Singapore Healthcare Management 2015

Lee Teng Teng, Singapore General Hospital
May Lim Hui Ting, Singapore General Hospital
Nadiah Binte Norzaini, Singapore General Hospital
Chin Yen Nee, Singapore General Hospital
Julie Tomy, Singapore General Hospital
Rozainah Binte Mohamed, Singapore General Hospital

Background

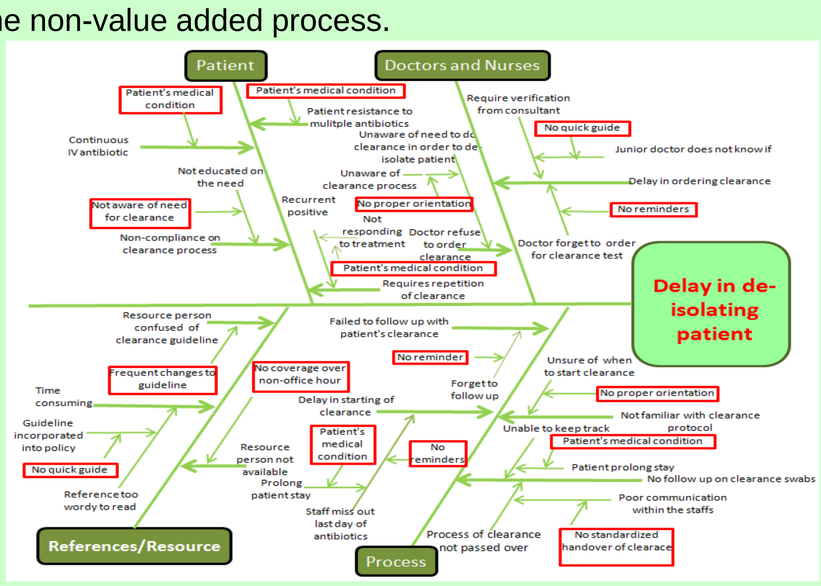
Ward 68 is the main Isolation ward within the hospital with 22 single bedded rooms and 4 4-bedded cohort rooms. Patients requiring isolation precaution are sent to ward 68.. Patient with MDRO are isolated in a single room and often faces problem with discharge plan to community setting such as the community hospital and voluntary nursing home, hence limiting the availability of single bedded isolation room for higher level of infectious cases. Patients stayed longer in isolation room due to delay in clearance as most community setting only accept patient who are cleared of the MDRO status.

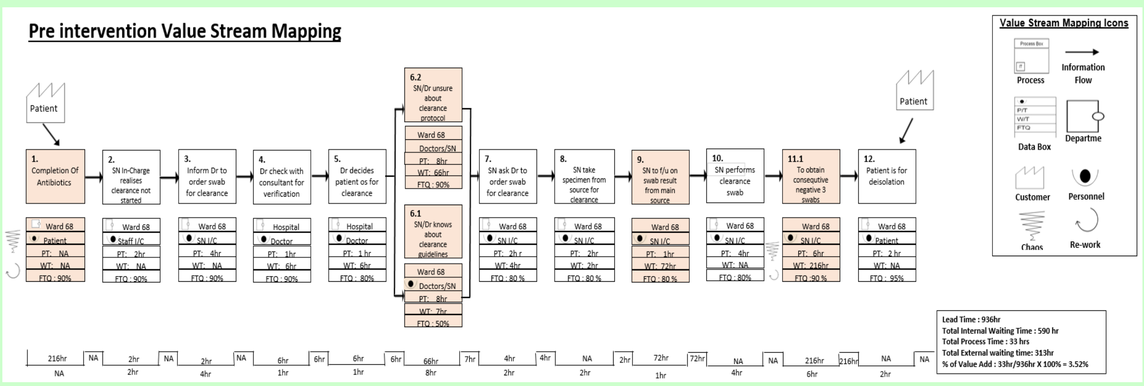
Objective : To improve the lead time taken for MDRO patients from antibiotic completion to de-isolation from W68 by 60%" within 9 months period.

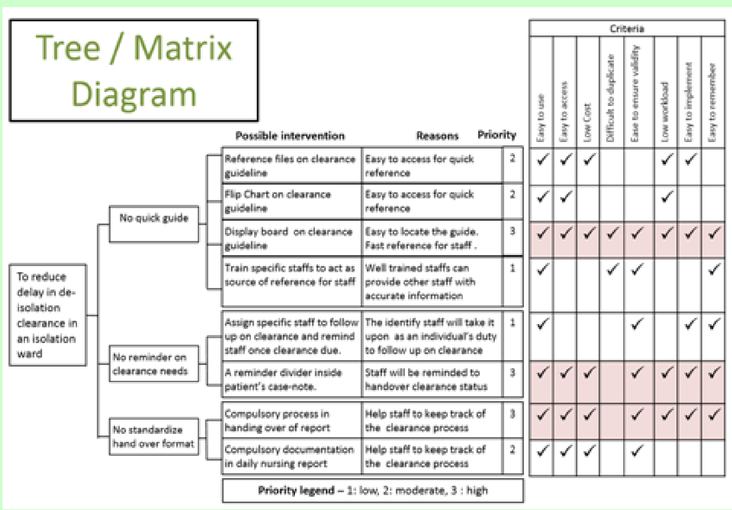
Methodology

The root causes of the delay in de-isolating patient were brainstormed among the team and 8 root causes were identified using a cause and effect diagram. To further verify the root causes, the team drew out a Value stream mapping (VSM) to identify which are the non-value added process.

The team targeted to reduce the internal waiting time for the 4 processes identified which have the longest internal waiting time of 570 hours. A combined tree-matrix diagram was used to help the team to simultaneously select the solutions that are implementable.





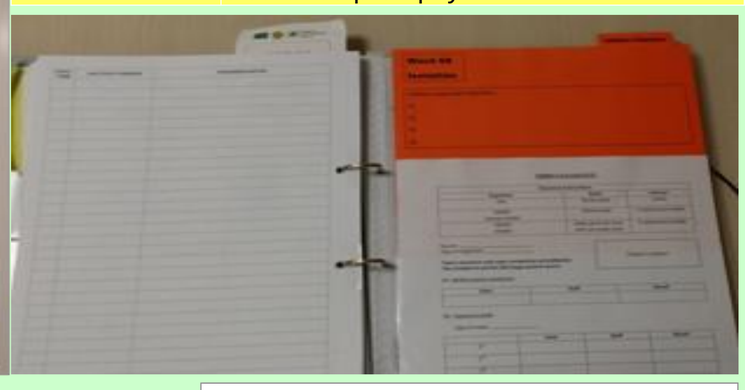


After analyzing the 4 processes, the root causes of the delay tallied with the top 3 root causes identified in the cause and effect diagram. 3 solutions were selected after evaluation of the criteria of the possible intervention. The 3 solutions are having a quick guide display board, an orange dividers and implementing handing over of patient's isolation status a process compulsory. The solutions are tested using two PDCA cycles over a period of 3 months

Processes	Causes of delay	Possible solutions
Process 6.2 Waiting time from team Doctor consulting ID Doctor via referral letter to team doctor being referred by ID doctor to ICN for the correct de-isolation process	Staff unsure of the clearance protocol and there is no quick guide for them to refer → unnecessary referral made to ID doctors	PDCA cycle 1 Quick guide display board
Process 1 Waiting time from completion of antibiotics to nurse realized that clearance not started	Staff forgot to follow up on clearance status of patient → there are not reminders for the staff to follow up on clearance status	PDCA cycle 2 Orange reminder dividers and compulsory process in handing over of report
Process 9 Waiting time from results of source test out to follow up of negative results		
Process 11.1 Waiting time from results of test out to follow up with 3 negative results		

Interventions

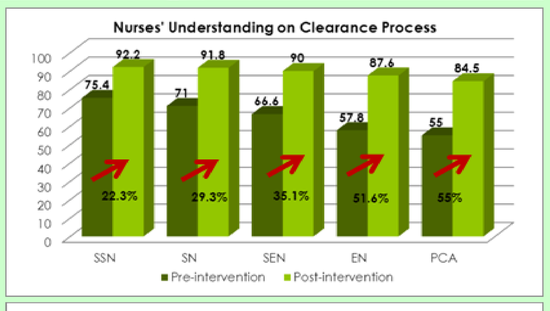
PDCA cycle 1	Test out the feasibility of using quick guide display board on the clearance guideline
PDCA cycle 2	Tests if an orange divider with clearance form helps to remind the staff to carry out clearance promptly



Tangible Results

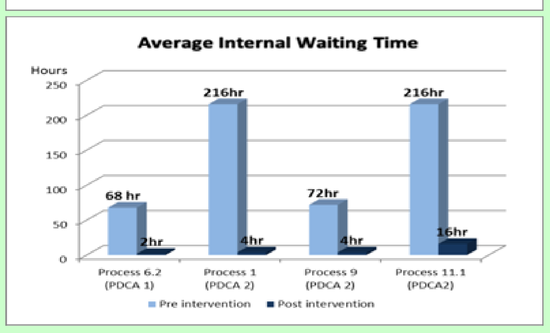
PDCA cycle 1

Post implementation questionnaire showed improvement in the knowledge level on clearance process from all level of nurses in the isolation ward.

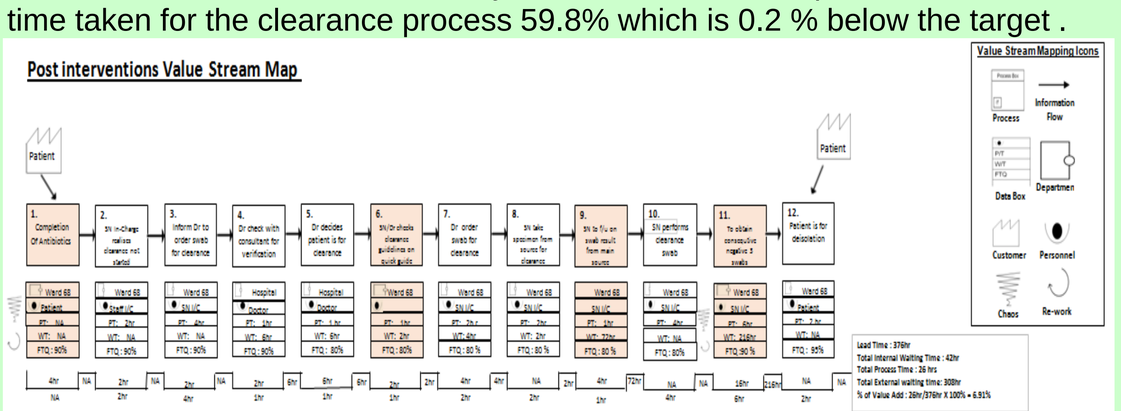


PDCA cycle 2

Random audits were conducted over 100 opportunities. 91% patient's status was handed over to the next shift. 92% of patients were started on the clearance promptly and 89% of the staff followed up closely on patient's clearance status.



The waiting time for the 4 processes was re-measured after the PDCA cycles. There was an improvement of the lead time taken for the clearance process 59.8% which is 0.2 % below the target .



	Pre implementation	Post Implementation	Time reduced
Ave. lead time	936 hours (±. 39 days)	376 hours (±. 16 days)	560 hours (±. 23 days)
Ave. total internal waiting time	590 hours (±. 25 days)	42 hours (±.2 days)	548 hours (±. 23 days)
Ave. process time	33 hours	26 hours	7 hours
Ave. total external waiting time	313 hours	308 hours	5 hours

The average reduction of 560 hours of lead time in the clearance process means that patient can be de-isolated earlier by 23 days

Intangible Results

Feedback on quick guide board

- Easy to refer
- Able to answer doctor's query immediately
- ICN received lesser enquiry on clearance
- Lesser referral to Infectious Disease department

Feedback on orange divider

- Useful reminder to ensure patients isolation status is being handed over
- Easy to follow up on patients clearance process

Sustainability

This QI was implemented in another Isolation ward. Monthly random audits done on the compliance of using the orange dividers. Questionnaire was conducted to ensure correct clearance tests are done. The lead time of de-isolation process monitored periodically within 3 months period to ensure sustainability of the interventions.

Conclusion

This project achieved to attain hospital priority in building capacity through creating more isolation beds for patient who needs them. With the improved workflow reduces cost in nursing patient in an isolation ward. Patient with clearance done can also be better integrated back to the community setting.