

Reconfiguration of the anaesthesia medication trolley layout to reduce medication errors

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Aim: We aimed to reduce the incidence of drug administration-related errors by 30% over 10 months, through optimising the layout of the anaesthesia medication trolley based on human factors engineering principles.

Methodology:

We reorganised the medication trolley configuration with these interventions in February 2021:

- Each drug is assigned a compartment within the trolley.
- Each drug compartment's floor and wall were labelled with drug labels.
- Drug labels were in large font sizes for easier viewing.
- Each compartment's drug label was colour coded to represent its drug class. Colours were chosen to be visible to staff with colour blindness.
- Drugs of the same class were kept in the same column.
- Drugs with similar packaging appearance were differentiated by being kept in secondary containers.
- The layout of the OT medication trolleys was standardised across SGH and SKH hospitals.

We tracked the monthly incidence of OT drug administration-related errors for 10 months before and after intervention. We also surveyed 30 anaesthesiologists and Anaesthesia nurses on the reconfigured medication trolley.

Results: After the interventions, the incidence of OT drug administration-related errors has reduced by 70% over 10 months, compared to the preceding 10 months.

>90% of respondents found the new trolley layout easy to use and helps reduce medication errors.

Conclusion: Adoption of human factors engineering in reconfiguring the anaesthesia medication trolleys layout in SGH and SKH has reduced OT drug administration-related errors in SKH.

This enhances patient safety by minimising harm from medication errors. The cost saving from preventing an adverse drug event from injectable medications is US\$3100, with further savings arising from reducing staff time and resources in investigating medication errors.

The new trolleys are in operational use in both hospitals and users' survey results indicate satisfaction with the new layout, making the changes sustainable. Human factor principles can be applied to reconfigure similar medication trolleys in the hospital.