



Improving medication supply resilience and reducing wastage within SKH Operating Theatre (OT)

Singapore Healthcare Management 2024

Dr Lim Wan Yen¹, A/Prof Sharon Ong GK¹, Karen Oh KH², Ng Hui Ting², Loy Ying Hao³, Tan Gui Yu³, Na Ming Hui³

¹Department of Anaesthesiology, SKH

²Pharmacy, SKH, ³Operating Theatre Nursing Unit, SKH

Background/ Aim

The Covid-19 pandemic highlighted **vulnerabilities in the global healthcare supply chain**, particularly in medication shortage which posed significant **risks to patient safety**. This prompted a shift from lean inventory towards overstocking for buffer in crisis.

Problem statement: Matching medication supply and demand to avoid wastage

Aim: Improving medication supply resilience and reducing wastage within SKH Operating Theatre (OT)



Methods

OT medication wastage between 2021 to 2022 was reviewed. Significant proportion was due to medications expiry (e.g. low utilization of resuscitation/high alert medications or short shelf-life). **Two PDSA cycles** were conducted:

PDSA Cycle 1 (from Aug 2022):

3-monthly rotations of near-expiry medications to areas of higher demand with inter-departmental collaboration

- Resuscitation/vasoactive drugs (e.g. adrenaline/nor-adrenaline) from OT → ICU/ED
- Neuromuscular blockers for intubation (e.g. suxamethonium/atracurium) from ICU → OT/ED



PDSA Cycle 2 (from July 2023 onwards):

1. Review of Periodic Automatic Replacement (PAR) level to estimate demand based on 6-monthly utilization records.

2. **Restock triggered** when supply falls below pre-determined level (routine: 50%, critical: 25%)



Automated Medication Cabinet with inbuilt technology (eg. PAR/restock trigger alert)



Results

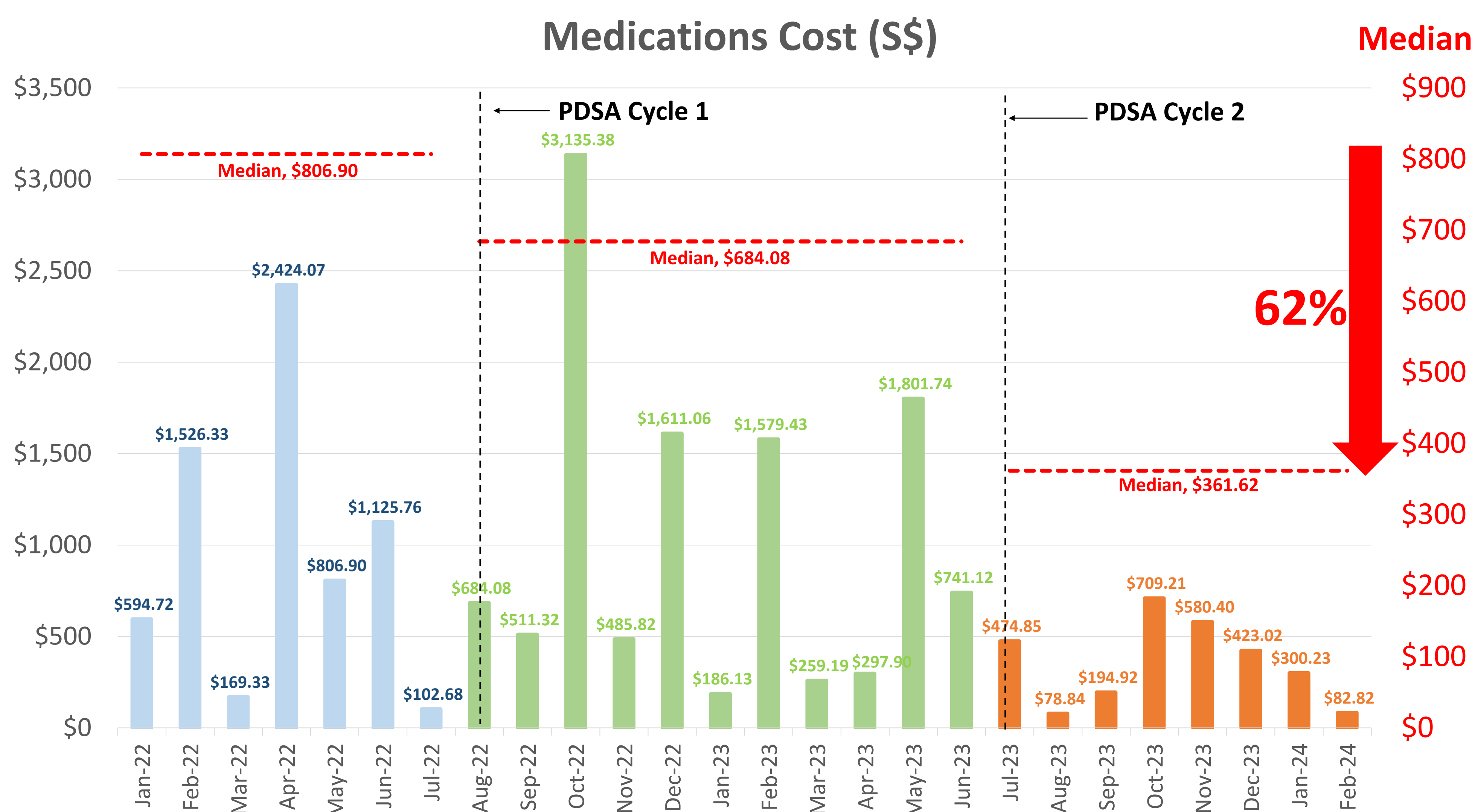
Medication wastage cost was reduced in PDSA cycle 1, and further reduced in PDSA cycle 2 (**~62% cost reduction**).



Significant cost-savings of **\$4069** was reported over 6 months.

Regular PAR level review and appropriate **restock trigger configuration** ensured consistent supply even for medications with erratic or infrequent utilization.

Precise inventory management ensured **uninterrupted supply** even during nationwide shortage (eg. suxamethonium supply disruption between March & May 2023).



Conclusion / Future plans

Precise stockpiling reduces avoidable healthcare expenditure due to over-supply and medication wastage, whilst ensuring adequate supply for safe and efficient functioning of OT.



Sustainable strategies to enhance resilience of medication supply include:

- Diversification** of drug procurement
- Technology adoption** in demand planning and inventory management
- Hospital-wide **collaboration** to minimize wastage through medication rotation

