

### **Project Title**

Reducing Proportion of Patients on I/O Chart Monitoring in an Intermediate Rehabilitation and Subacute Setting

### **Project Lead and Members**

Project Lead: Wang Qian, Senior Nurse Clinician

Project Members:

- Wee Fong Chi, Deputy Director of Nursing
- Glenda Maris Lucero Abato, Asst Nurse Clinician
- Delphine Chen Yu Mei, Senior Staff Nurse
- Puvannaa Muniandy, Healthcare Assistant
- Dr Lee Liang Tee, Clinical Director (Integrated Care Hub)
- Dr Colin Ngeow, Senior Consultant
- Yannis Ong Yan Ling, Assistant Manager
- Wong Jing Wen, Executive

### **Organisation(s) Involved**

Tan Tock Seng Hospital

### **Healthcare Family Group(s) Involved in this Project**

Medical, Nursing, Healthcare Administrator (Hospital Operation)

### **Applicable Specialty or Discipline**

Rehabilitation Medicine

### **Project Period**

Start date: Nov 2020

Completed date: May 2021

### **Aim(s)**

To measure the changes in productivity based on a modified Nursing Input and Output (I/O) Review Process

### **Background**

See poster appended/ below

### **Methods**

See poster appended/ below

### **Results**

See poster appended/ below

### **Lessons Learnt**

The team has learnt that it was effective for junior Nurses and Healthcare Assistants to lead the discontinuation of I/O Review on the ground, as it had a direct impact on their daily work. Staffs were able to observe the benefits gained and they were motivated to reinforce the practise on the ground.

When junior staffs were empowered in clinical decision-making, they acquire clinical knowledge and were able to articulate the considerations during transdisciplinary discussions.

### **Conclusion**

See poster appended/ below

### **Project Category**

Care & Process Redesign, Quality Improvement, Workflow Redesign, Job Effectiveness

Workforce Transformation, Workforce Performance, Workforce Productivity

**Keywords**

Nursing Input and Output Process, Chart Monitoring

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# Reducing Proportion of Patients on I/O Chart Monitoring in an Intermediate Rehabilitation and Subacute Setting

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## Background

This project aims to measure the changes in productivity based on a modified Nursing Input and Output (I/O) Review Process.

Helmed by a project team comprising of representatives from the Nursing and Medical team, new initiatives are progressively implemented in the 37-bedded ward to sandbox the feasibility of new clinical care models and resourcing in a Community Hospital setting. Patients transferred to the ward are medically stable and identified to benefit from 2 to 3 weeks of Intermediate Rehabilitation in a hospital before returning to community. The average age of patient profile was 74 years old.

Implemented in Nov 2020, Nurse-led I/O Chart Review is an ongoing project in Tan Tock Seng Hospital (TTSH) Ward 8, which is located in Ren Ci Building. The ward was set up in preparation of the opening of TTSH Integrated Care Hub (TTSH-ICH), a 608-bedded facility which would provide community hospital (CH), acute rehab services and hospice services (provided by Dover Park Hospice).

Based on a pre-implementation study, 100.0% of patients who were transferred from acute setting to a Intermediate Rehabilitation (IR) and Subacute (SA) setting were placed on daily I/O Chart Monitoring, and Medical Team would only review the I/O upon prompts from Nurses. In consideration that most of the patients are medically stable and admitted for a short period of rehabilitation before returning to community, most of them should not require I/O Chart Monitoring.

This project aims to (i) better understand the necessity of I/O Chart Monitoring for patients and (ii) implement a solution which would reduce proportion of unnecessary I/O Chart Monitoring.

## Our Strategy

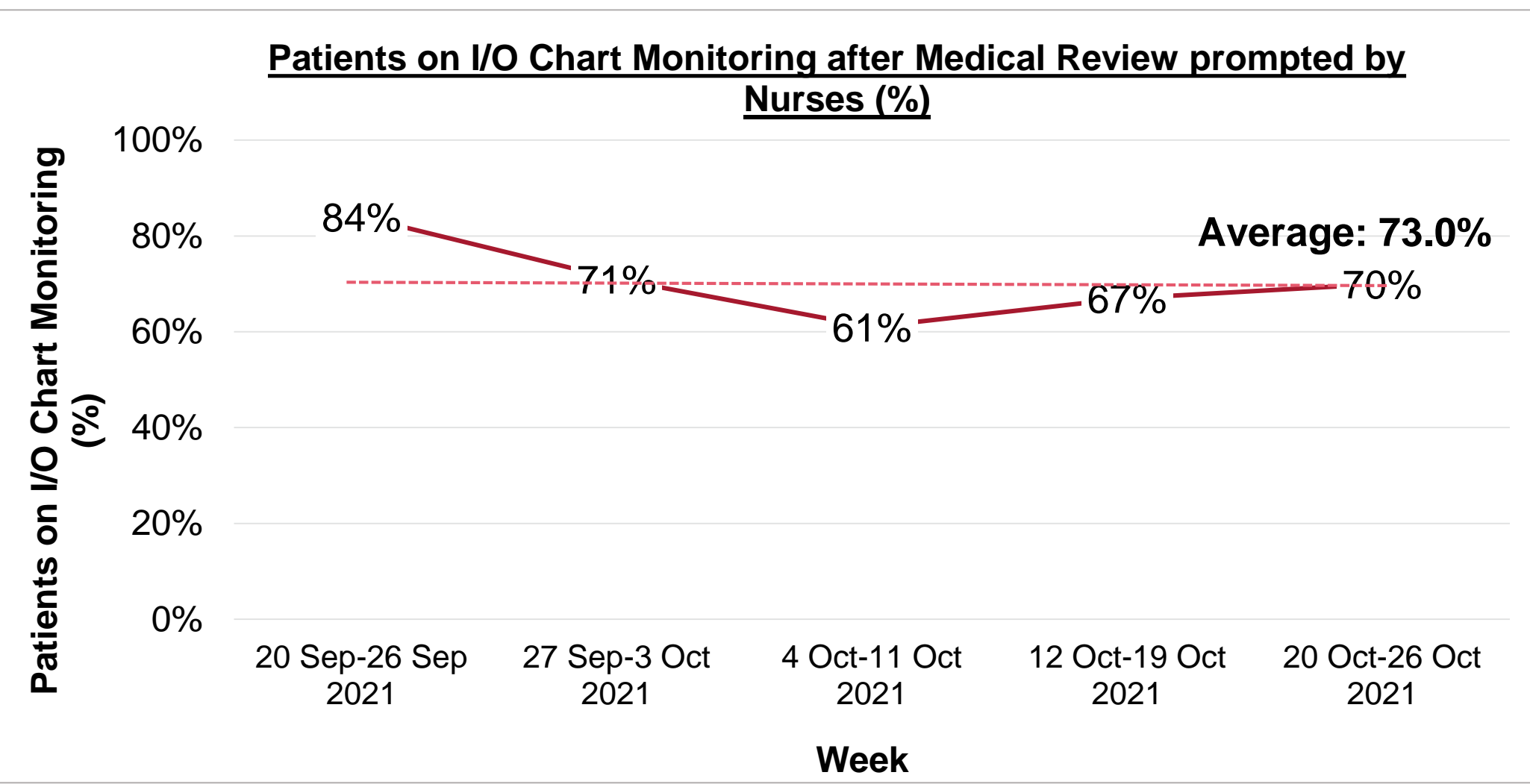


Figure 1. Pre-implementation study: Percentage of Patients on I/O Chart Monitoring after Medical Review prompted by Nurse

A 4-week pre-implementation study was conducted to calculate the percentage of patients on I/O Chart Monitoring and the number of Nursing hours spent.

100.0% of patients who were transferred from acute inpatient setting to the ward were placed on daily I/O Charting. Nurses would prompt doctors to perform a medical review of patient's condition and an average of 73.0% of patients were on I/O Chart Monitoring (Figure 1). We conducted a motion study and found that 10 minutes was required for Nursing to do I/O Chart monitoring for each patient daily, which amounts to 181 minutes of Nursing hours daily.

These findings were discussed during weekly ward meetings with multi-disciplinary healthcare leaders in end Sep 2020 and the team agreed to modify an existing Nursing I/O Review Workflow from TTSH Nurse Education Department.

- To successfully implement the modified workflow in the ward on 9 Nov 2020, the team took the following measures:
- 1) Appointing junior Nurses and Healthcare Assistants to lead the initiative on the ground;
  - 2) Conducting several briefings were conducted to teach and explain the new workflow to ground staff;
  - 3) Encouraging all staff to raise any difficulties and feedback during a weekly session with Nurse Managers.

- In modifying the workflow, the following factors were considered:
- 1) Doctors to review whether patients require I/O Chart upon transfer to the ward and to terminate if it is not required;
  - 2) During inpatient stay, Nurses would review patient's risk factors and the balance between their Intake and Output; Nurses would discontinue I/O Chart Monitoring if the criteria has been met (Figure 2).

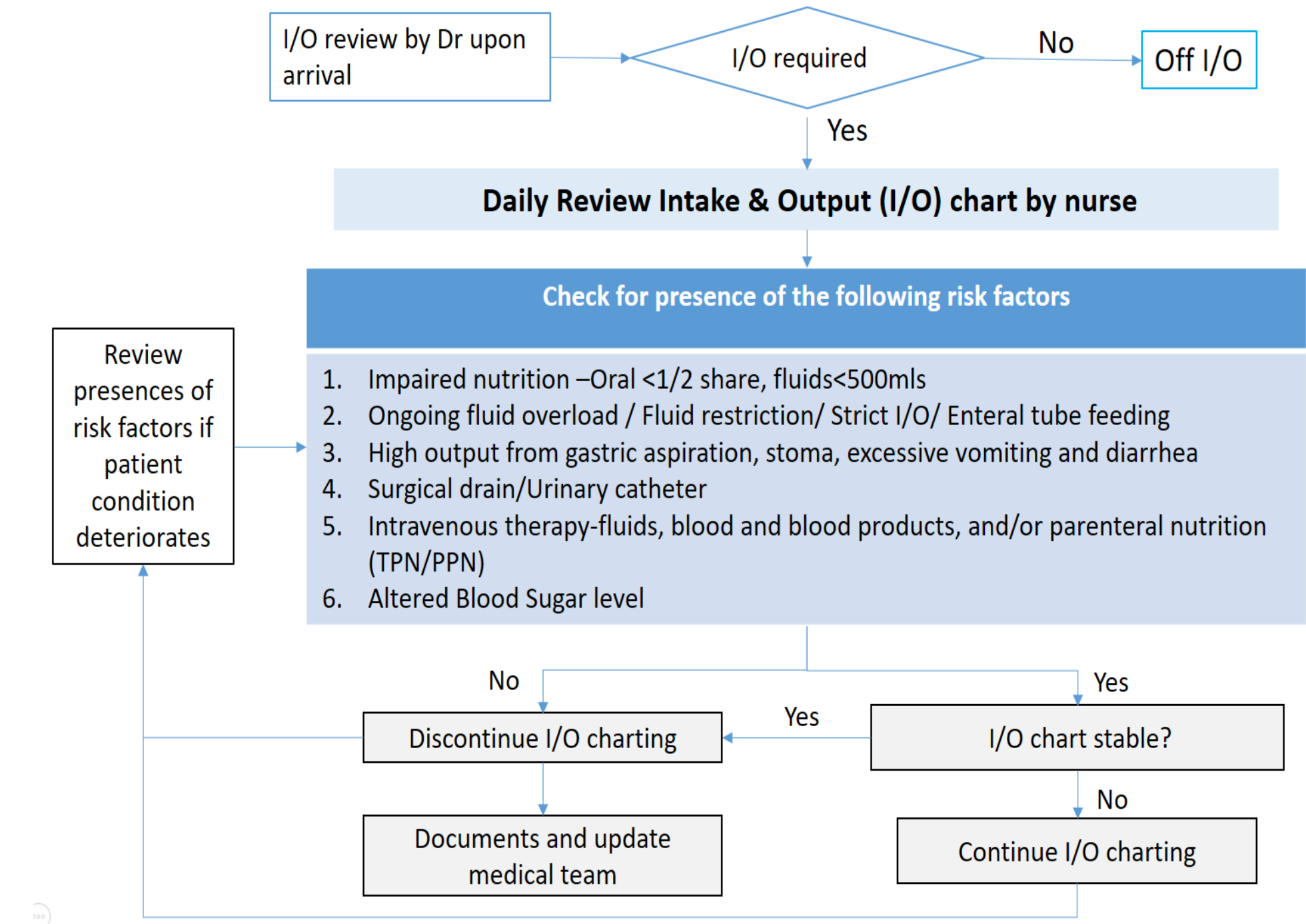


Figure 2. Workflow of Modified Nurse-led I/O Review

## Results

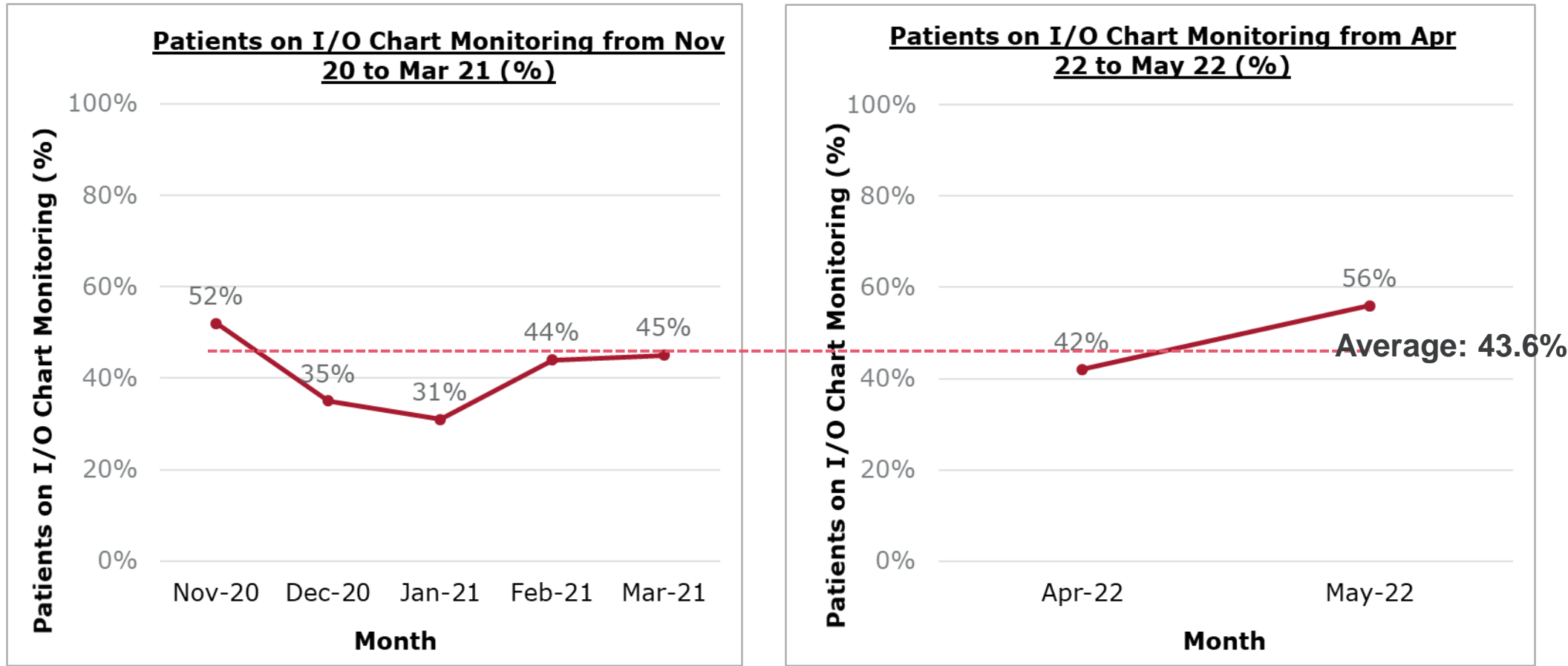
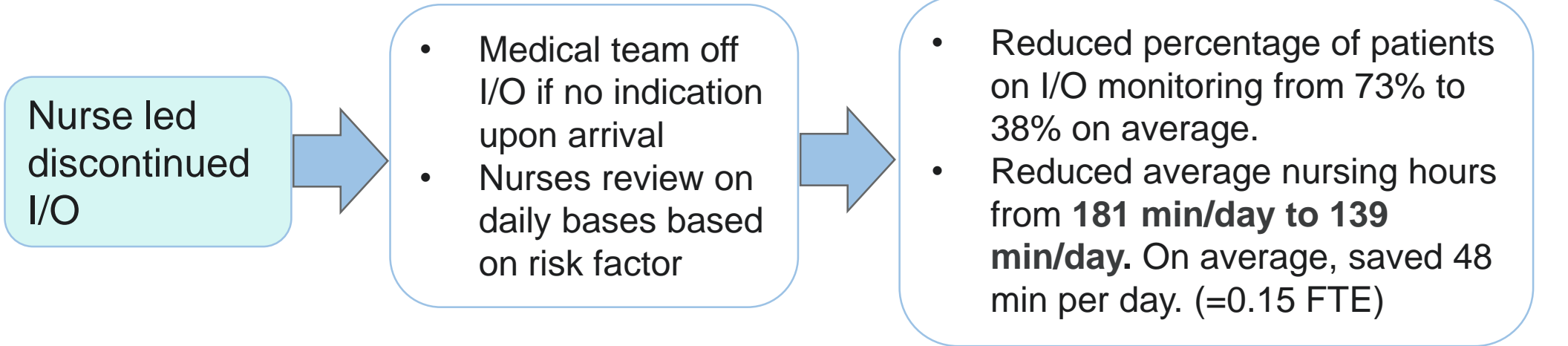


Figure 3. Percentage of Patients on I/O Chart Monitoring (Nov 20 - Mar 21) and Figure 4. Percentage of Patients on I/O Chart Monitoring (Apr 22 - May 22).

The trial was implemented across 7 months and the percentage of patients on I/O Chart Monitoring was reduced from 73.0% to 43.6% (Figures 3 & 4). On average, staff hours that was spent on I/O Chart Monitoring was reduced from 181min/day to 139 min/day. There were no adverse events caused by the modified workflow. The improvement in productivity had provided Nurses with more opportunities to carry out care duties which would maximise patient's function in rehabilitation.



## Effects of Changes

Nursing I/O Chart Monitoring is a process which takes up significant Nursing hours to monitor, calculate and document patient's condition. The reduced wastage in time and resources spent had improved productivity of Nursing practice. During weekly feedback sessions, Nurses and Healthcare Assistants appreciated that the initiative had given staff a greater capacity to conduct other care duties which could optimise patient's functional outcomes, such as ambulating patients to the toilet and engaging patients during exercises.

## Lessons Learnt

A challenge faced in implementing the project was the frequent rotation of Medical Officers into the ward. This provided a shorter runway for doctors to adapt to the new work process and cultivate it into practice.

The team has learnt that it was effective for junior Nurses and Healthcare Assistants to lead the discontinuation of I/O Review on the ground, as it had a direct impact on their daily work. Staffs were able to observe the benefits gained and they were motivated to reinforce the practise on the ground. When junior staffs were empowered in clinical decision-making, they acquire clinical knowledge and were able to articulate the considerations during transdisciplinary discussions.