Management of Fluid Overload in a Hospital-at-Home Programme: A Retrospective Service Evaluation

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Introduction

Acute decompensated heart failure and other causes of fluid overload are among the most common reasons for hospital admission in older adults. Standard management requires diuretic therapy (intravenous (IV)/oral), close clinical assessment, and serial monitoring of renal function and electrolytes, traditionally necessitating inpatient care.

Hospital-at-Home (HaH) has emerged as an alternative model that delivers hospital-level care within patients' homes. Potential benefits include reduced hospital associated complications, improved patient experience, preservation of functional status, and reduced demand on acute hospital bed capacity. Although evidence supporting HaH continues to grow, published data describing the management of fluid overload in the home setting remain limited, particularly in Asian healthcare systems.

This study aimed to describe the patient characteristics, clinical outcomes, and operational challenges of patients with fluid overload managed under Tan Tock Seng Hospital at Home (TTSH@Home) programme.

Methods

A retrospective service evaluation was conducted of consecutive patients with fluid overload managed under TTSH@Home between February to October 25.

Demographic, clinical, and treatment data were extracted from electronic medical records. Variables collected included patients characteristics, underlying aetiology of fluid overload, diuretic therapy (IV/oral), weight change, renal function, acute kidney injury (AKI), length of stay (LOS), return-to-hospital (RTH), 30-day readmission, and operational challenges encountered during home-based management.

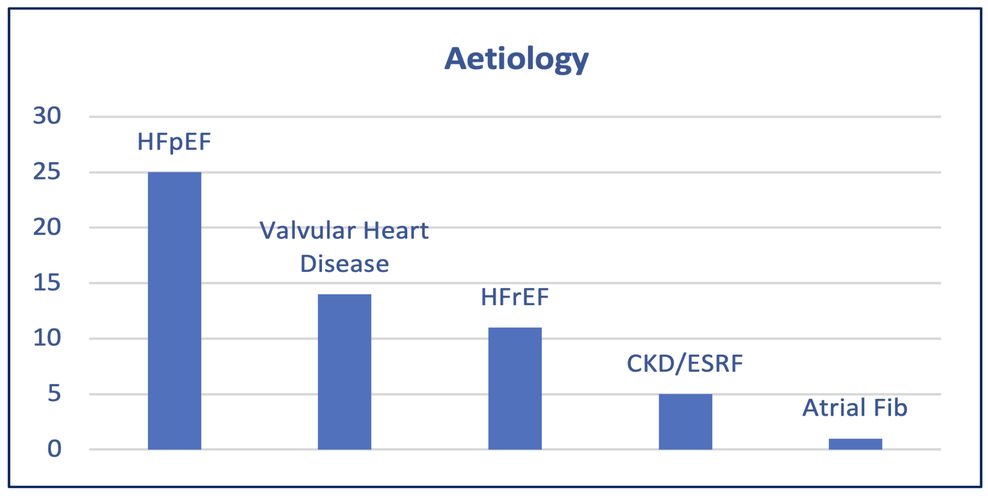
Clinical and operational outcomes were summarised using descriptive statistics.

Conflict of Interest: None declared

Results

Baseline Characteristics

56	88.1 yrs	6.4	7 days
Patients enrolled	Mean age	Mean Charlson Comorbidity Index	Median LOS



78.6% (n=44) patients received IV diuretics

Clinical Outcomes

3.12 kg	3.6%	19.6%	17.9%
Mean weight reduction	RTH	30-day readmission	AKI/AoCKD from over-diuresis

Operational Challenges

Assessment of volume status
Remote assessment relied on symptoms, video review, and selective home visits
Limited opportunity for bedside examination (unlike in ward)

Monitoring treatment response
Difficulty obtaining reliable daily weights and fluid balance
Regular laboratory monitoring remained essential

Diuretic optimisation
Medication titration required balancing effective decongestion against risk of renal dysfunction and over-diuresis

Home-based care delivery
Successful management dependent on patient/caregiver engagement and timely escalation when clinically indicated

Conclusion

- Management of carefully selected patients with fluid overload was feasible within the TTSH@Home programme.
- Most patients achieved effective decongestion with a low rate of hospital escalation.
- Assessment of volume status in the home setting remains challenging and may require a combination of symptom assessment, remote review, serial weight monitoring, and selective home visits.
- Further work should focus on optimising patient selection, refine strategies for assessing volume status in the home setting, and evaluating patient-reported outcomes and healthcare utilisation.