Implementing disposable manual resuscitators makes good $ense

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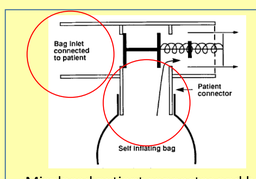
Introduction

Before Nov 2016, conventional or reposable manual resuscitators (MRs) were used in SGH. Used MRs were reprocessed and reassembled before next use.

Use of reposable MRs gives rise to **3 major issues**:

1) Reported critical incidents associated with mis-assembled MR

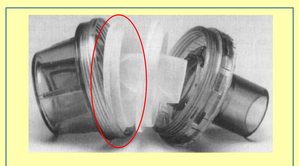


Misplaced patient connector and bag inlet → inadequate ventilation

Patient did not respond to resuscitation (Munro, 1990)

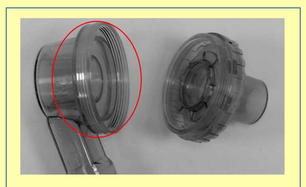
Misplaced disk membrane → a complete blockage of exhalation port

Patient developed left tension pneumothorax (Cushing, 2002)



Presence of an additional valve → a complete blockage of exhalation port

Two patients developed tension pneumothorax (Hunter, 1991; Ho, 1996)



Missing lip valve → inability to ventilate

Patient survived after correction was done (Smith, 2002)

2) Reprocessing involves multiple steps and is labour-intensive

Total turnaround time : 4 days

3) Reprocessing is costly

Reposable MR	Disposable MR
• Unit material cost: $400 • Each unit only could be reprocessed for 100 cycles → unit material cost for each patient-use: $4 • Unit reprocessing costs: $60 Total costs per patient-use: **$64**	• Est. unit material cost: ±$18 • Each unit could be used for multiple times on the same patient • Est. waste management costs per unit: $0.15 Total costs per patient-use: **±$18**
• Costs of ERRORS (treatment of complications, legal costs) • Accessories replacement costs • Depreciation costs of sterilizers • Costs of managing occupational hazards related to exposure to chemicals • Holding costs of extra sets to standby while reprocessing	• Supplies chain management costs • Costs of wastage if not used and expired – *avoidable with good inventory and supplies chain management*

HIDDEN COSTS

Objectives

To enhance patient safety, operational efficiency and cost-effectiveness through the implementation of disposable MRs.

Methodology

Mar 15
Proposal for disposal MR was approved

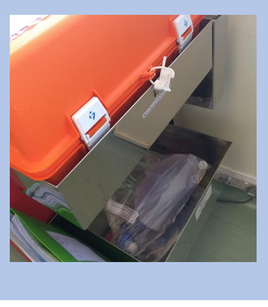
→ Apr – Jul 15
Key users provided input on selection criteria (wish-list)

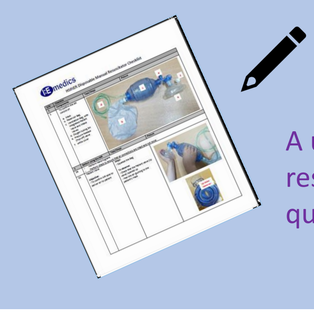
↓ Aug 15 - Sep 16
Product evaluation and purchase

← Sep - Nov 16
Communication and training

↓ Nov 16
Hospital-wide implementation

→ Apr 17
Staff survey, cost-benefit analysis





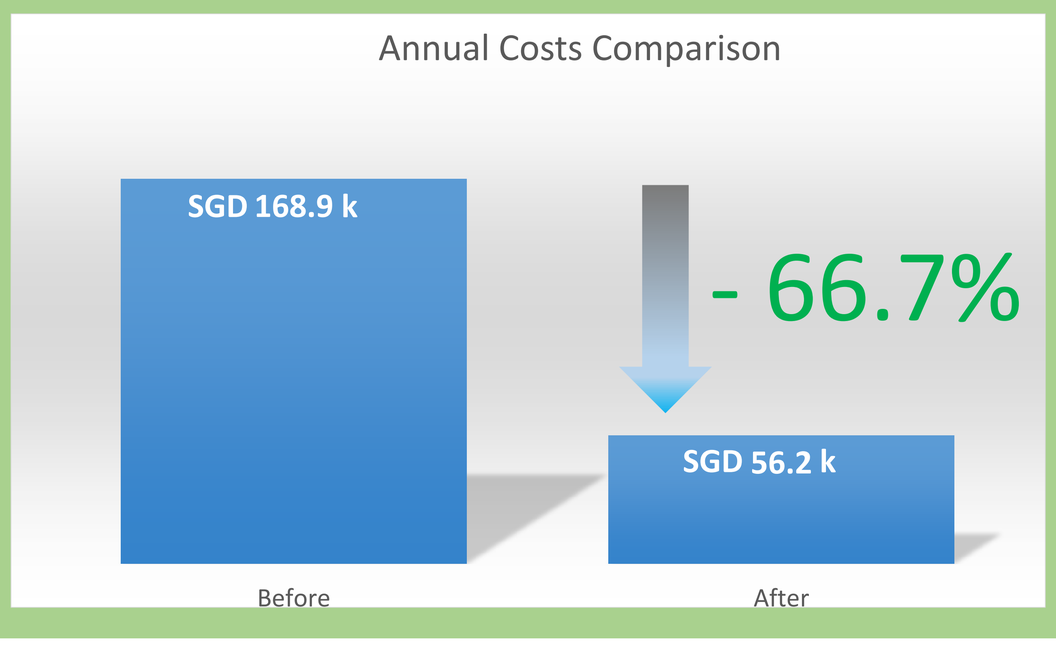
A user guide is placed at resuscitation trolleys for quick reference

Results

1. Staff feedback

Pre-assembled set + Simplified functional test + Time saved from investigating missing accessories = Expedites response in resuscitation; Ensures use of safe product

2. Cost-benefit analysis



Conclusion

Hospital-wide implementation of disposable MR **enhances patient safety** through the use of safe product, **is cost-saving**, and **enhances operational efficiency** and **staff satisfaction**.

Acknowledgement

The project team would like to thank senior management and all who have participated in the product evaluation and provided input and recommendations for the execution of the initiative.