

Project Title

Reduction in Missed X-ray Orders for Repeat Visit Patients in Clinic B1A

Project Lead and Members

Project lead: Ms Bavani Deyvi Periasamy

Project members:

- Adj A/Prof Lee Keng Thiam
- Mr Surender Naini Reddy
- Mr Jeffrey Lai Siu Piew
- Chan Man Nok
- Ms Liu Tingting
- Mr Chong Chun Meng
- Ms Ng Guat Keow

Organisation(s) Involved

Tan Tock Seng Hospital

Healthcare Family Group(s) Involved in this Project

Medical, Allied Health, Ancillary Care

Applicable Specialty or Discipline

Orthopaedic Surgery, Radiography Service, Ward Management

Project Period

Start date: 01 May 2019

Completed date: 31 March 2022

Aims

To reduce the percentage of missed X-ray orders in CCOE for Orthopaedic Repeat Visit Patients from 13% to 0% in 6 months in Clinic B1A.



Project Attachment

See poster attached/below

Background

See poster attached/below

Methods

See poster attached/below

Results

See poster attached/below

Lessons Learnt

See poster attached/below

Conclusion

See poster attached/below

Additional Information

Accorded the NHG Quality Day 2022 (Category C: Developing a Flexible & Sustainable Workforce) Best Award

Project Category

Care & Process Redesign

Productivity, Time Saving

Keywords

X-Ray Order, Computerised Clinical Order Entries



Name and Email of Project Contact Person(s)

Name: Ms Bavani Deyvi Periasamy

Email: bavani deyvi@ttsh.com.sg



Reduction in Missed X-ray Orders for Repeat Visit Patients in Clinic B1A

Ms Bavani Deyvi Periasamy Clinic B1A

18%



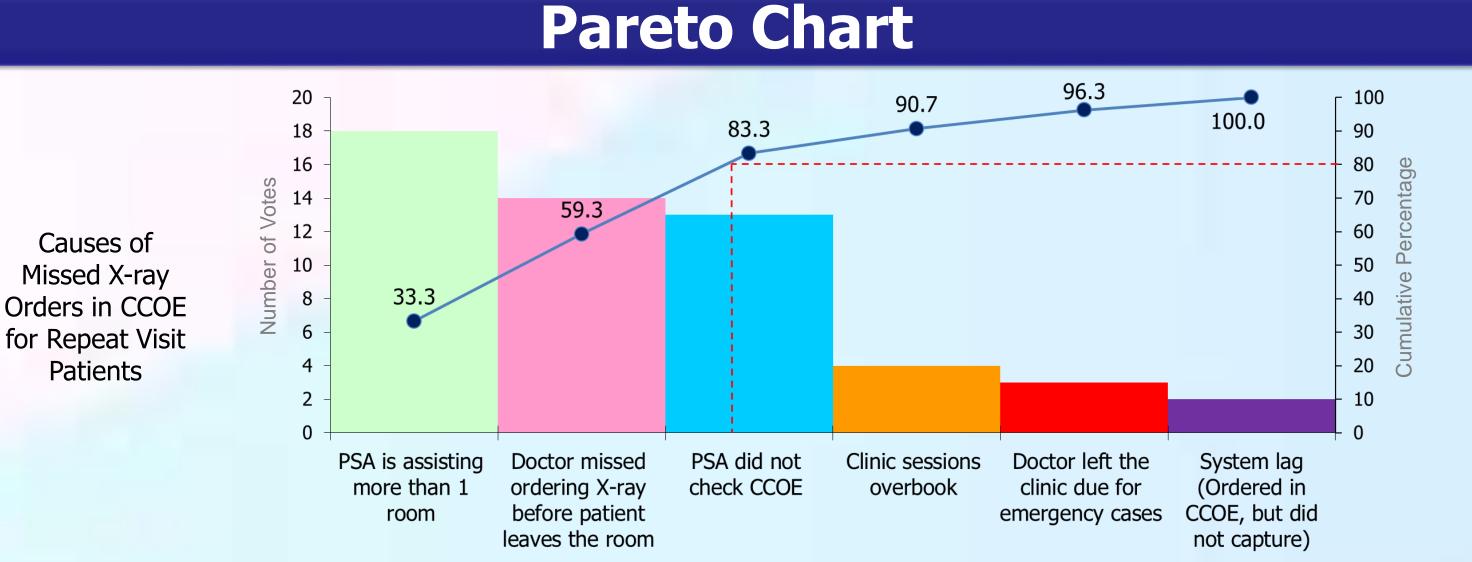
Adding years of healthy life

Mission Statement

To reduce the percentage of missed X-ray orders in CCOE for Orthopaedic Repeat Visit Patients from 13% to 0% in 6 months in Clinic B1A

Team Members

	Name	Designation	Department					
Team Leader	Ms Bavani Deyvi Periasamy	Senior Nurse Manager	Clinic B1A					
Team Members	Adj A/Prof Lee Keng Thiam	Head & Senior Consultant	Orthopaedic Surgery					
	Mr Surender Naini Reddy	Head & Principal Radiographer	Radiography Service					
	Mr Jeffrey Lai Siu Piew	Assistant Nurse Clinician	Clinic B1A					
	Chan Man Nok	Senior Staff Nurse	Clinic B1A Clinic B1A					
	Ms Liu Tingting	Senior Staff Nurse						
	Mr Chong Chun Meng	Principal Radiographer	Clinic B1A					
	Ms Ng Guat Keow	Assistant Supervisor	Clinic B1A					
Mentors	Ms Goh Lee Lee & Ms Sui Huangbo							

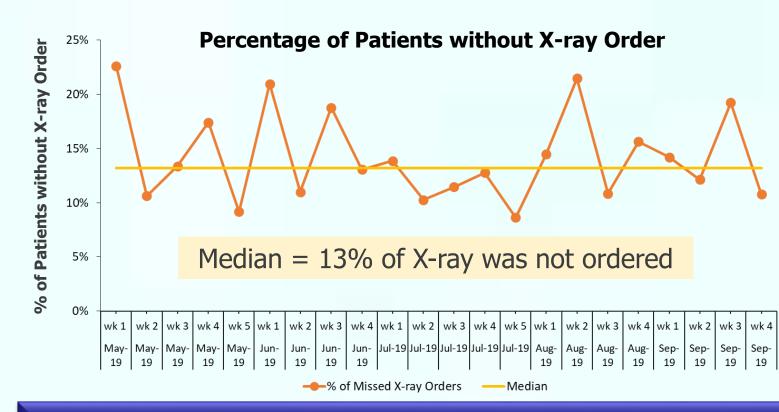


Evidence for a Problem Worth Solving

During a patient's First Visit appointment in the clinic, doctors may need to order an X-ray for the subsequent visits to determine treatment plan for the patients.

In a duration of 6 months, the team found a total number of 1,796 Repeat Visit patients' X-rays were not ordered by doctors during their previous visits in the clinic.

When these orders are not ordered in the Aurora, patient's consultation is delayed due to the missed X-ray orders and resulted in a delay in diagnosing and rendering treatment in a timely manner for the patients.

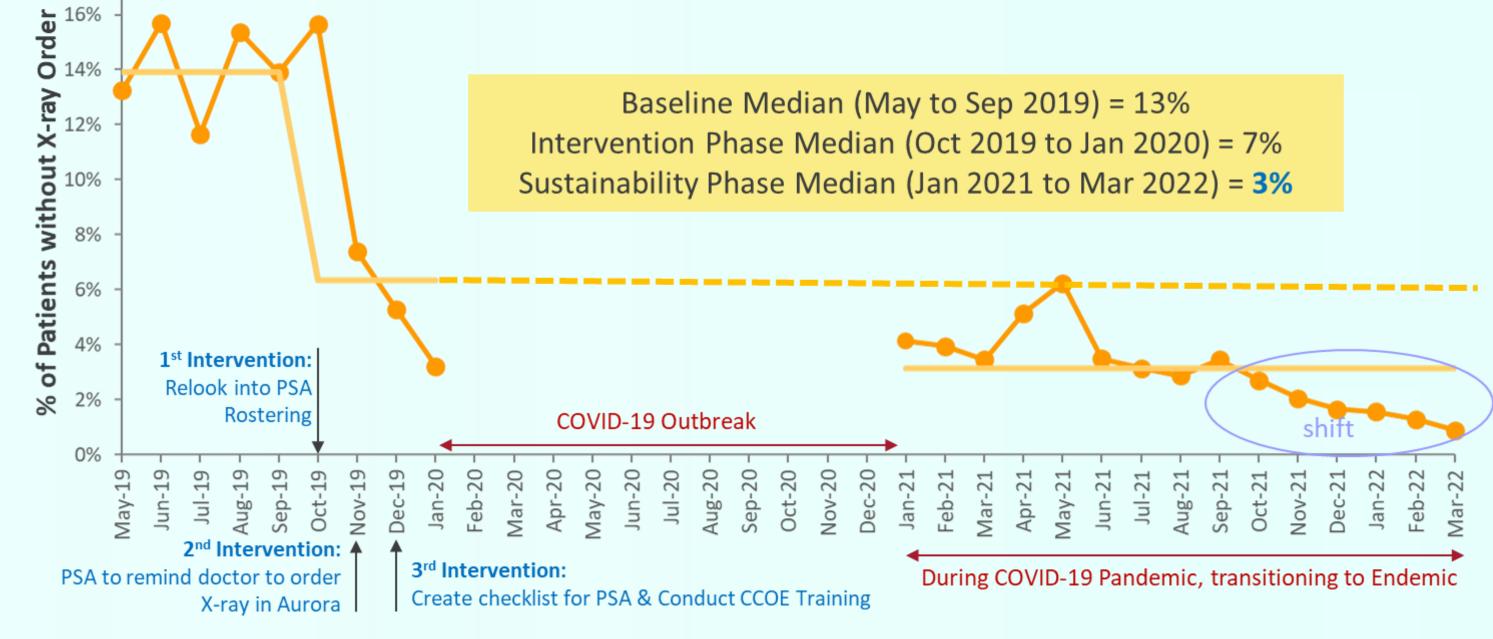


•						
Month	Week	No. of Patients Without X-ray Order	No. of Patients who Required X-ray Orders			
May-19	wk 1	45	199			
May-19	wk 2	61	574			
May-19	wk 3	64	479			
May-19	wk 4	75	431			
May-19	wk 5	50	545			
Jun-19	wk 1	87	415			
Jun-19	wk 2	56	509			
Jun-19	wk 3	98	522			
Jun-19	wk 4	69	528			
Jul-19	wk 1	79	570			
Jul-19	wk 2	48	468			
Jul-19	wk 3	57	498			
Jul-19	wk 4	67	525			
Jul-19	wk 5	30	348			
Aug-19	wk 1	89	614			
Aug-19	wk 2	96	447			
Aug-19	wk 3	56	516			
Aug-19	wk 4	80	512			
Sep-19	wk 1	76	535			
Sep-19	wk 2	64	528			
Sep-19	wk 3	96	499			
Sep-19	wk 4	65	603			

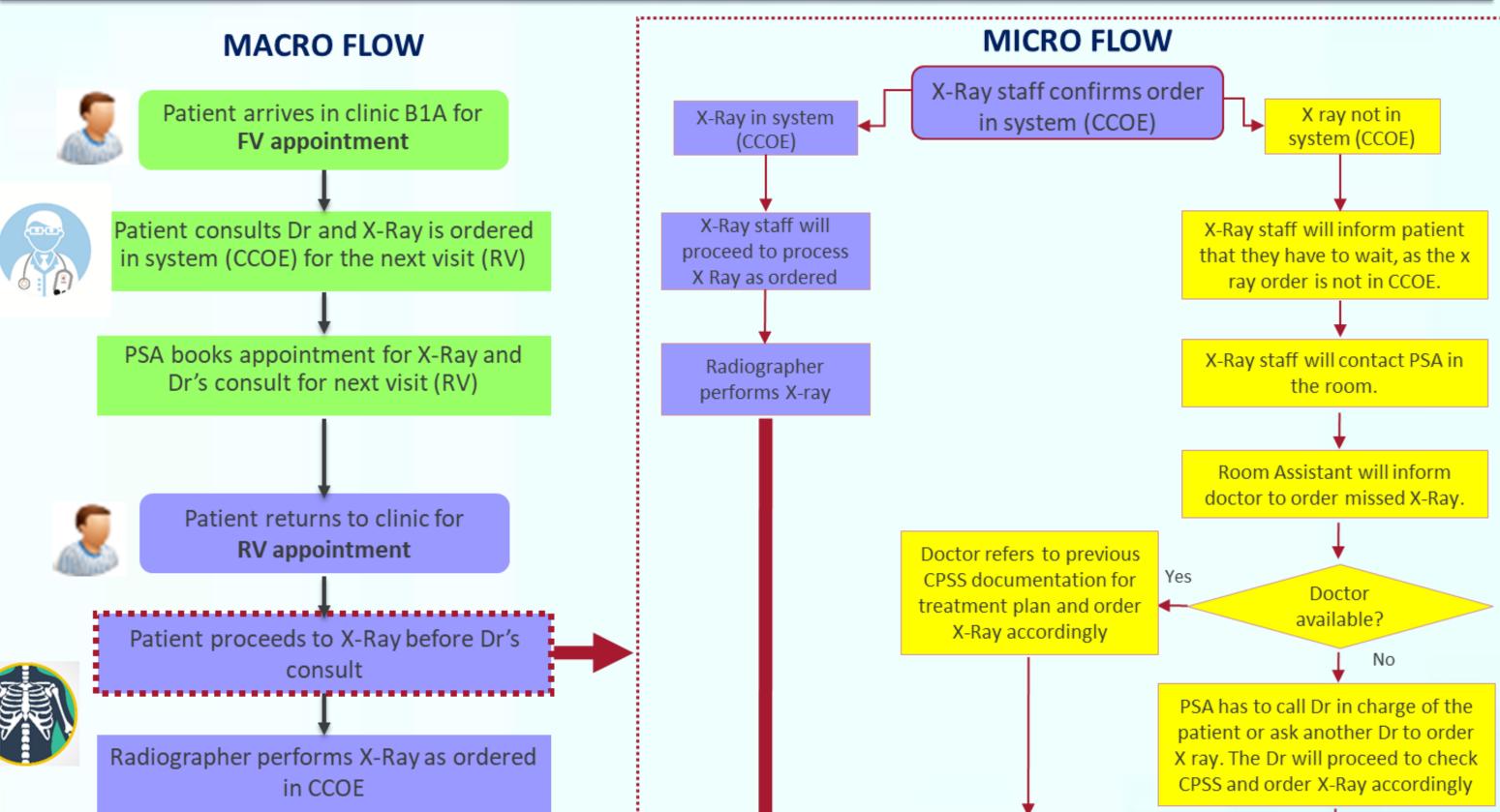
Implementation								
Root Cause	Intervention	Implementation Date						
Cause 1: PSA is assisting more than 1 room	Relook into PSA Rostering	Oct 2019 (Week 1)						
Cause 2: Doctor missed ordering X-ray before patient leaves the room	PSA to remind doctor to order X-ray in CCOE	Nov 2019 (Week 1)						
Cause 3: PSA did not check CCOE	Create checklist for PSA and Conduct CCOE Training for PSA	Dec 2019 (Week 1)						
Results								

Percentage of Patients without X-ray Oder (Monthly Runchart)

Period: May 2019 to March 2022

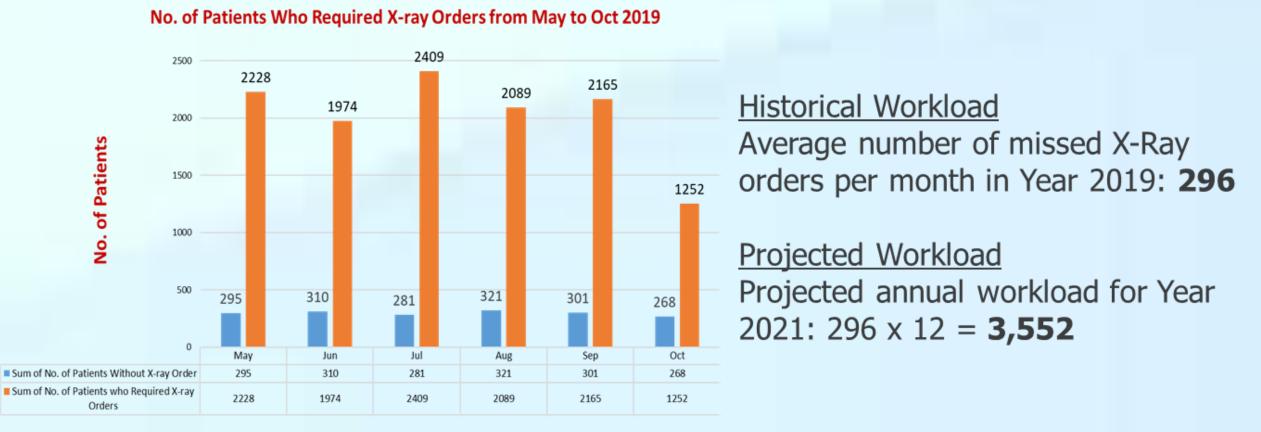


Flow Chart of Process



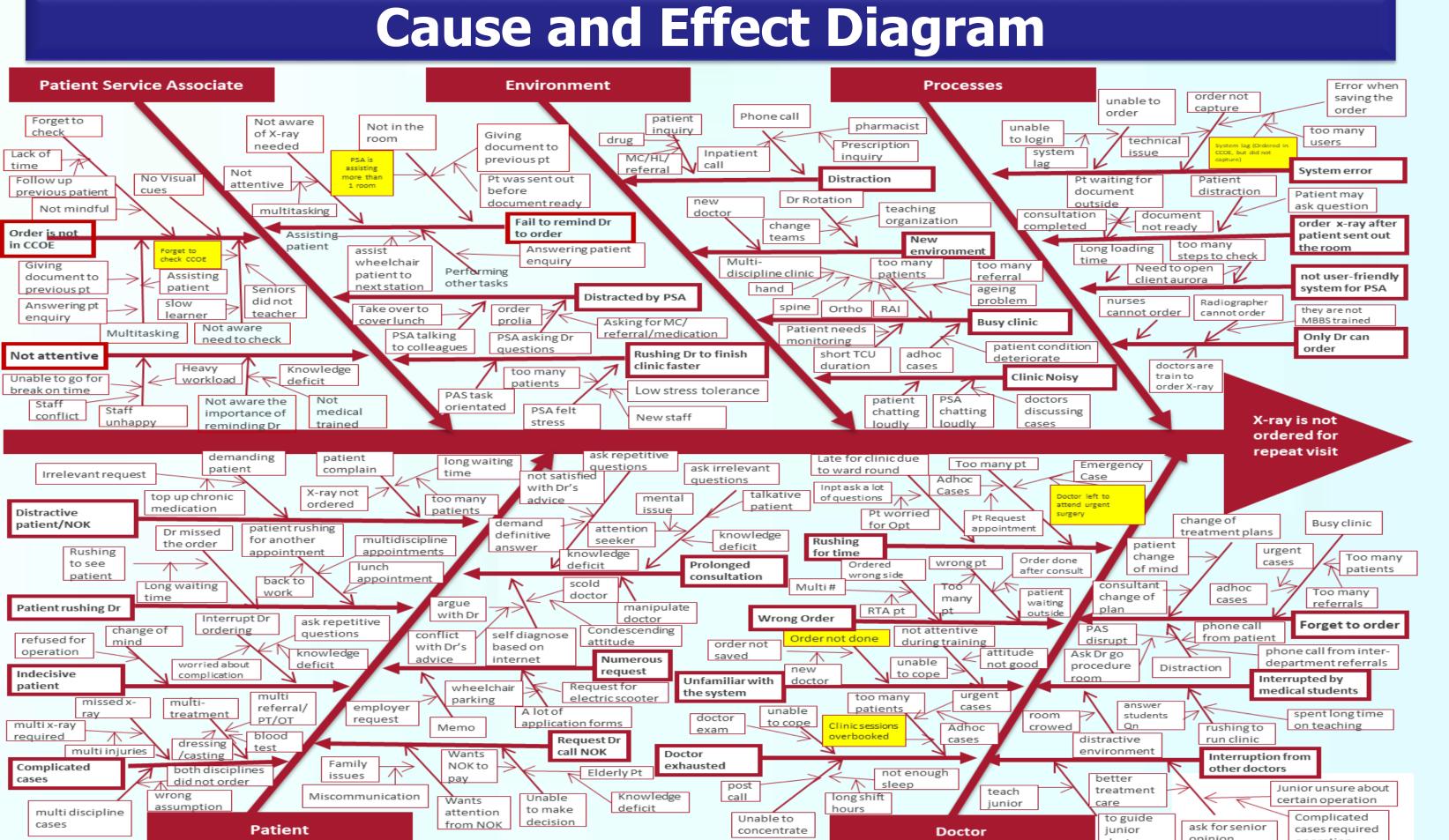
	Baseline Data					Intervention Phase				Sustainability Phase														
Month	May-	Jun-	Jul-	Aug-	Sep-	Oct-	Nov-	Dec-	Jan-	Jan-	Feb-	Mar-	Apr-	May-	Jun-	Jul-	Aug-	Sep-	Oct-	Nov-	Dec-	Jan-	Feb-	Mar-
Month	19	19	19	19	19	19	19	19	20	21	21	21	21	21	21	21	21	21	21	21	21	22	22	22
No. of Patients Without X-ray Order	295	310	281	321	301	288	155	100	67	63	56	60	78	26	39	48	47	55	35	32	27	17	19	15
No. of Patients who Required X-ray Orders	2228	1974	2409	2089	2165	1839	2093	1896	2077	1523	1421	1734	1516	417	1114	1525	1639	1588	1291	1551	1630	1091	1464	1689

Cost Avoidance & Cost Savings



Upon Implementation of Nurses Re-ordering of Missing X-Rays:





	Radiographer Cost Avoidance	Doctor Cost Savings
Manpower FTE	 Average duration to review CPSS and inform patient of missing X-Ray order: 2mins Total Radiographer FTE avoided = [(3,552 x 2mins / 60mins) / 1,940h*] = 0.06 FTE 	 Average duration to review CPSS and reorder X-Ray: 5mins Total Doctor (Medical Officer) FTE saved = [(3,552 x 5mins / 60mins) / 1,940h*] = 0.15 FTE
Manpower Costs	 Radiographer costs avoided: 0.06 FTE x \$100,000^ = \$6,000 	 Medical Officer costs saved: 0.15 FTE x \$120,000^ = \$18,000

* 1940 hours is the norm calculation for total number of working hours per year ^ \$100,000 and \$120,000 are the estimated norm costs for annual income of Radiographer and Medical Officer respectively

Lessons Learnt

- 1. Get the Buy-In and work with multi-team stakeholders
- 2. Multi-team effort
- 3. Practice No Blame Culture
- 4. Be a Motivator to keep the project alive and going

5. Avoid Finger Pointing

Strategies to Sustain

- 1. Ensure roster is well planned at all times
- 2. Train nurses and lead PSAs to monitor missed X-Rays
- 3. Flag out if any team members refused to corporate (Nurse and Lead PSAs to be my eyes and ears)