[Restricted, Non-sensitive]

NURSE LED VITAL SIGNS MONITORING REDUCTION PROTOCOL

❑ SAFETY ❑ PRODUCTIVITY
❑ QUALITY ❑ COST
❑ PATIENT EXPERIENCE

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Define Problem, Set Aim

Problem Statement

There is currently no standardized guideline in NTFGH to determine the appropriate frequency of vital signs monitoring based on patient stability. 75% of inpatients are on 4 hourly vital signs monitoring, even though some are clinically stable, while only 4% are on 8 hourly monitoring. On average, each ward spends 817 minutes/day on vital checks. This highlights a significant opportunity to optimize monitoring frequency without compromising patient safety, thereby reducing unnecessary nursing workload, minimizing disturbances to patients, and improving resource utilization.

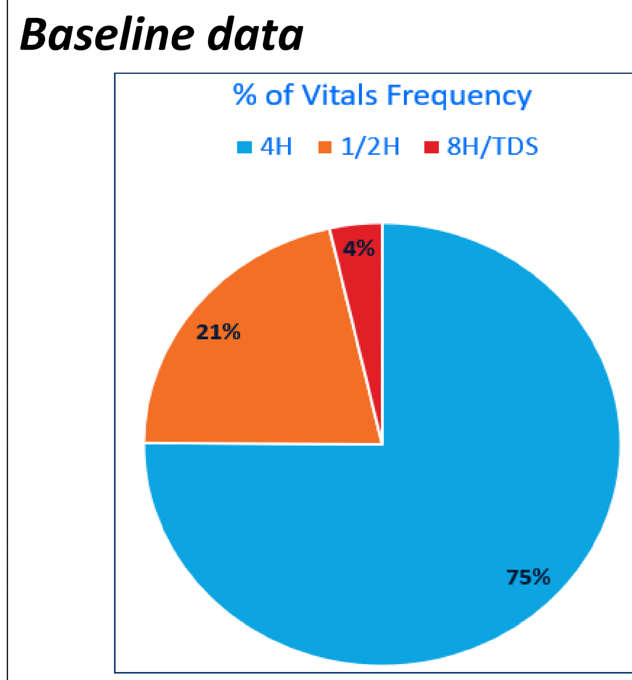
Aim Statement

To implement a nurse-led protocol in NTFGH inpatient wards that empowers nurses to safely transition clinically stable patients from 4 hourly to 8 hourly vital signs monitoring, aiming for 20% of patients to be on 8 hourly monitoring without any adverse events.

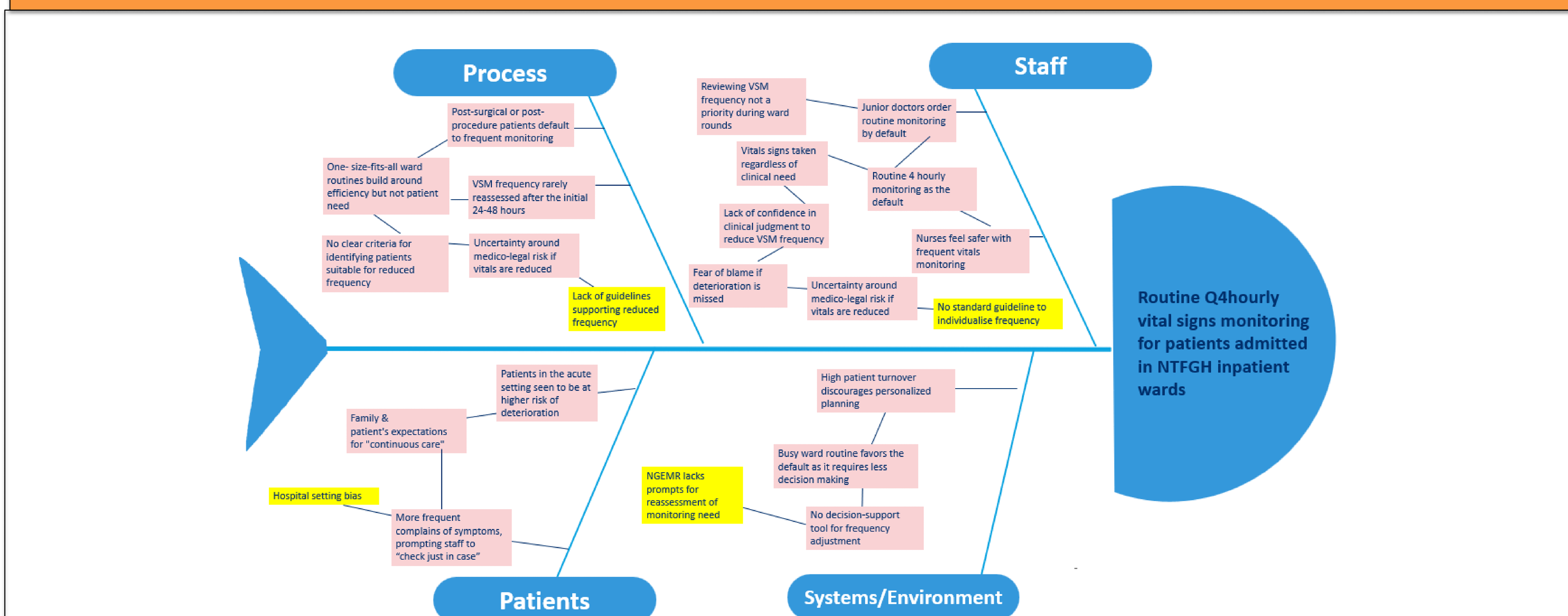
Establish Measures

Measure	Parameters	Target
Outcome	% of patients on Q8H/TDS monitoring	20%
Process	% compliance with the protocol amongst eligible patients	80%
Balancing	% of adverse patient outcomes arising from inadequate vital signs monitoring	0%

Baseline data



Analyze Problem



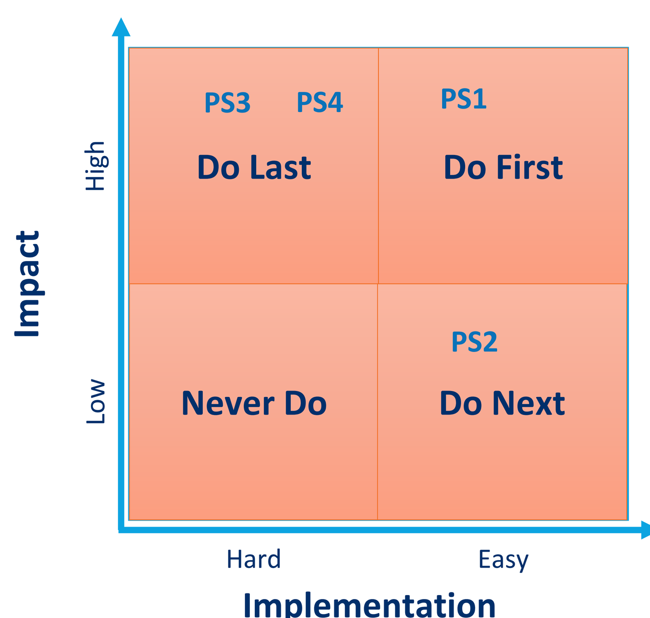
Time motion study performed to quantify workload and establish an estimate total time spent per shift/day on taking 1 full set of vital signs:

Average	B9	C9
Q1	4	1
Q2	1	1
Q4	30	29
Q6	0	1
Q8	0	3
TDS	0	0
BD	0	1
Daily	0	1

- Average time taken to complete one set of vital signs check = **3 minutes**
- Average time spent on vital signs check in a day per ward = **817 minutes**
- Potential time saved from vitals reduction from Q4H to Q8H monitoring = **9min/day/patient**

Select Changes

Root Cause		Potential Solutions
No standard guideline to individualise frequency	1	*Implement standardized criteria for de-escalation of vital signs monitoring*
	2	*Create awareness amongst junior doctors to order vitals monitoring frequency based on clinical judgement*
NGEMR lacks prompts for reassessment of monitoring need	3	*Embed vital signs review into BPA*
Hospital setting bias	4	*Shift staff mindset through education that reduced vitals frequency for stable patients is safe*



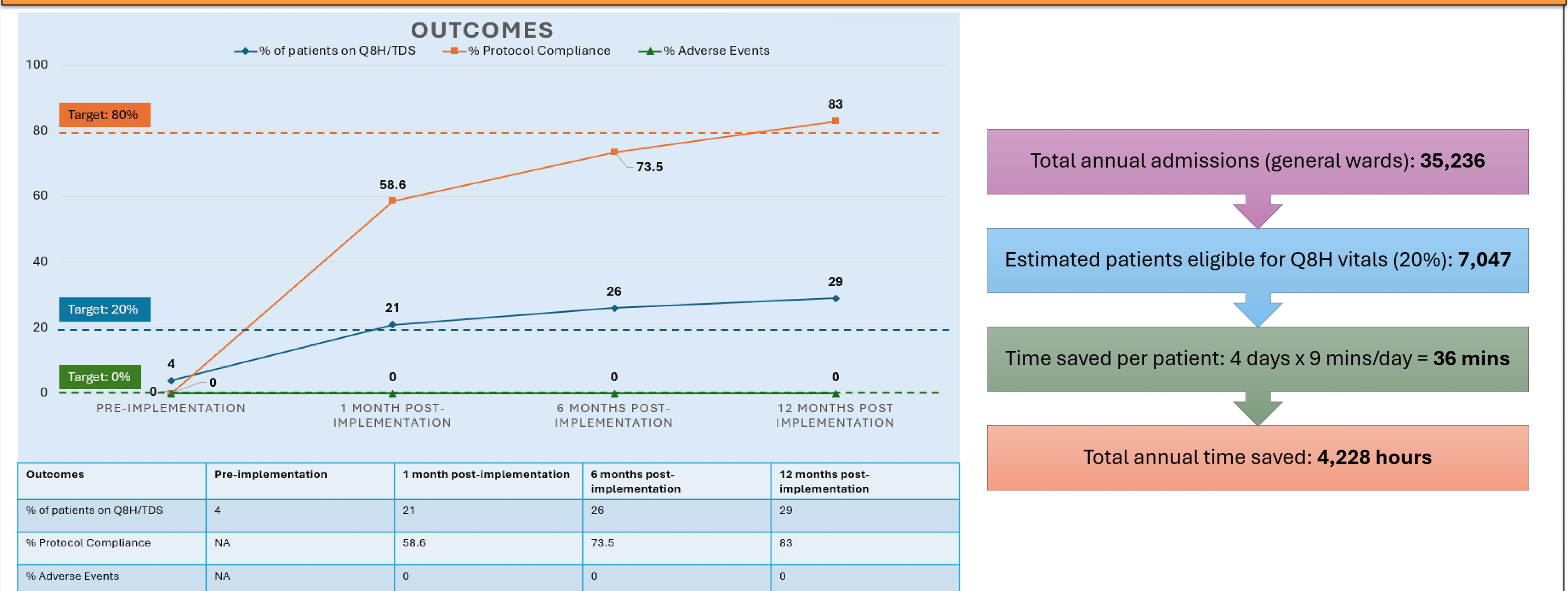
Ng Teng Fong General Hospital

Jurong Community Hospital

Test & Implement Changes

PDSA cycles were carried out with progressive scale up of intervention from two pilot wards to eventually spreading and sustaining the intervention to all NTFGH inpatient wards.

CYCLE	PLAN	DO	STUDY	ACT
1	Empower nurses to modify vital signs monitoring frequency by developing a nurse-led vital signs monitoring reduction protocol using NEWS2 score as a reference guide.	Protocol was piloted in 1 Surgical and 1 Medical Ward - B9S and C9 from Oct 23 to Nov 23.	Feedback gathered from Nurses: 1. Concerns over safety of protocol, felt that the NEWS2 score range of 0-4 was too wide → patients who are clinically unstable (single NEWS2 score of 3) may fall into this category too 2. NEWS2 score in NGEMR only shows total score, does not show individual score, nurses found it tedious to check individual scores manually to ensure there was no single NEWS2 score of 3	Based on the gathered feedback, the protocol criteria was reviewed to ensure nurses could safely apply protocol with no adverse outcomes.
2	Modify nurse-led vital signs monitoring reduction protocol with a narrow NEWS2 score range	A second cycle of pilot was conducted in the same two wards – B9S and C9 from Dec 23 to Jan 24.	Feedback gathered from Nurses: 1.Protocol was easier to apply and felt safer 2.Despite narrowed NEWS2 score range, protocol remained effective in identifying clinically stable patients who will benefit from vitals monitoring reduction, with no adverse outcomes	Protocol can be effectively rolled out across all NTFGH wards.
3	Spread and implement change across all NTFGH inpatient wards	Sharing across all nursing platforms, individual ward roll calls, identification of ward champions to create awareness and implement protocol. Protocol was implemented hospital wide on 1 Mar 2024. Post-implementation, first month data collection was carried out.	Protocol application compliance rate was unsatisfactory – 58.6% Focus group discussions were conducted with four wards to identify barriers and challenges to protocol application: -No standardized timing to review -Junior staff did not feel confident to review -Fear of inadequate monitoring -Lack of awareness of protocol – nurses and doctors (doctors reverting vitals back to Q4H)	Based on the feedback, the team implemented the following measures: -Standardized timing for review of protocol: during AM-PM shift handover -This also allows junior staff to check in with senior if application of protocol is appropriate -More ward roll call sharing sessions to increase awareness -Clinical lead reinforced and communicated protocol with various clinical head of departments to increase physician awareness.
4	Maintaining change and ensuring sustainability	Audits were conducted 6 months and 1 year post-implementation to monitor outcomes and ensure change is sustained.	Audit results showed improved compliance to protocol application. Team continued to engage ward champions to identify areas of improvement. Feedback gathered: - Troublesome and redundant to inform doctors about reduction in vital signs monitoring frequency - Felt that patients who are on Q6 hourly vitals monitoring can benefit from this protocol too.	Approval was sought: - To remove the need for informing doctors about reduction in vital signs monitoring frequency -To include patients who are on Q6 hourly vitals monitoring These new changes were implemented since 1 June 2025.



Outcomes

OUTCOMES

(Chart legend: % of patients on Q8H/TDS; % Protocol Compliance; % Adverse Events. Target: 80%; Target: 20%; Target: 0%)

Outcomes	Pre-implementation	1 month post-implementation	6 months post-implementation	12 months post-implementation
% of patients on Q8H/TDS	4	21	26	29
% Protocol Compliance	NA	58.6	73.5	83
% Adverse Events	NA	0	0	0

Total annual admissions (general wards): **35,236**

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Estimated patients eligible for Q8H vitals (20%): **7,047**

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Time saved per patient: 4 days x 9 mins/day = **36 mins**

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Total annual time saved: **4,228 hours**

Future Plans for Sustained Change

To ensure long term sustainability, the team plans to embed the protocol into practice by building a Best Practice Advisory (BPA) in NGEMR, this also helps to reduce the time spent by nurses to manually review the protocol.

Spread Changes, Learning Points

What were the strategies to spread change after implementation?

In the initial month post-implementation, the target for protocol compliance rate was not met, only 58.6% of the eligible patients were screened. To identify the possible barriers preventing successful adoption, the team conducted focus group discussions with ward champions and gathered feedback from nurses through survey. Based on the barriers identified, action plans were crafted immediately and acted upon to improve compliance.

Where will the team spread/intend to spread the changes to?

This protocol was piloted in Ward B9S and C9, then subsequently rolled out to all NTFGH inpatient wards.

Are/Were the spread leaders identified and engaged?

Ward champions were identified for respective wards; the team worked closely with the ward champions to spread change across all the inpatient wards.

How will/did you communicate to affected staff?

The team communicated this protocol implementation at various nursing platforms including NEC, NLM, NQF, and briefed individual wards during roll calls.

What are the key learnings from this project?

It is important to engage spread leaders early in the project to ensure stakeholders buy-in, and to maintain constant communication to ensure successful change adoption.