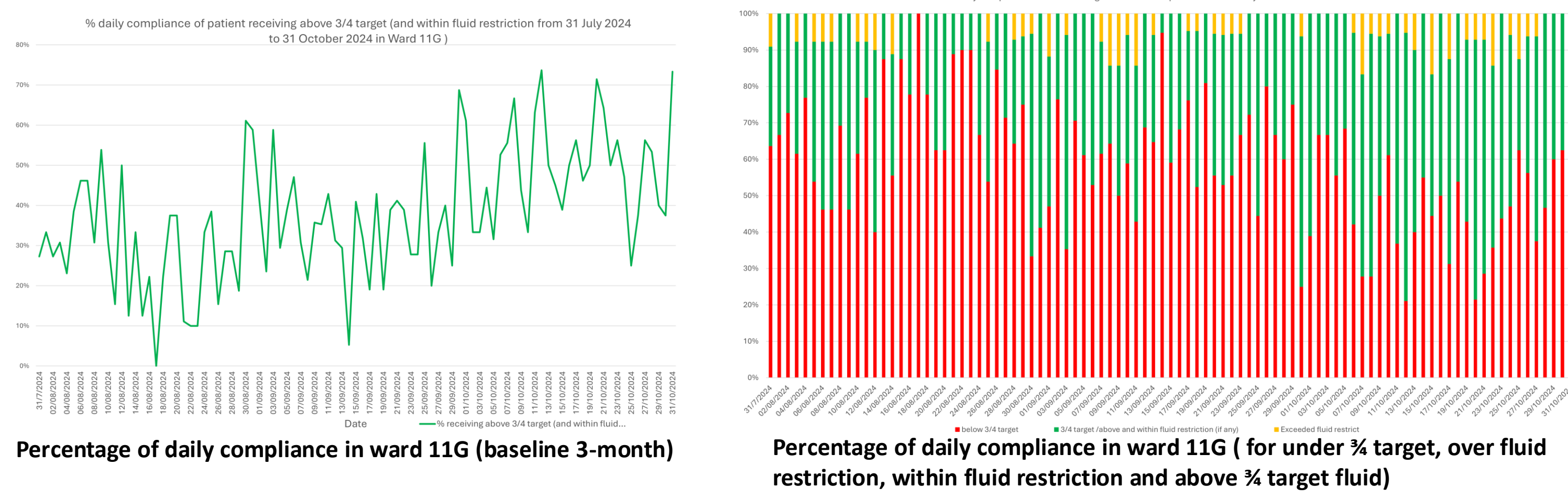


Tan Tock Seng Hospital Integrated Care Hub
Goh Cheng Jee, Dr Khin Khin Win, Sun Sijia, Lua Chong Ying, Alagar Sivarani

Introduction/Background

Dehydration in older adults is a significant health concern associated with increased length of hospital stay, higher mortality risks, and increased healthcare costs. Local study at an acute geriatric ward in CGH found 90% of elderly inpatients didn't meet recommended daily fluid intake.

Baseline data for this project, collected from Integrated Care Hub Ward 11G, showed that only 35% of subacute patients were meeting at least 3/4 of their target fluid intake as set by the Geriatric medicine team. This low compliance rate underscored the need for targeted interventions to improve fluid intake among this vulnerable population.



Goal/Objective

To increase the percentage of daily compliance* for fluid intake, from 35% to 75% (stretch goal 80%) for subacute patients^ admitted to Ward 11G in 6 months (from September 2024-February 2025)

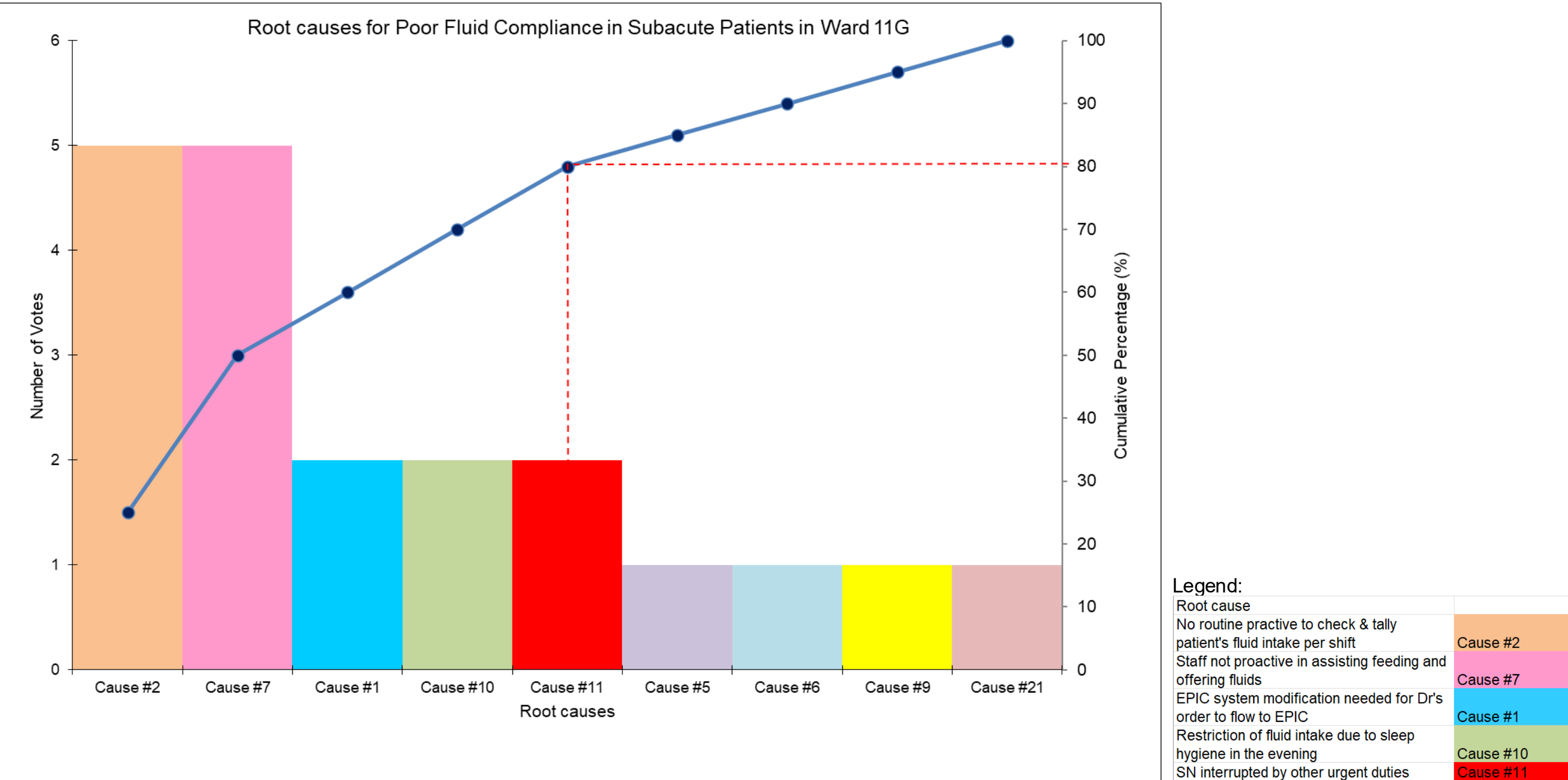
*Daily compliance defined by meeting at least ¾ of target fluid intake set by Geriatric medicine team, and within fluid restriction

^Exclusion: patients who are on non-oral feeding, end of life case/palliative case/persistently refused oral feeding due to progression of medical condition issue (e.g. progression of dementia) or patients with controlled amount of comfort feeding

Problem Analysis

Applying Clinical Practice Improvement Programme (CPIP) principles, we diagnosed problems using tools such as root cause analysis methodology, brainstorming and affinity table was done, and lastly fish bone analysis. Caregiver and patients' inputs were obtained qualitatively and included in the brainstorming phase as our informal members in the project. After three rounds of multi-voting, lack of routine fluid check & tally and staff proactivity were identified as the top 2 root causes of non-compliance from our pareto-chart.

Following the diagnostic phase, we designed a 2-phased interventions and conducted Plan-Do-Study-Act (PDSA) cycles.



Implementation Plan

Cause/ problem	Phase 1: Leveraging EPIC System Tools	Charts/ Images
Cause #2: No routine practice to check & tally fluids per shift	Phase 1A (18/11/2024 – 5/12/2024): Formalisation of Fluid Intake Tally in EPIC system 1. Smartphrases for fluid intake tally was introduced to nurses for end of day (night shift) and mid-day (morning shift) 2. Updated medical team on the schedule fluids ordering protocol. 3. Team conducted nurses' education roadshows	
Cause #2: No routine practice to check & tally fluids per shift	Challenges from Phase 1A "Nil data recorded " issue noted as Phase 1A EPIC smartphrase will pull data before 1359hours (for morning shift) however, Morning shift nurses may have difficulty documenting handover notes before 1359hours Phase 1B (6/12/2024 – 21/12/2024): Flowsheet Data Integration 1. Integrated flowsheet data and modified nursing handover templates for improved data visibility 2. Standardised doctors' fluid order templates in EPIC system	

Intervention Phase 1A&1B, implemented from November to December 2024, saw an increase in median daily compliance from 35% to 63.6%.

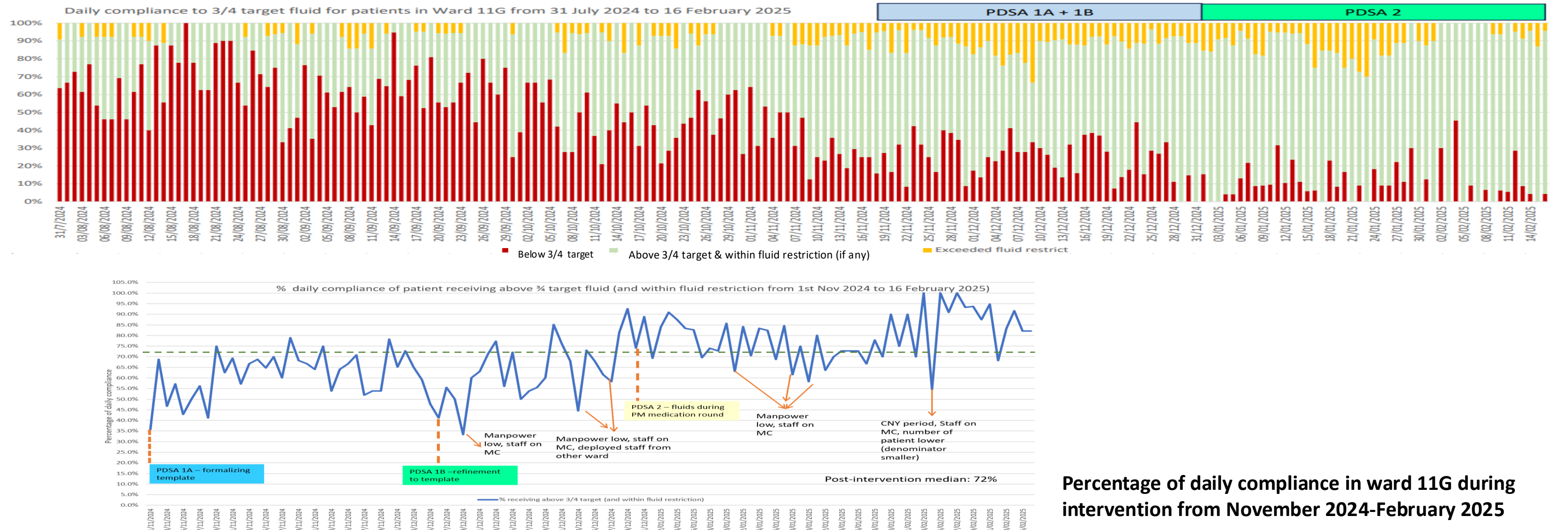
Phase 2 (30/12/2024 – 16/2/2025): Evening Fluid Protocol

- Implemented 200ml fluid administration during 6-8pm medication rounds for non-fluid restriction patients, aligning with last toileting schedule with regular staff roll calls for reinforcement

The second intervention, carried out from December 2024 to February 2025, further improved compliance from 63.6%.

Benefits/Results

Clinically, the median daily compliance increased from a pre-intervention baseline of 35% to a post-intervention level of 72%.



Systemic change achieved: streamlined Doctor's order workflow, and formalised and standardised fluid intake tally in EPIC system.

Changes to Flow chart	
Secondary Clinical Outcomes	Nil cases rerouted to acute ward for fluid overload crisis due to increased oral fluid consumption. Reduction in total number of IV fluid hydration days ordered for patients due to dehydration/ poor fluid intake from 30 days pre-intervention to 17 days post intervention over a period of 17 days.
Impact (Staff & Patient)	Increased awareness of fluid intake importance. Better compliance with documentation. Improved workflow efficiency. Enhanced patient comfort (reduced IV plug needs).
Financial Impact (Over 2 weeks)	Total savings: \$14,765.40. Reduced IV hydration needs: \$14,482. Nursing manpower savings: \$283.40. Additional savings from: Shorter hospital stays & Reduced IV consumables.

Sustainability

Continual Education	Integration into new staff orientation (Doctors, Nurses) Regular reminders during roll calls and doctor rotation meetings Department-wide sharing with Geriatric doctors and nurses
System Enhancement	Automation of EPIC report generation for monitoring Standardisation of documentation processes & Integration into existing ward workflows

Reflections

- Aligning interventions with ward's workflows bearing in mind staff/patient consideration
- Multi-disciplinary collaboration is crucial.