Improvement of Patient Experience at the **Exercise Stress Echocardiogram (ESE)** Laboratory with Lean Principles **Singapore Healthcare** Management 2019

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BACKGROUND

Exercise Stress Echocardiogram (ESE) is an ultrasound stress scan for the detection of obstructive coronary artery disease.

RESULTS

After implementation, a repeat VSM for 24 patient journeys showed there is an average reduction of 13 min journey time

At our laboratory, about 25 scans are performed daily, in 3 rooms. A typical patient journey as summarized in the following Value Stream Map (VSM):



Initial VSM of ESE Patient Journey

Median Cycle Time = 95min Median Process Time = 56 min Median Waiting Time = 39 min

Aim: To improve patients' waiting time for cardiac stress tests, using the VSM and



Post Implementation VSM:



Cycle Time 95min 82min **Process Time** 56min 51min Wait Time **O3min** 12min

simple Lean queuing theory.

METHODOLOGY

The appointment schedule was simulated based on the current appointment template, to show the impact of appointment time on the waiting time. Just base on template design alone, 7 patients waited more than 45 min, this translates into a total waiting time of 195 mins waiting time for the 27 patients scheduled.



Average Time Saving Per Patient 13 min 5400 Patients Per Annum (FY18)



INTANGIBLE BENEFITS

- Improved waiting time for ESE test in the Lab
- Improved patient and caregiver experience
- Improved staff morale

CONCLUSION

- Improved efficiency
- Enhanced teamwork for holistic patient care
- Maintain professional image of hospital

Monday	Contraction of the local data and the local data an			1000	ALC: NO PERSONNEL	A CONTRACT OF A CONTRACT.				
Wednesday		830	900	930,	1030.	1100 .	1345	1420	1200	1600
	New 1	Templa	ate Des	ign						
Room 1	800	800	950	10	40 Ex.	1330	1400	150	DO Ex	
Room 2	800	800	950	10	40 Ex.	1330	1400	150	DO Ex	
Room 3	800	800	950	10	40 Ex.	1330	1400	150	DO Ex	
Force in slot	815	12 91	50-10	1.	1100	1	345 14	45 1	530	

Simulation Board for Impact of scheduling template on Wait Time

Interventions.

Based on simple queuing theory principles, the team redesigned a new appointment schedule template by determining the most appropriate appointment intervals based on the median procedure cycle-time that minimise patient waiting time.

Reduced unnecessary complaints

Using lean queuing theory and the use of a simple simulation exercise, the team was able to gain deeper understanding of patients' journey and introduce the necessary measures to decrease average WT for ESE, as well as total patients' duration in our lab. This change has helped in optimization of our current resources within the lab, creating an opportunity for higher

productivity, yet providing better patients' experience.