the interval from time to recognition of VFib/pVTach arrest to time of delivery of the first shock.

-Root cause analysis

- Done through a 2 question survey

Results

- 27% of VFib/pVtach arrests were defibrillated within the recommended 2-minute interval. 36% of patients did not receive any shock for a shockable rhythm despite being in cardiac arrest longer than 2 minutes. The average time to defibrillation was 2 minutes and 33 seconds.
- 100 responses (22% RN in ICU, 9% RN on telemetry, 13% RN on med/surg, 21% residents, 11% interns, 14% RTs, 5% Hospitalist TJUH, 3% Hospitalists at JHN
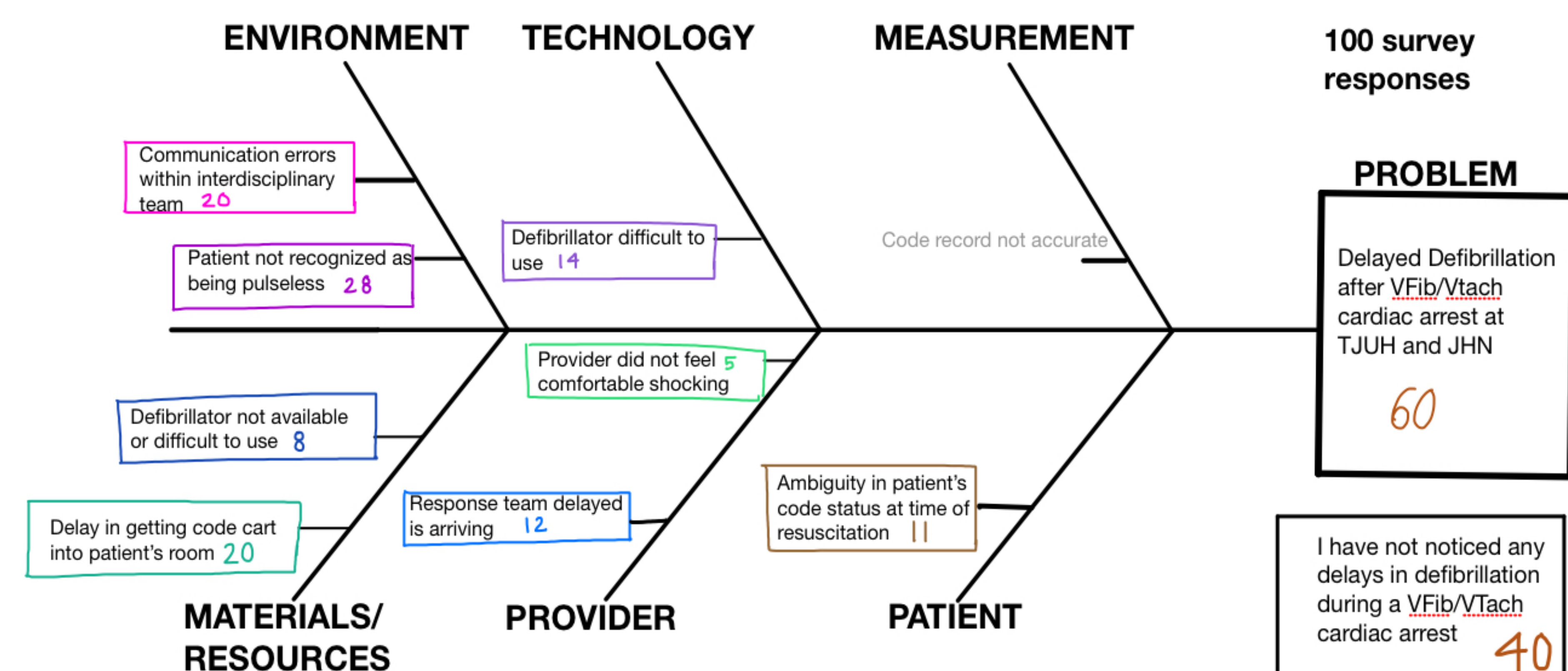
Aims for Improvement

-Improve average time to defibrillation after VFib/pVTach cardiac arrest to < 2 minutes within an 8 month interval at TJUH and JHN.

-Improve the percent of VFib/pVTach cardiac arrests that are defibrillated within the recommended 2 minute interval by 30% at TJUH/JHN within an 8 month interval

Proposed Intervention

-Code blue event recording changed from a paper record system to a phone application which will automate a code blue event record that will be emailed to code blue data keeper.
-Reinforcement of post-code debriefing such that when code record is emailed to code blue data keeper, recorder is prompted to list 3 areas of improvement that can be identified by the resuscitative team.
-Utilization of Zoll defibrillator data to analyze resuscitation parameters and incorporate results into simulation sessions to further improve resuscitation efforts

Implementation Plan

Implementation team: Dr. Yair Lev in the Department of Cardiology, Internal Medicine Residents, Nursing at TJUH and JHN, Code Blue Committee.
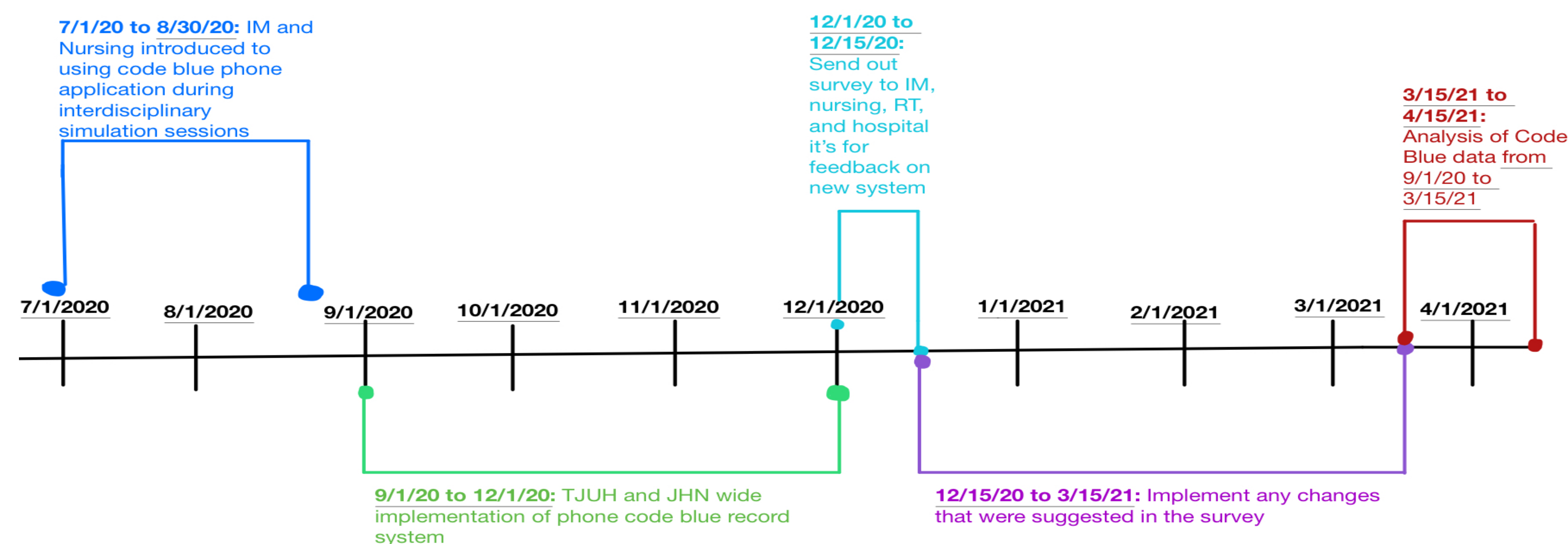
Measurement Strategy

Outcome measure

-Average time to defibrillation after in hospital VFib/pVTach cardiac arrest between 9/1/2020 to 3/15/2021

-Percent of in hospital VFib/pVTach arrests defibrillated within the recommended 2-minute interval during the above defined time period.

Process measure

-Percentage of cardiac arrests due to VFib/pVTach are not declining (given overwhelming number of COVID admissions, PEA contributing more to cardiac arrests than VFib/pVTach).