

Project Title

Safe, Efficient and Ergonomic Drainage of Peritoneal Dialysate Fluid

Project Lead and Members

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Organisation(s) Involved

Singapore General Hospital

Healthcare Family Group(s) Involved in this Project

Nursing, Healthcare Administration

Applicable Specialty or Discipline

Urology, Facilities Management and Engineering

Aims

To design a closed drainage system that was safe, efficient and ergonomic to reduce or eliminate lifting

Background

See poster appended/ below

Methods

See poster appended/ below

Results

See poster appended/ below

Conclusion

Work –related musculoskeletal disorder (WRMSD) eliminated with the new drainage workflow

Project Category

Care & Process Redesign

Quality Improvement, Design Thinking, Workflow Redesign, Job Effectiveness

Keywords

Peritoneal Dialysate Drainage System

Name and Email of Project Contact Person(s)

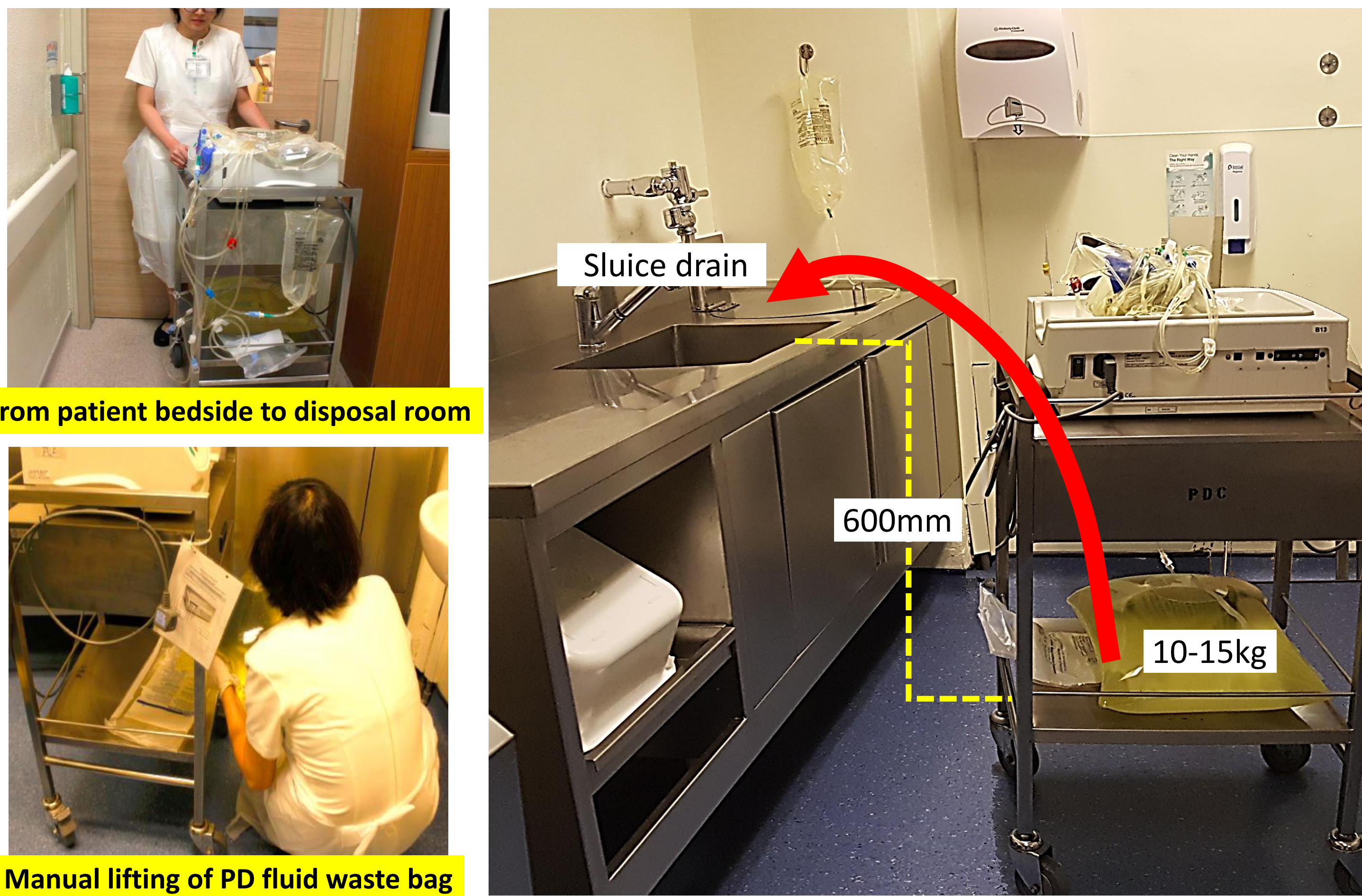
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Safe, Efficient and Ergonomic Drainage of Peritoneal Dialysate Fluid

Background and Aim

Nurses manually disposed peritoneal dialysate fluid after the completion of each peritoneal dialysis session. The distended dialysate bag could be as heavy as 15 kg (for patients on overnight peritoneal dialysis); and had to be manually lifted from the bottom shelf of a trolley up 600mm onto the sluice hopper to drain the fluid.



The above was not ideal as:

- The manual lifting of PD fluid to drain in the Inpatient Disposal Room posed **low to medium risk for work-related musculoskeletal disorder (WRMSD)** for 75% of female population and 90% of male population under ideal conditions.
- As the healthcare worker's regular duties involved various forms of manual handling activities, e.g. assisting, bending, lifting and patient transfer, the cumulative risk level for WRMSD could be significant.

The aim of the project was to design a closed drainage system that was safe, efficient and ergonomic to reduce or eliminate lifting.

Methodology

A multi-disciplinary team, comprising Nursing Division, Infection Prevention and Control, Facilities Management and Engineering and Workplace Safety was formed.

The following steps were performed:

| | |
|---------------------------|---|
| Workflow | A detailed mapping of the work process was conducted |
| Problem | Manual lifting of heavy dialysate bag that had no proper handhold |
| Possible solutions | We consulted institutions of higher learning and also conducted cross learning from other settings/industries |
| Rapid prototyping | The team designed and implemented the first prototype, refined the work process and then implement the second prototype |

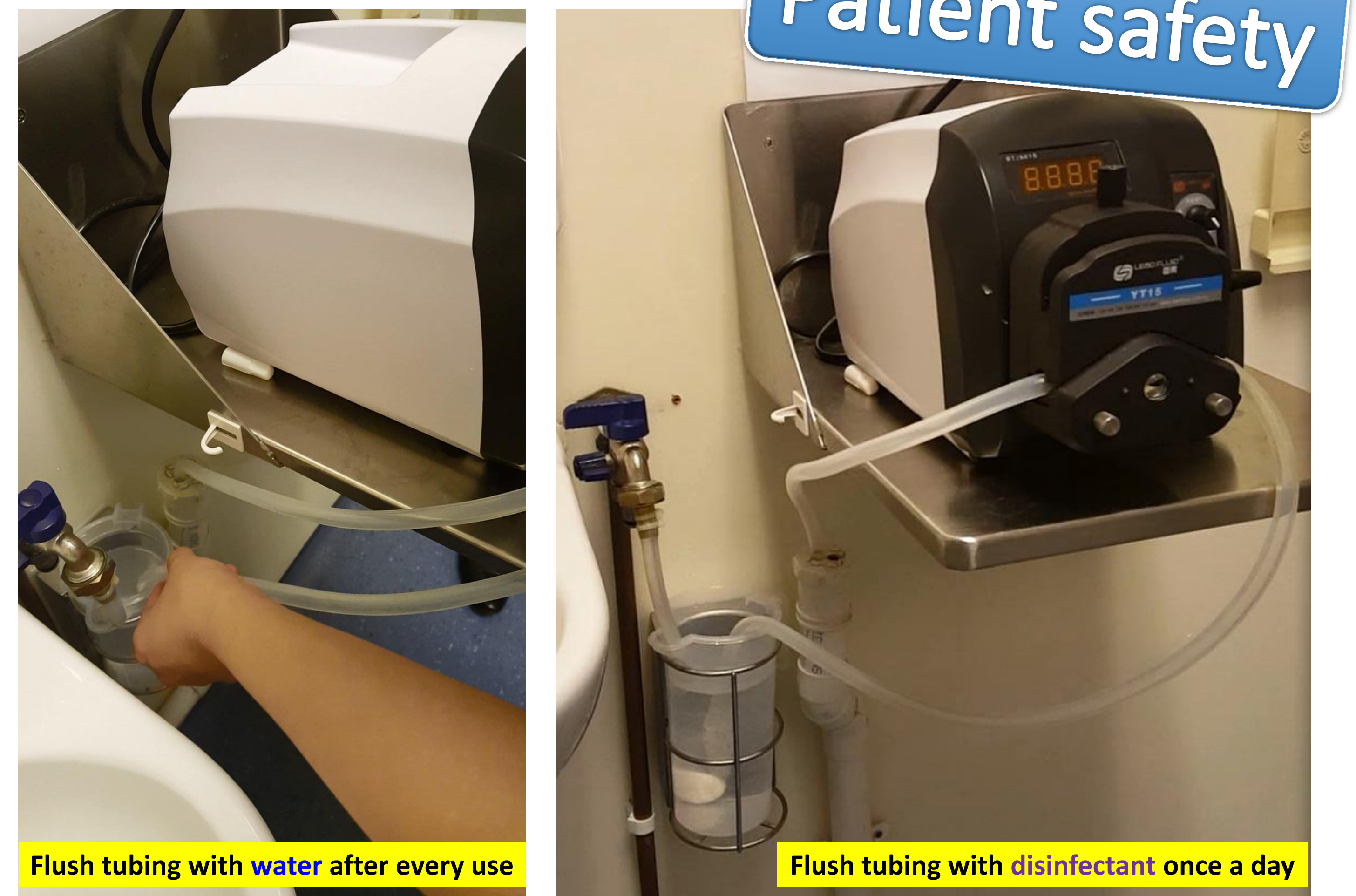
Results

The solution consisted of a peristaltic pump with tubing and connectors compatible with the dialysate fluid bags.

Drainage Process



Cleaning & Disinfection



With the new workflow,

- manual lifting of the heavy dialysate bags was **ELIMINATED**
- the drainage was a closed system with little risk of spillage; and
- the time taken to drain the bag was as efficient as direct drainage and did not disrupt normal operations.

Conclusion

A safe, efficient and ergonomic solution was implemented.

