

# VALUE-BASED HEALTHCARE CONFERENCE 2024

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## Optimising Telemetry Usage in Changi General Hospital

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### Background

As a tertiary hospital, CGH cares for patients with complex medical issues who require telemetry monitoring for various indications.

Unfortunately, there are limited general ward telemetry units (30 pieces) available and suboptimal allocation of these scarce resources to low risk patients often results in insufficient units to monitor higher risk patients.

This not only compromises patient care but also delays patient transfers from the intensive care unit, high dependency and the emergency department to the general wards, resulting in increased healthcare costs (\$70-80 per day for A class patients; \$20 per day for C class patients).

### Aims

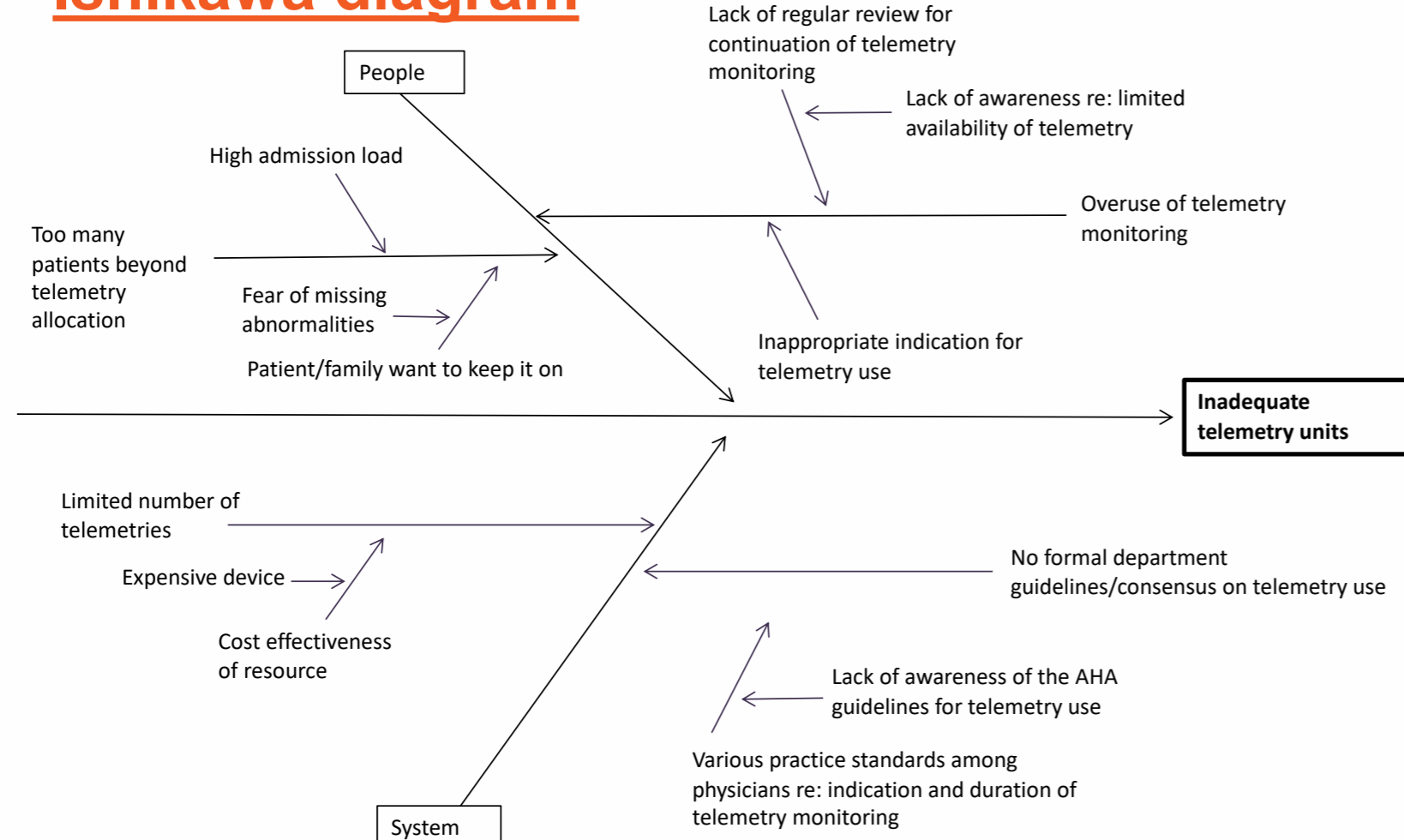
To achieve 95% appropriate (indication and duration of use) of telemetry according to recommended guidelines, in the cardiology inpatient wards, within 3 months.

### Analysis of Problem

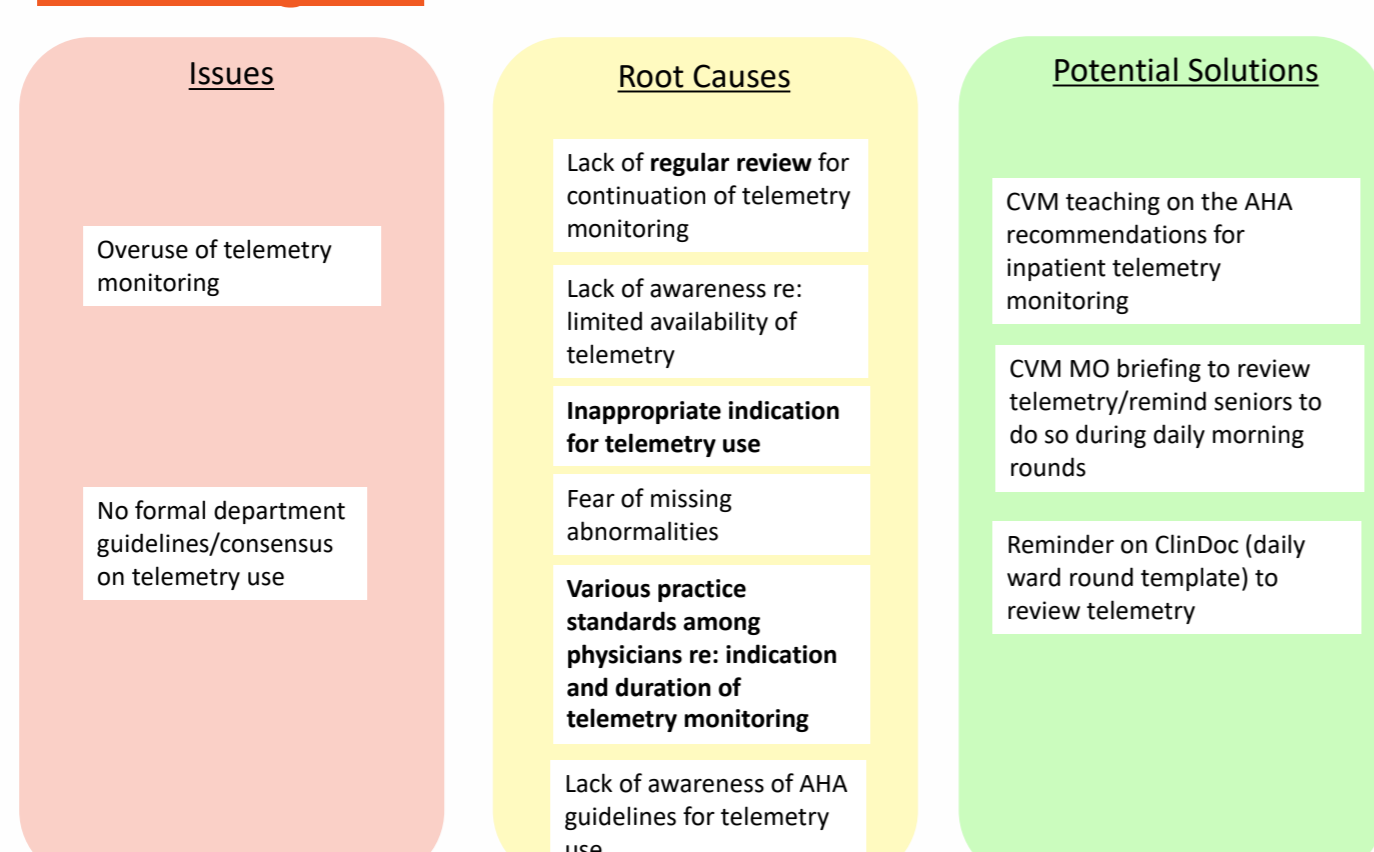
An initial survey in May 2022 revealed that of the 329 patients placed on telemetry, there was a 26% rate of inappropriate indication and duration of telemetry usage.

A review of the current telemetry workflow with the assistance of an Ishikawa diagram and identified the following root causes and potential solutions.

### Ishikawa diagram



### Tree diagram



### Intervention

Tutorials were conducted for cardiology medical officers (MOs) on appropriate indications for and duration of telemetry use in accordance with the 2017 American Heart Association scientific statement. MOs were also encouraged to review telemetry daily and document duration of telemetry use in daily ward round entries as a reminder to the ward team to review and remove telemetry units if no longer indicated.

Additionally, the nursing manager educated staff nurses to highlight the duration of telemetry use to ward teams to encourage telemetry review and removal if appropriate.

### Results

Retrospective data from July to October 2022, showed a total of 1219 patients were on telemetry monitoring, of which 40 were excluded due to missing data. The repeat analysis was conducted in December 2022, after our education initiative.

After the 1st PDSA cycle of educational interventions, 98.7% appropriate telemetry use based on indication and 80.0% appropriate duration of telemetry use were achieved (p-value <0.001).

|                          | Baseline (n=1179) | Post-Education (n=302) | P value |
|--------------------------|-------------------|------------------------|---------|
| Appropriate Indication   | 1091 (92.5%)      | 298 (98.7%)            | <0.001  |
| Inappropriate Indication | 88 (7.5%)         | 4 (1.3%)               |         |
| Appropriate Duration     | 654 (60.0%)       | 238 (80.0%)            | <0.001  |
| Inappropriate Duration   | 437 (40.0%)       | 60 (20.0%)             |         |

Amongst those with appropriate telemetry use, there was a reduction of patients on telemetries for inappropriate duration by 50.0% or 1703 days (p-value <0.001).

These would result in cost savings of \$4575/month for reducing inappropriate telemetry use and \$28,331/month for streamlining appropriate telemetry use duration.

### Future Plans

We hope to build upon this project by making education on telemetry an integral part of Cardiology MO orientation, and extending education to our colleagues in all the medical and surgical disciplines.

Additionally, we are working with the IT department to create a new flowsheet for documentation of telemetry duration and alerts across CGH.

### Acknowledgements

This telemetry quality improvement (QI) project is an extension of the telemetry QI project that is ongoing at the National Heart Centre Singapore. We would like to thank Dr Alex Tan, Dr Michelle Kui, Dr Kenneth Chew, Dr Teo HK, Dr Ignasius Jappan and Dr Eric Lim for providing the framework and resources to making this QI possible.

### References

<sup>1</sup>2017 AHA Update on practice standards for ECG monitoring in hospital settings. Circulation 2017; 136:e273–e344