

# Relocation and expansion of KKH Oncology Pharmacy to improve safety and efficiency

Ng Cheng Li <sup>1</sup>, Coleen Beck <sup>2</sup> and  
SingHealth Facilities Development

1: Principal Pharmacist, Department of Pharmacy, KK Women's and Children's Hospital  
2: Assistant Manager, Facilities Development, KK Women's and Children's Hospital

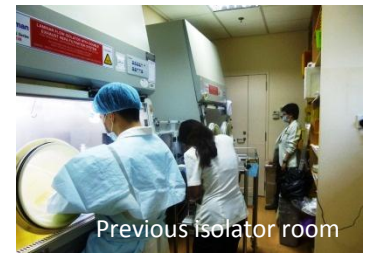
## Background

- Non-conductive environment in Oncology Pharmacy had been cited as a cause of physical discomfort and distraction for staff

## Aim:

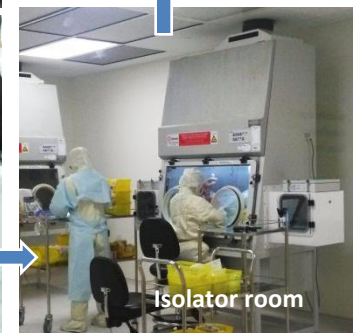
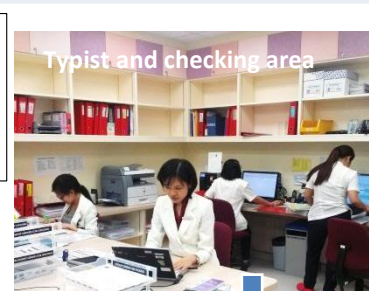
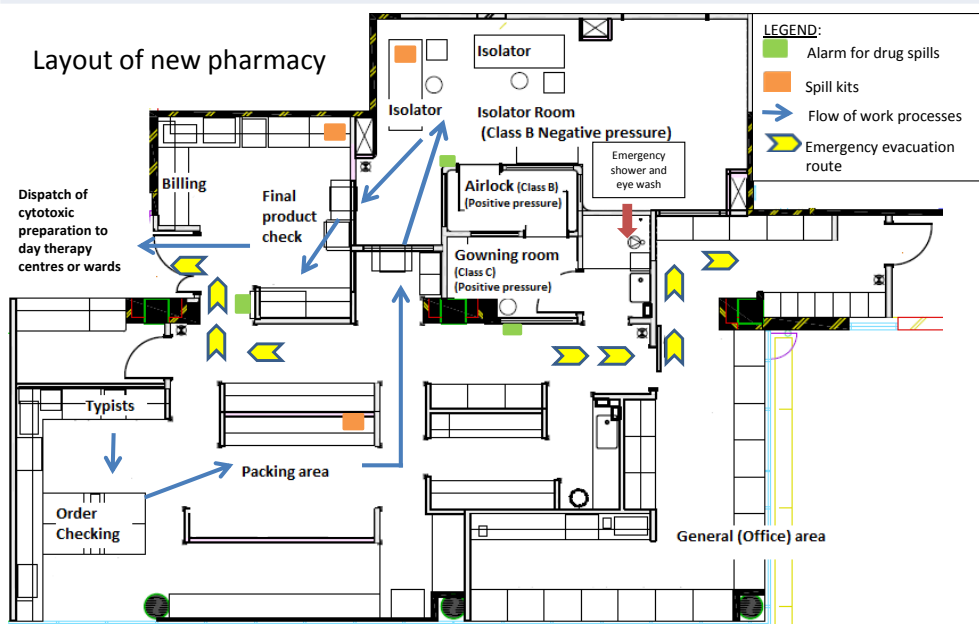
To design a new Oncology Pharmacy to improve efficiency and address safety issues, in a bid to reduce:

- fatigue, physical discomfort and distraction
- medication near misses and errors
- stress from the risk of handling cytotoxic drugs in a confined space



## Methodology

- Workflow during drug order processing and staff needs were analyzed systematically and mapped out diagrammatically
- Areas of potential congestion and areas with high risk of cytotoxic drug spills were identified.
- Visits were made to other Oncology Pharmacies to observe their practices
- Safety features recommended by good practice guidelines\* were incorporated in the newly designed space
- The proposed pharmacy layout was repeatedly reviewed and modified to meet the objectives



## Results

- Seating and shelving arrangements were optimized based on staff feedback and ergonomic principles.
- Drug order processing area was segregated from general (office) area so that staff not involved in drug order processing has minimal contact with cytotoxic drugs.
- Isolators for reconstitution/dilution of cytotoxic drugs are now housed in a negative-pressure Class B clean room for enhanced safety and cleanliness. The exhaust air from the isolators is now ducted out and filtered before exiting the building.
- Isolators are housed in a restricted-access area so that staff performing aseptic manipulation on cytotoxic drugs has less disturbance and distraction.
- Cytotoxic spill alarm and digital monitoring of room pressure differentials, temperature and relative humidity was installed
- Emergency shower with eyewash was installed for personnel decontamination in the event of cytotoxic spill

## Conclusion

\*PIC/S cGMP, ISO and USP 797 Standards

- Adequate planning resulted in smoother flow of work processes
- Improved layout, new alarm system and emergency shower allowed a more robust emergency evacuation, containment and decontamination plan to be put in place (in the event of a cytotoxic drug spill)
- Practical, ergonomic design and space allocation based on staff needs and feedback during the design of the new Oncology Pharmacy has improved safety, efficiency and staff morale.