NUHS@HOME

National University Health System

USAGE OF AN AMBULATORY PUMP IN A HOSPITAL-AT-HOME SETTING – A NOVEL INITIATIVE IN SINGAPORE

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Introduction

Hospital-at-Home programmes present challenges including frequent nursing visits which can potentially strain healthcare resources. Administration of medications requiring controlled infusion rates also pose challenges such as pump rental arrangements which can delay treatment initiation. To address these, usage of an ambulatory pump was piloted under NUHS@Home with an aim to reduce home visits and provide an efficient solution for medications requiring controlled infusion rates. This study explores the pump's utilisation and evaluates its advantages and challenges in a Hospital-at-Home setting

Methods

The pumps used were loaned from BD (BD Bodyguard™). A retrospective analysis was conducted on patients using the pump under NUHS@Home from 4-31 August 2025. Data collected included patient demographics, pump acceptance rate, rejection reasons and medications administered.



Results

Suitable candidates for usage of BD pump were identified. A total of 10 suitable candidates were identified and counselled on BD pump usage. There was an acceptance rate of 60% with the median age being 63 years old

Screening of patients for suitability of BD Pump → Counselling of patients by doctor/nurse on BD pump to get patient's consent → 60% Acceptance Rate

EXCLUSION CRITERIA

1. High Fall Risk
2. History of psychiatric disorders
3. Patients who are agitated/confused
4. Cognitive Impairment
5. Visual/Hearing Impairment
6. Physical Impairment that prevents patients from simple troubleshooting
7. OSA patients

COUNSELLING POINTS

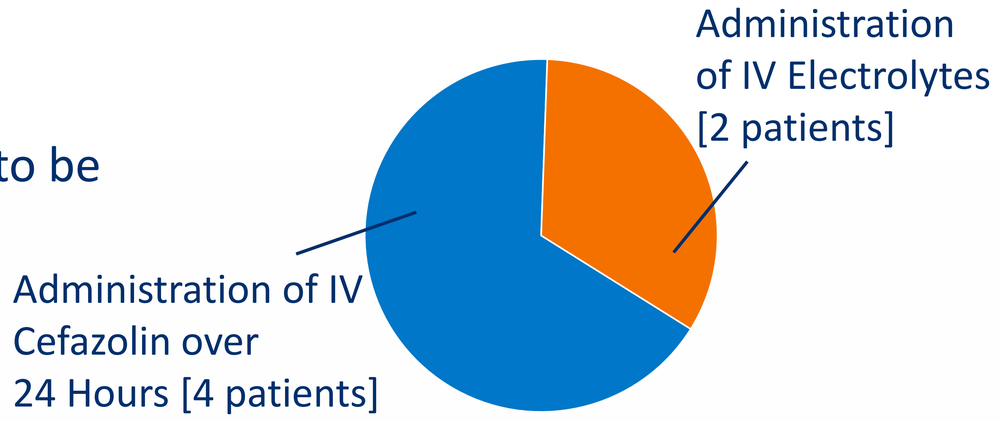
1. Orientation of the pump and how it works
2. Troubleshooting of the pump

REJECTION REASONS

1. Inconvenience
2. Not keen to be attached to be a machine the whole day

USAGE OF PUMPS

Administration of medications were done either using peripheral lines or Peripherally Inserted Central Catheters (PICCs)



ADVANTAGES

- Minimal alarms which helps to reduce the need for last-minute nursing visits
- Versatility in handling ad hoc infusions, potentially reducing reliance on rental pumps
- Generally well-tolerated by patients with few complaints
- Minimal lag time to initiate

CHALLENGES

- Extended nursing preparation time due to excessive air bubbles requiring multiple priming
- Long battery charging time
- Occasional reports of air bubbles in tubing
- Durability concerns
- 40% rejection rate
- Absence of a drug library

Conclusion

The BD pump shows potential for improving efficiency of medication administration in a Hospital-at-Home setting. Refining patient selection criteria based on failure cases could improve acceptance rates in the future. However, further discussions are required to address concerns and explore solutions to the challenges found during this trial.

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