

Improve Hospital-Wide Portering Response Time and Design Portering System Operational Strategy with Aid of Simulation Analytics



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Background

From Oct 2013 to Jan 2014, Alexandra Hospital (AH) portering response time performance of patient related tasks was recorded at 16.07 mins, not meeting the target of 15 mins at the 80th percentile. Hence, the team aimed to improve this process using Lean Six Sigma Methodology and Operations Research analysis.

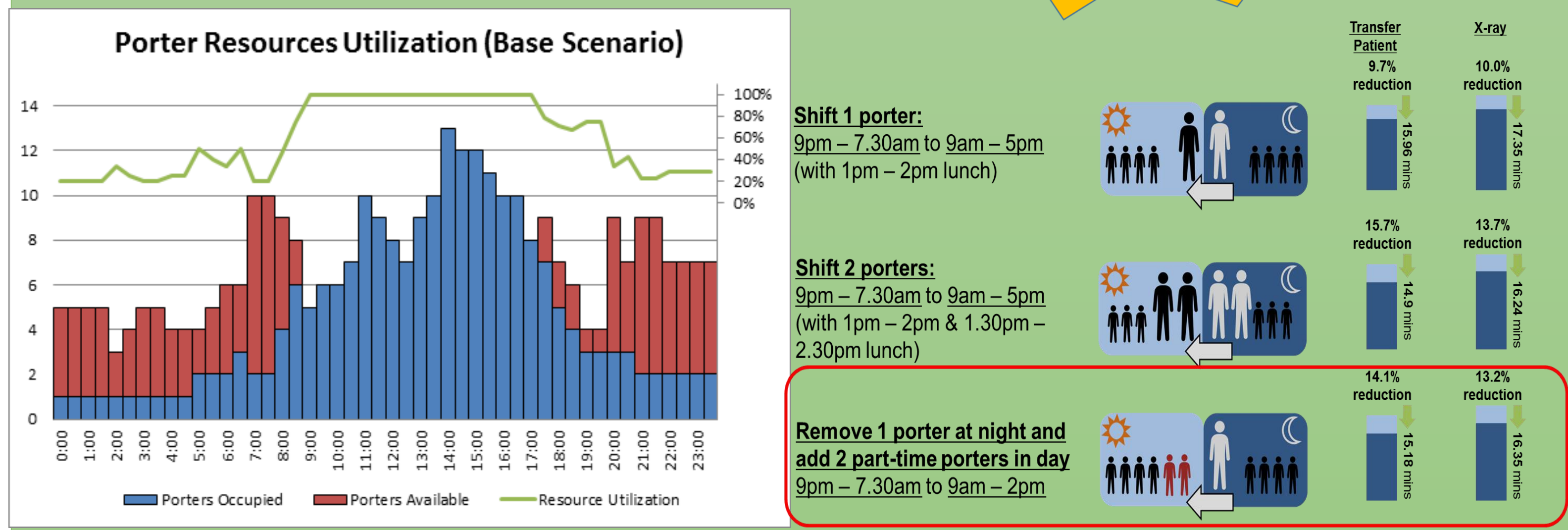


The findings of the study will be extended to plan portering services of new Ng Teng Fong General Hospital (NTFGH) and Jurong Community Hospital (JCH).

Simulation Analysis & Solution

1. A Discrete Event Simulation model covering hospital wide portering services was built to understand baseline performance. It was found that manpower resources utilisation was not balanced across the day.
2. Scenario analysis was performed in the risk-free simulation environment to evaluate the expected gain if manpower resources were re-allocated.
3. Removing 1 porter at night (9PM – 7:30AM) and adding 2 part-time porters in the day (9AM – 2PM) will achieve desirable response time reduction with minimum capital cost and interruption to the operations at night.

Solution 2



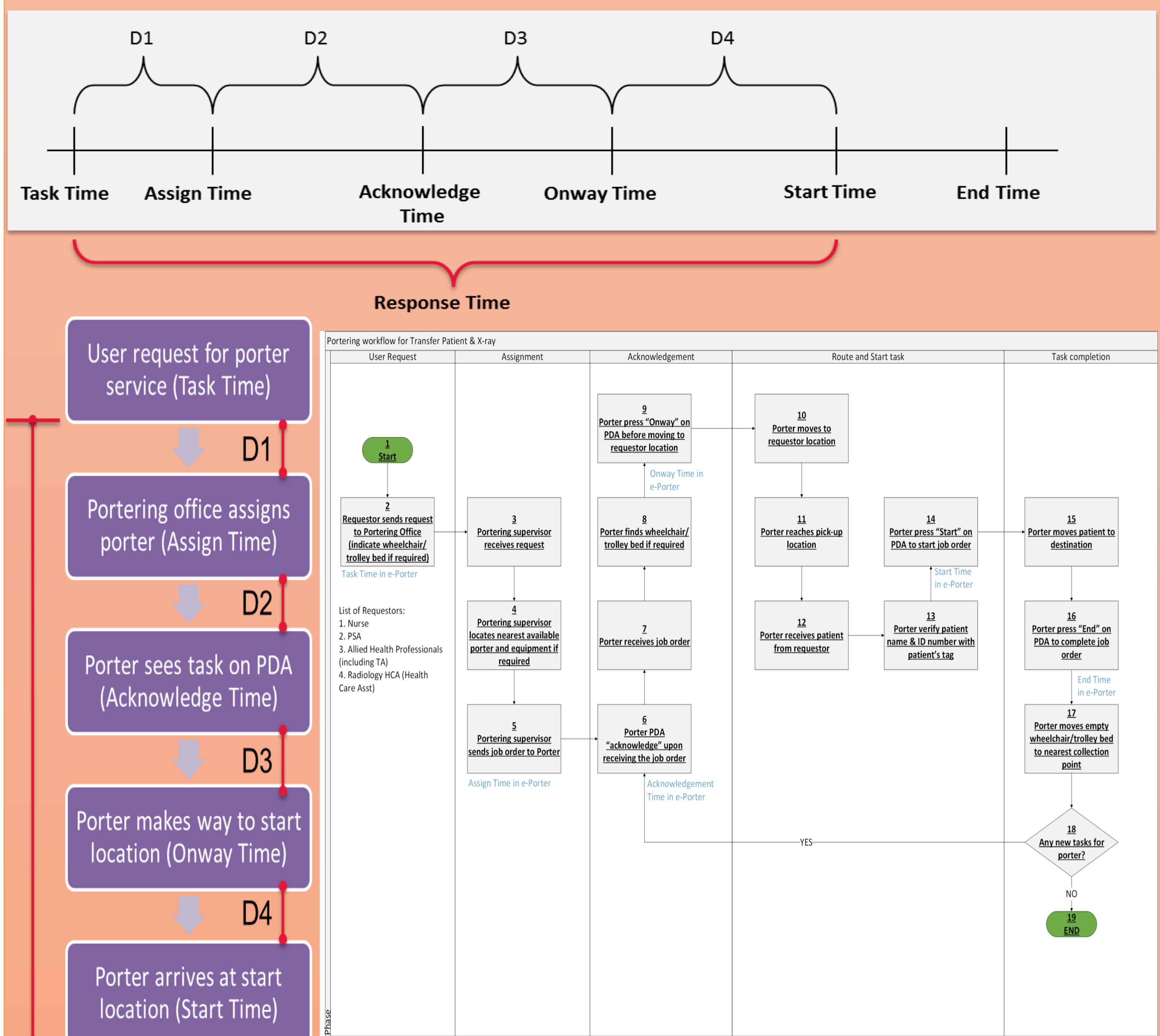
Objectives

1. To reduce AH portering response time from 16.07 mins (Oct 2013 – Jan 2014) to 15 mins target at the 80th percentile, focusing on Patient Transfer and X-ray tasks.
2. To study and design portering system operational strategy for implementation in NTFGH and JCH targeting both service level and cost effectiveness.

Process Analysis & Solution

Operational Definition was aligned for each step of the whole portering service process. Portering response time is measured from the time user request for porter service to the time porters arrive at start location.

End to end process was mapped for further analysis and design.



Process analysis suggested to set up a sustainable mechanism for task status and ground situation communication.

Solution 1:

Significant Improvement Results Achieved

After the implementation of solution 1 & 2, significant portering response time reduction was observed.

Ys	Measurement Metrics	Before (Oct 2013 – Jan 2014)	Target Set	After (Aug 2014 – Oct 2014)	% Improvement
80 th percentile	All Patient related tasks	16.07 mins	15 mins	12.36 mins	23.09%
	Patient Transfer	16.30 mins	15 mins	12.50 mins	23.31%
	X- ray	16.80 mins	15 mins	12.63 mins	24.82%

Design Portering Strategy for NTFGH and JCH

With the simulation model built and learning from the AH study, new portering system operational strategies were evaluated & implemented in NTFGH and JCH:

1. Centralised portering operational model was implemented in NTFGH and JCH instead of Stationed Porters model
2. Optimal manpower shift pattern was designed & implemented based on projected load
3. Satellite portering stations were set up at Tower A, B & C
4. Fast response team was set up to undertake emergency tasks



Conclusion

1. Through Lean Six Sigma framework and Simulation Analytics, project team drove the project to achieve expected outcomes in AH effectively.
2. In addition, the simulation model built was used to evaluate and design portering operations in NTFGH and JCH during planning phase. This project promoted evidence based decision making and showed how Lean Six Sigma, Operations Research and Analytics could help to improve hospital operations and patient care.