Project Title

Pilot Implementation of Red Zone Patients Automated Alerts to Smartphones based on NEWS score (National Early Warning Score)

Project Lead and Members

Project lead: Patricia Leong

Project members: Faheem Ahmed Khan, Low Ting Jun, Normazreen Maswan, Ong Yoke Moi, Rebecca Lim, Tan Shieh Tein & Nicholas Lim

Organisation(s) Involved

Ng Teng Fong General Hospital

Healthcare Family Group Involved in this Project

Medical, Nursing

Applicable Specialty or Discipline

Intensive Care Medicine

Aims

To reduce human errors and delay in activating the right senior doctor and addition of ICU outreach nurse to certain groups of patients, in RED zone criteria as per NEWS 2 scoring system.

Background

See poster appended/ below

Methods

See poster appended/ below

Results

See poster appended/ below

Lessons Learnt

With the digitalisation of processes and use of existing infrastructure with validated NEWS score, it has shown to improve compliance of escalation policy, and also led to appropriate early intervention, reduced the need for ICU/HD admission. It has indirectly reduced the length of hospital stay and costs. Patient can be safely managed in general wards by primary medical team with support of the ICU Outreach nurse.

Conclusion

See poster appended/ below

Project Category

Care & Process Redesign

Quality Improvement, Workflow Redesign

Keywords

Automated Alerts, Digitalisation, Early Warning, Critical Vital Signs

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PILOT IMPLEMENTATION OF RED ZONE PATIENTS AUTOMATED ALERTS TO SMARTPHONES BASED ON NEWS SCORE (NATIONAL EARLY WARNING SCORE)

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- ☑ SAFETY
- ☑ QUALITY
- ☑ PATIENT EXPERIENCE
- ☐ PRODUCTIVITY
- ☑ COST
- ☑ TEAMWORK
- ☑ COMMUNICATION

Define Problem, Set Aim

Problem/Opportunity for Improvement
Data collected has shown poor compliance of escalation matrix, especially for red zone group of patients, as low as 10 % despite having deteriorating patients escalation policy.
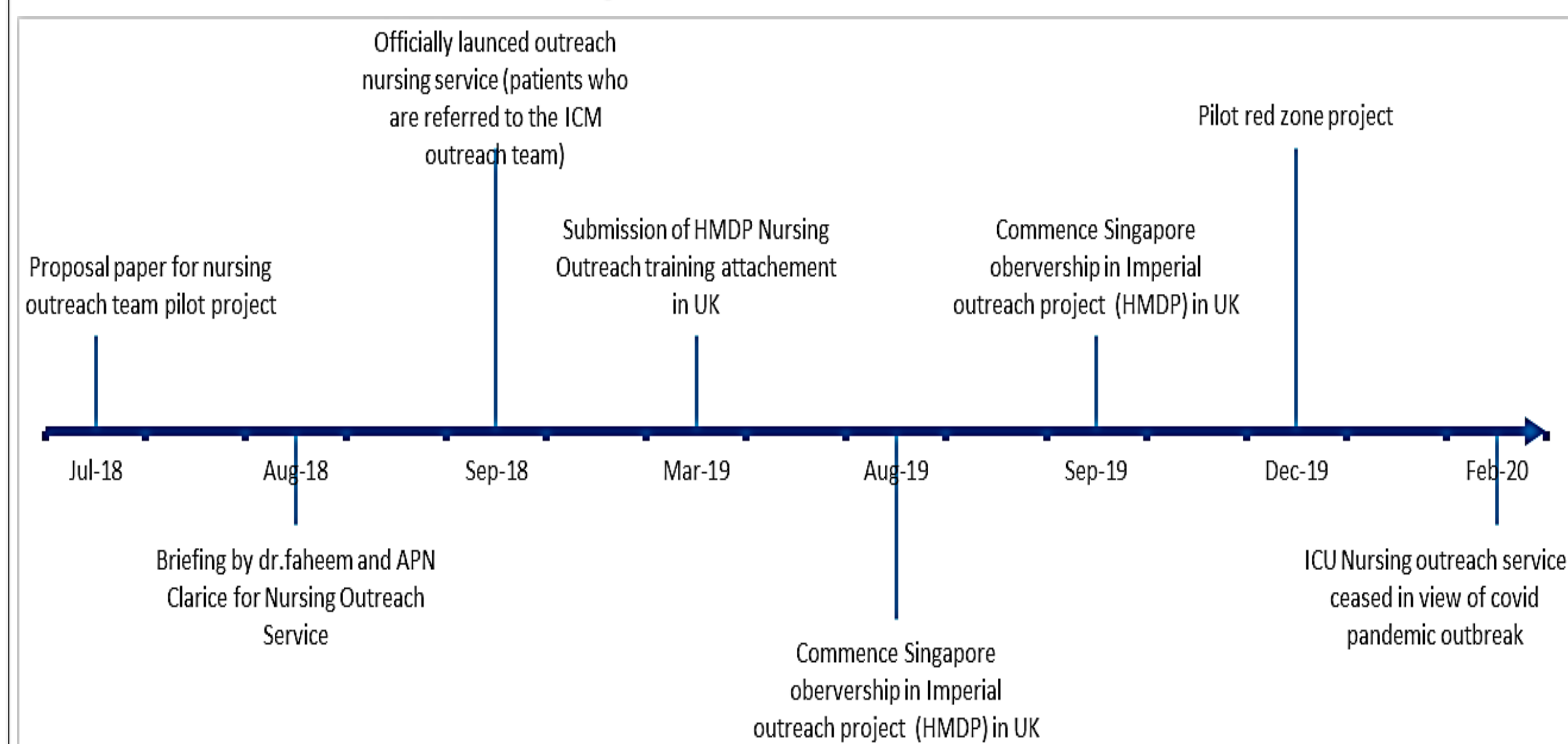
Aim
To reduce human errors and delay in activating the right senior doctor and addition of ICU outreach nurse to certain groups of patients, in RED zone criteria as per NEWS 2 scoring system.
Automating the alerts using the existing IT infrastructure.

Establish Measures

Time Line Chart for Outreach Project since 2018:

Analyse Problem

Ng Teng Fong General Hospital used the JurongHealth Escalation Trigger System (JETS) escalation policy to identify deteriorating patients in the acute wards that risk stratifies patients who might need more medical attention. This has been changed only to National Early Warning Score (NEWS 2) on the physiology monitoring device from Feb, 2020. However, this escalation is not automatic, even though the physiology monitoring device auto calculates the score and gives advisory message, what to do next, and it also requires the bedside nurse to call a doctor for a medical review. Most of the time, junior most doctor is alerted, even though senior doctor intervention is needed immediately. This may result in significant delay and has caused harm to the patients in the past. The automated alerts has been used for pre defined peri cardiac arrest group of patients in NTFGH and has proven to be beneficial. This has led in trying similar automated alerts to Red zone group of patients and addition of ICU outreach nurse to the workflow.

The team has analyzed the following problems in escalating deteriorating patients before further deterioration such as peri-arrest or cardiac arrest:
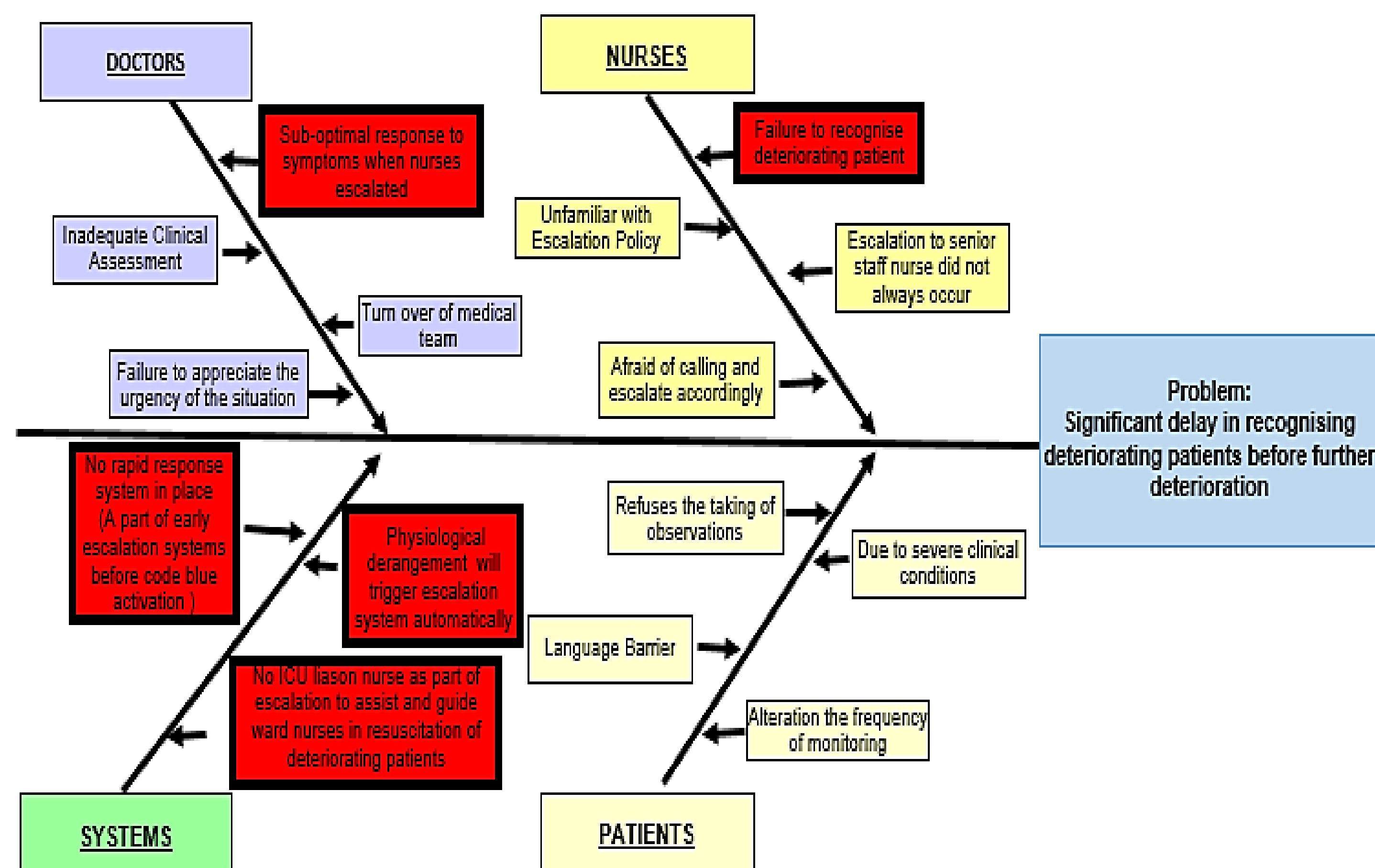
Select Changes

The Clinical Practice Improvement Programme (CPIP) that had been done in Ward 6, showed that one of the recommendation was to use technology to improve compliance. Hence, the birth of red zone patients automated alerts to smartphones.

A pilot project of this new workflow was initiated from 5th December 2019 in 3 medical wards and expanded across hospital to include surgical wards. As soon as the NEWS score reached 10 and above or any single physiological parameter (BP, HR, RR, SpO2) score was 3, automated alerts will be sent to smartphones of ICU outreach nurse, ward nurse-in-charge and medical registrar (after office hours). During office hours, respective registrars will be informed by ward nurse in charge via a phone call and seeking for advice or any intervention to be taken.

The automated alerts included patient's name and location, doctors in-charge name, vital signs (HR, RR, Systolic BP, Temperature ACVPU). Upon receiving the alert, ICU outreach nurse attends and assesses the patient's clinical condition with doctors and assists in the care management. If patients were deemed for urgent ICU/HD care, ICU outreach nurse and primary team registrar will be liaising with ICU consultant directly. Otherwise, primary team will initiate medical treatment in the wards.
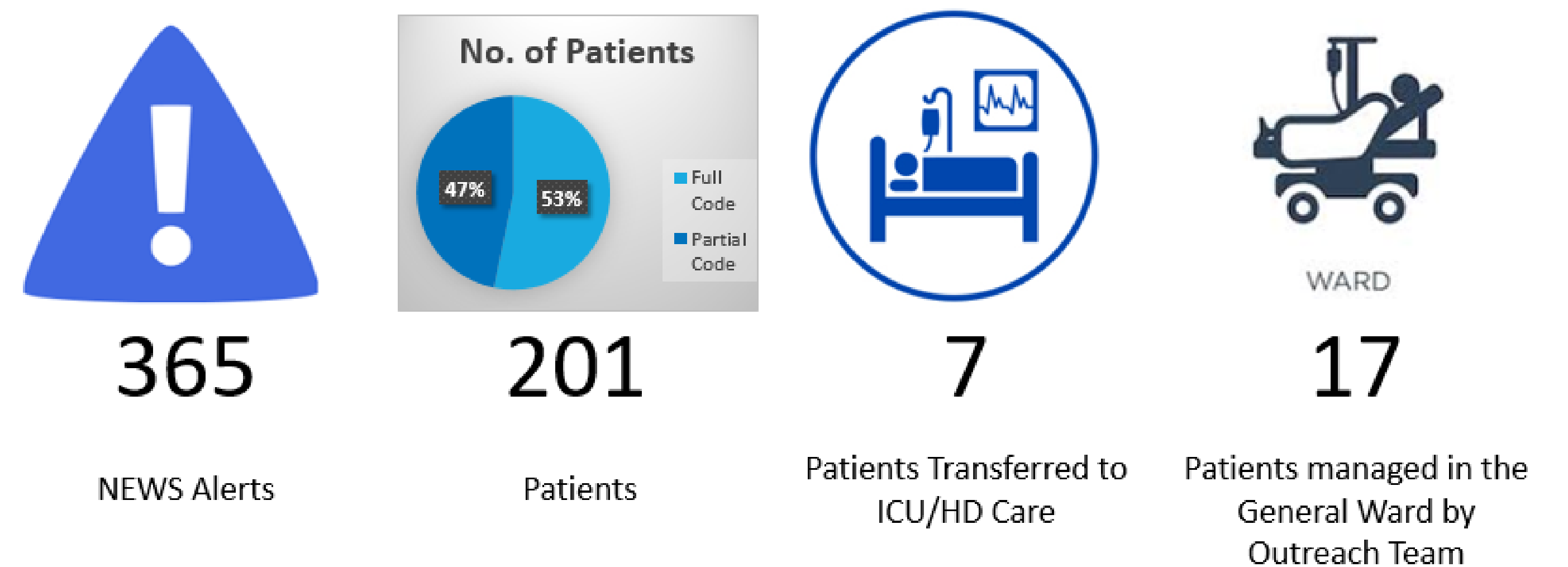
(The above was achieved in collaboration with our Non-clinical colleagues from Facilities, Biomedical engineering and Information Technology. Supported by Philips(vendor)).

Test & Implement Changes

During pilot implementation, there were 365 NEWS alerts, consisting of 201 patients from both partial and full code status, were received. 190 out of the 365 NEWS alerts were from 107 patients (53.2%) on Full Code Status. Out of the 107 patients, 7 patients were referred to ICU/HD for further closer monitoring and intervention/ treatment. Thus, preventing further deterioration of patient's condition.

A total of 17 patients were managed in the ward by the Outreach team and avoided ICU/HD admission, and had the ICU outreach nurse to follow up. Remaining patients improved after the treatment in the wards. The main point of concern was alarm fatigue due to alerts from patients on partial code status. There will be further enhancement for the alerts system, to prevent it, using EMR EPIC starting in September,2020

Result Findings

365	201	7	17
NEWS Alerts	Patients	Patients Transferred to ICU/HD Care	Patients managed in the General Ward by Outreach Team

Spread Changes, Learning Points

With the digitalisation of processes and use of existing infrastructure with the already validated NEWS score, it has shown to improve compliance of escalation policy, and also led to appropriate early intervention, reduced the need for ICU/HD admission. It has indirectly reduced the length of hospital stay and costs. Patient can be safely managed in general wards by primary medical team with support of the ICU Outreach nurse.

Ng Teng Fong General Hospital

Jurong Community Hospital