

“STREAMLINING OF IP PROCESS FOR RADIOLOGY INVESTIGATIONS ”

Presented by

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Academic year, 2015-2017**



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CONTEXTUAL BACKGROUND

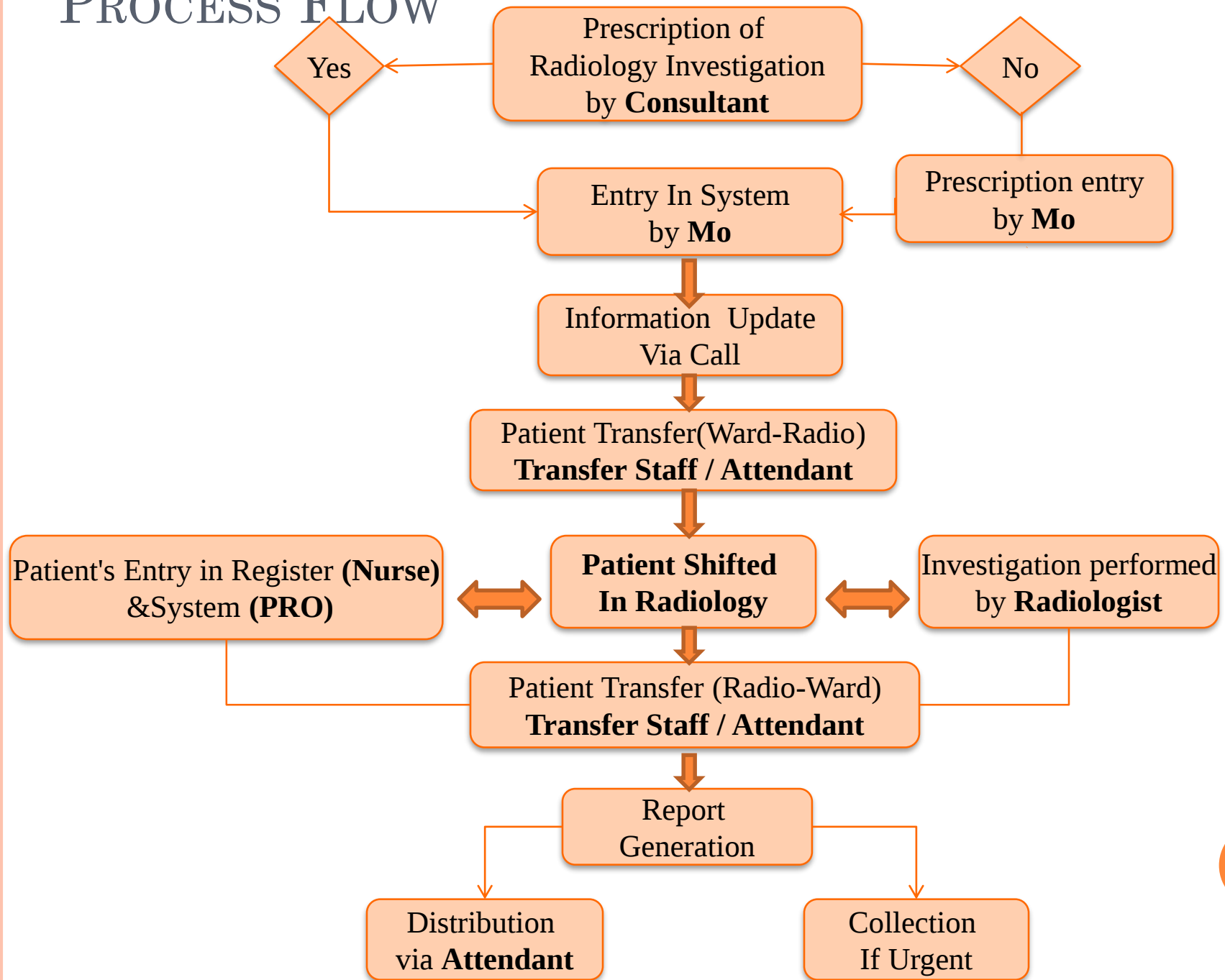
- Radiology has been a distinct medical specialty with unique technical challenges from inception. It is now the key for many diseases and has an important role in monitoring treatment and predicting outcome.
- It is essential for every health care organizations to maintain a proper healthcare facility and bridge the gaps to carve a name for itself in healthcare market, as a factor which most of the customers seek in quality of the services

NEED FOR STUDY

- Strategic planning and right tools can keep your department running smoothly. In an effort to improve the efficiency of department's workflow and meet the challenges that continually threaten it, radiology department heads who face requirements to be efficient while also maximizing quality, it may jump to decisions that are unwise. Hence to maintain quality these initiatives are needed to be taken.



PROCESS FLOW



RESEARCH QUESTIONS

- What is the Process flow of In Patients for Radiology Investigations?
- What are the Gaps in process flow?
- What are the factors Causing delay?
- How to bridge the gaps?
- How to reduce investigation delays?



LITERATURE REVIEW

- Monica C. Villarreal et al. (2015)⁽⁸⁾ conducted a research on “Improving Procedure Start Times and Decreasing Delays in Radiology and concludes that Many different factors contribute to patient delays—it is a complex work environment with both IP and OP workflows. However, a data-driven, interdisciplinary approach was an effective way to reduce patient delays and workflow bottlenecks & important next step is to identify the causes of delays contributing the miscellaneous category”.
- Tejaswi Kocherlakota (2014)⁽⁷⁾ had published a paper on “Patient Flow management in OPD and delivers the information which says Reducing delays and making sure that patients receive the right time will have a significant beneficial effect on the quality of care patient receive
- Also, Cristen C. Bolan (2010) ⁽⁶⁾ had published an article in imaging technology news over Best Practices in Radiology Workflow he says that “the biggest challenge in applying best practices in radiology workflow is seeing the big picture. The entire imaging cycle includes identifying the patient data, conducting the imaging exam according to the proper protocols, and then streamlining and processing the data in a timely manner.”



OBJECTIVES

- To understand Process flow of IP Patients For Radiology Investigations
- To identify the gaps in the process flow.
- To determine factors influencing delay in radiology investigation.
- To bridge the gaps in process flow
- To reduce the frequency of delay in radiology investigations



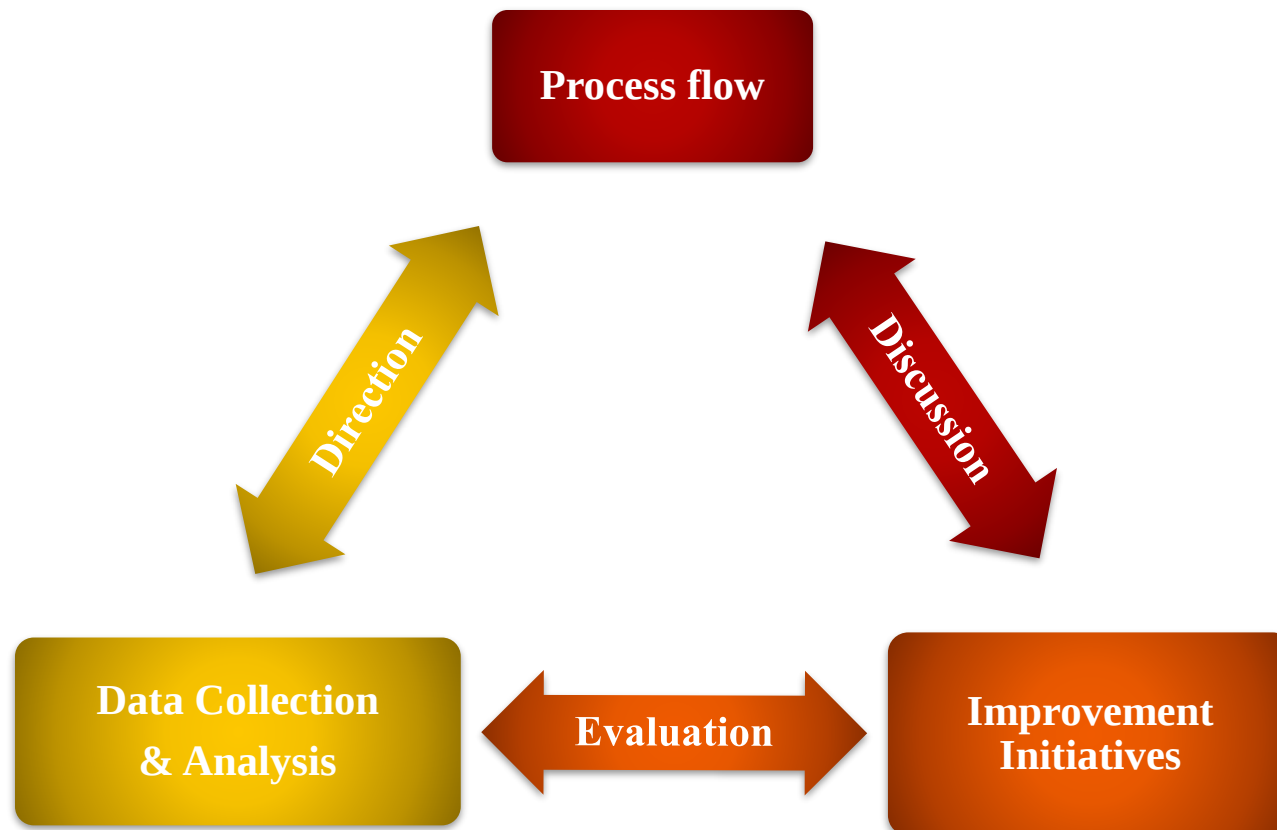
RESEARCH METHODOLOGY

- Study Design- Interventional study
- Study Area- Radiology Department.
- Duration- 3 months.
- Sample size – 510
- Sampling Technique– Convenience sampling
- Study participants –Patients Prescribed for Radiology Investigations.
- Study Time- 9am- 5:30pm
- Inclusions: In-Patients prescribed for Radiology Investigations.
- Exclusions: Investigations performed on Sundays.
- Investigations Performed after 5:30 PM



The project was built on three successive but interrelated tasks

- 1) Understanding of process Flow
- 2) Data collection and analysis
- 3) Implementations of Interventions with repeat data acquisition and analysis.



DATA COLLECTION

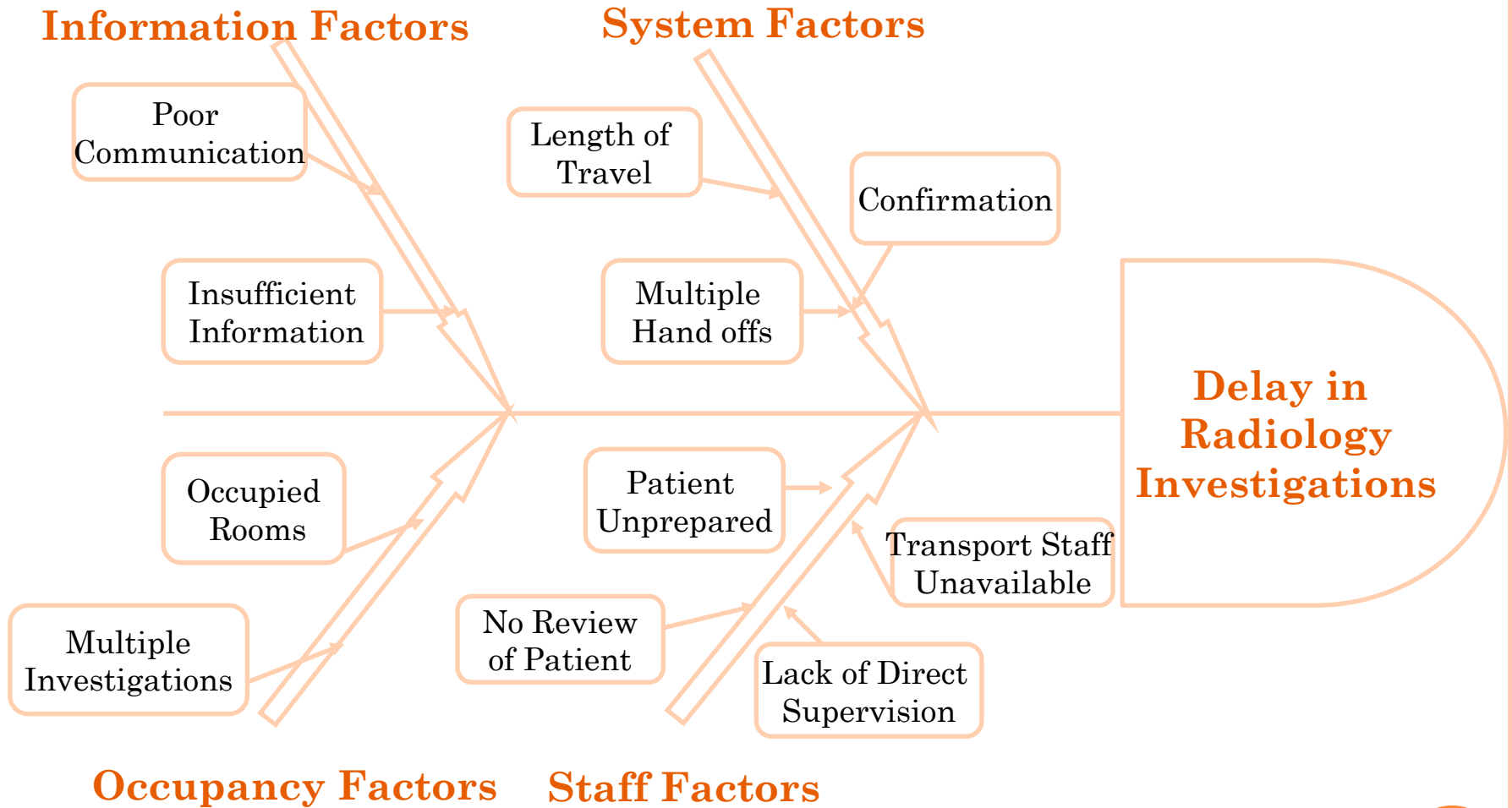
- Data was collected for one month; the patient's information was entered into pre-designed pro-forma having all the relevant details.
- **Primary data collection:** - Data was collected from personal observation and information gathered by discussion with staff.
- **Secondary data collection:** Data was collected from patient's files and health system data, which provided procedure order details.
- The following times were recorded for each Patient:
- **Advice Time:** Patient Prescribed for Radiology Investigation by Consultant.
- **System entry-** Time at which Nursing Staff made an entry in System
Time at which it is reflected in Radiology System
- **Call Time:** Time at which the patient is asked to shift.



DATA COLLECTION (CONTD.)

- **Received time:** Time at which the patient entered Radiology Department.
 - **In time:** The time at which the patient entered for investigation.
 - **Out time:** The time at which the patient was shifted out of the Radiology Department.
 - **Remarks** were mentioned according to the flow of patients.
 - These data were transferred into a database from which graphs were generated. These records gave information necessary to identify potential areas of opportunity for improvement, to plan and implement interventions, and to evaluate the effect of these interventions. Also, Fish bone Diagram was used to understand the causes of delay. Post pathway implementation & intervention were undertaken, & data with almost the same number was reviewed.
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FISH BONE DIAGRAM



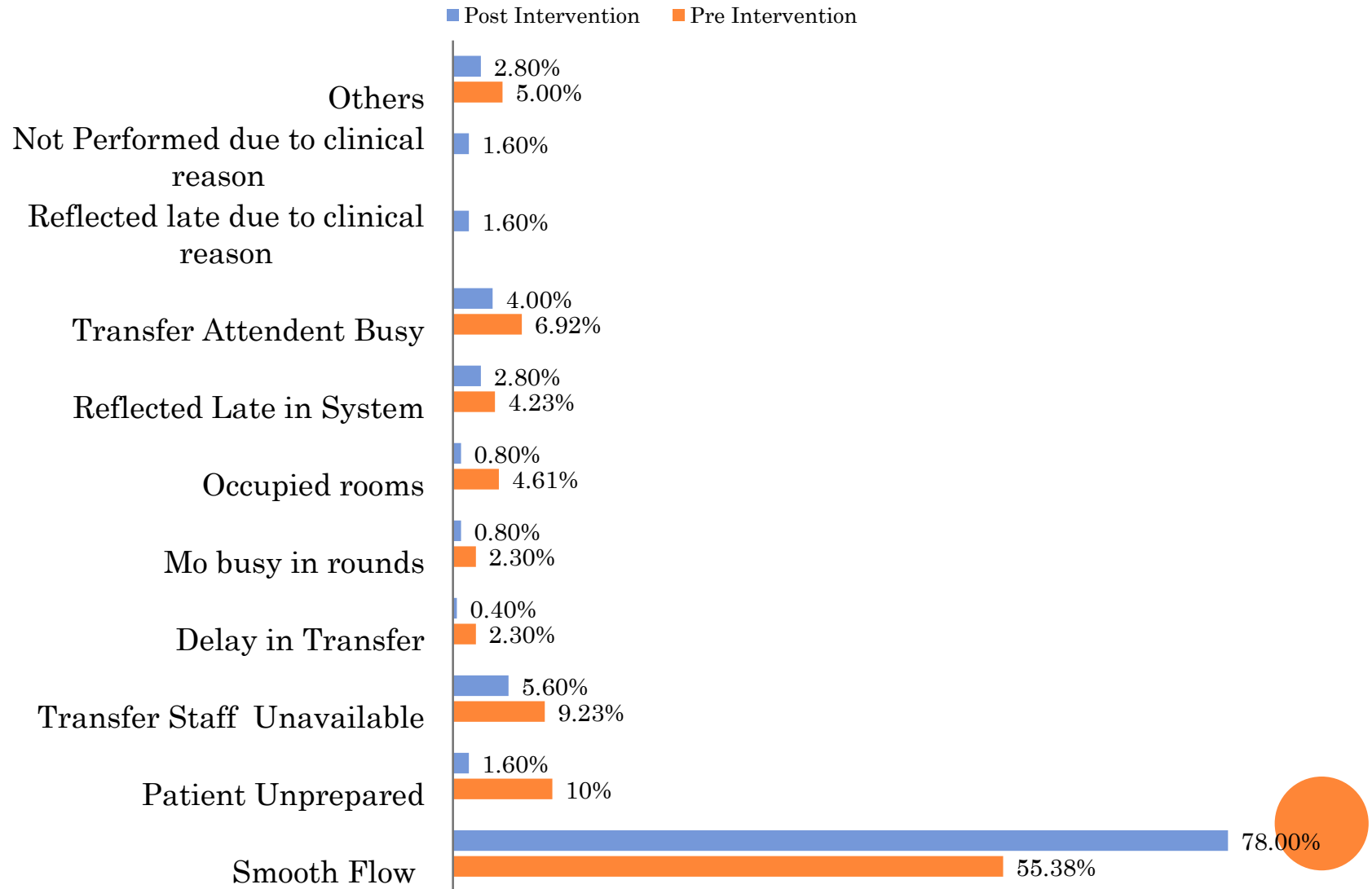
INTERVENTIONS

- On Job Training Program on “Preparedness of patient for radiology investigations” was conducted for the Nursing in-charges.
- Leaflets were printed and displayed in each and every ward in the hospital containing information on preparedness of patients.
- PRO (Planning & Reporting Officers) at Radiology Reception were ask to maintain call records so that there will be proper communication between either sides.
- Medical Officers were made aware of patient Preparedness for Radiology Investigations.
- Nursing Staff were educated regarding the importance of shifting of patient in given time also for the proper channel of planned investigation in the morning.
- There was insufficiency of Staff as many dimensions (IPD, OPD, ER, Health Check UP) jump-in to the radiology department for Investigations hence more 2 nursing staffs were recruited.
- Additionally, nursing staff and technicians of radiology department were educated regarding the importance of Quality Indicators, Communication, Consents, Patient handover, so as to reduce any kind of error in future.



Data Analysis

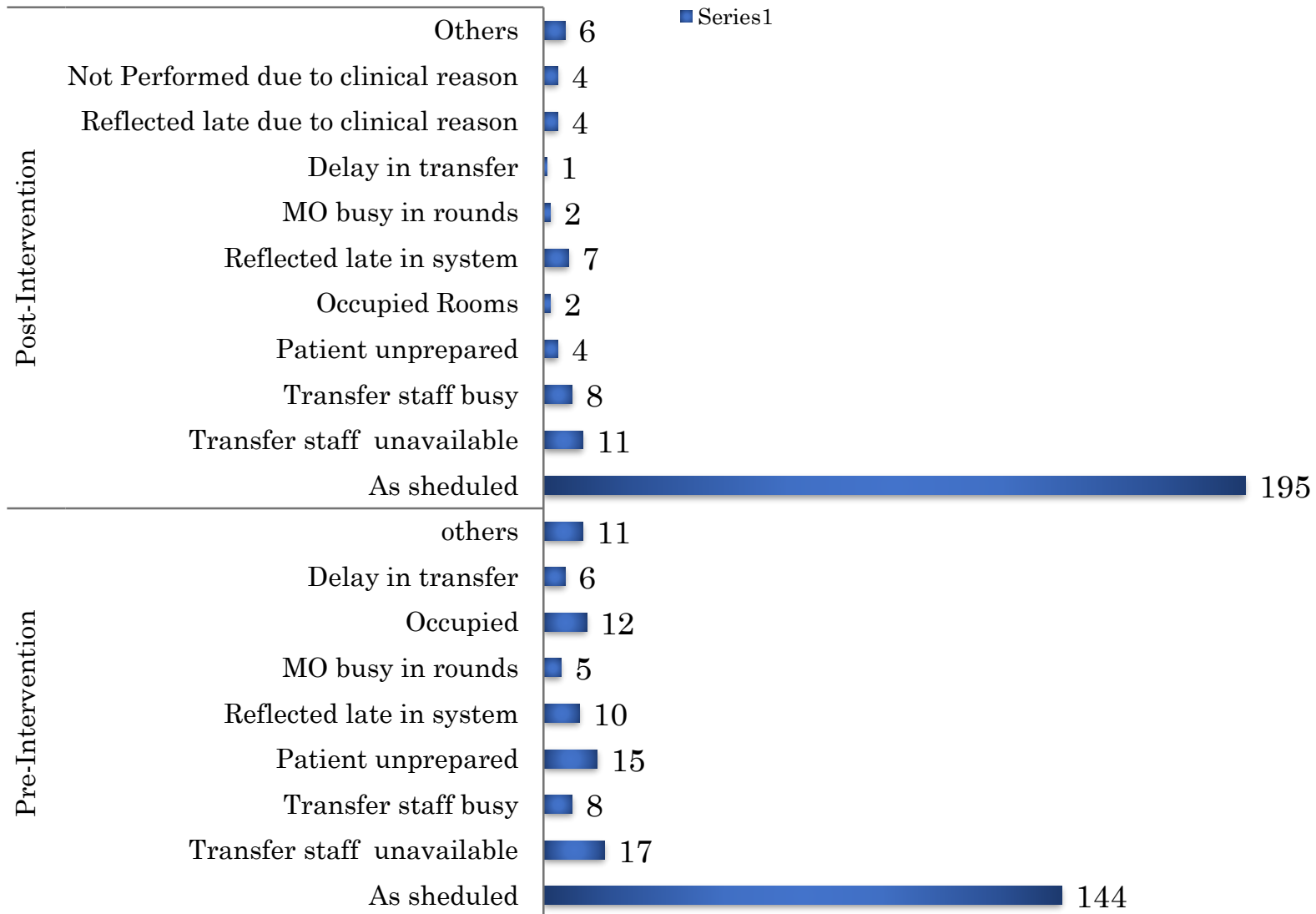
Pre V/S Post Intervention



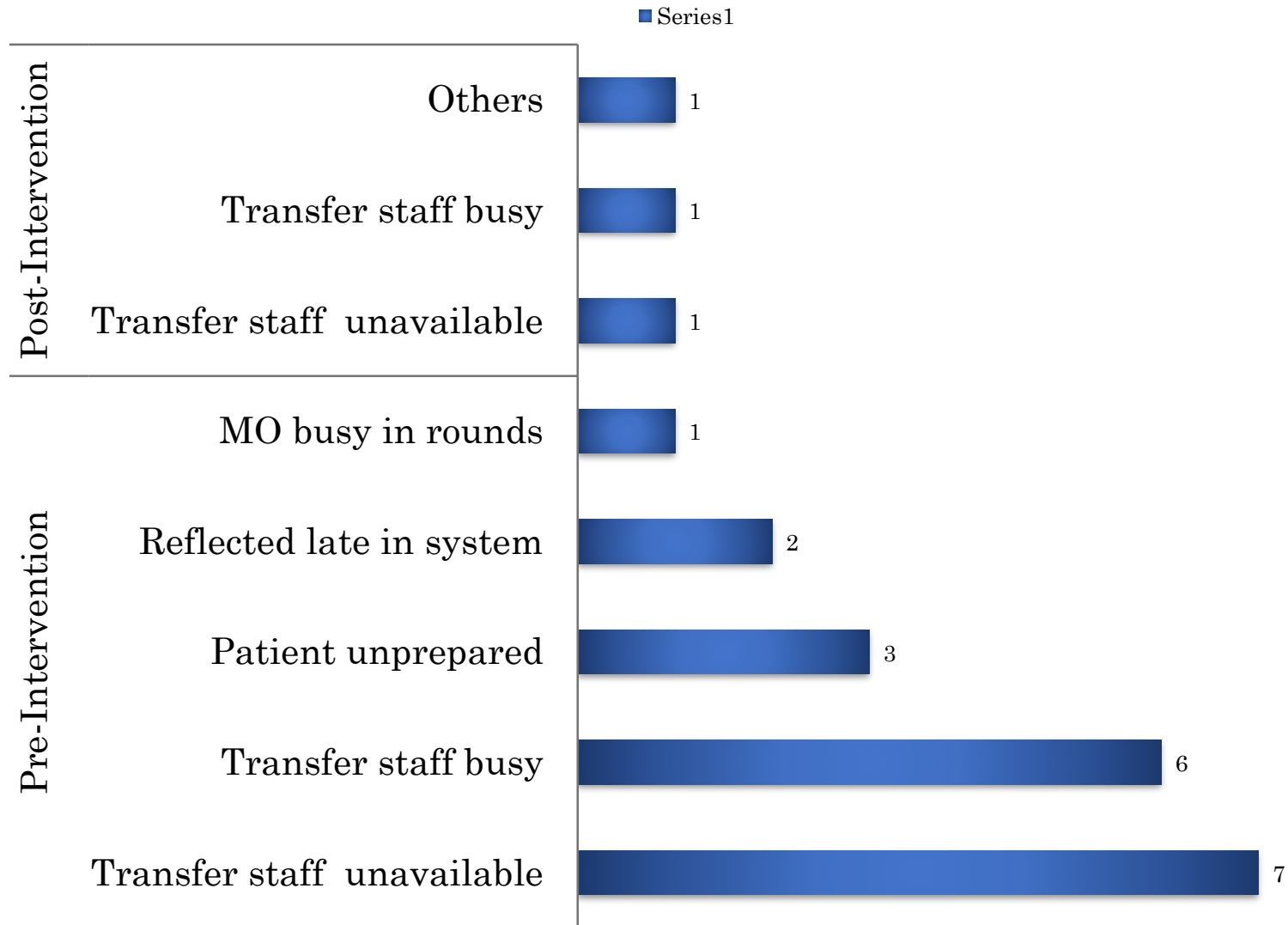
Smooth Flow & Delay					
		PERCENTAGE		FREQUENCY	
		PRE	POST	PRE	POST
Smooth Flow		55.38%	78.00%	144	195
Patient Unprepared		10%	1.60%	26	4
Delay in Transfer		18.45%	10%	48	25
	Transfer Attendent Busy	6.92%	4.00%	18	10
	Due to lift	2.30%	0.40%	6	1
	Transfer Staff Unavailable	9.23%	5.60%	24	14
Mo busy in rounds		2.30%	0.80%	6	2
Occupied rooms		4.61%	0.80%	12	2
Reflected Late in System		4.23%	2.80%	11	7
Reflected late due to clinical reason			1.60%	-	4
Not Performed due to clinical reason			1.60%	-	4
Others		5.00%	2.80%	13	7



Shifted within 30 mins

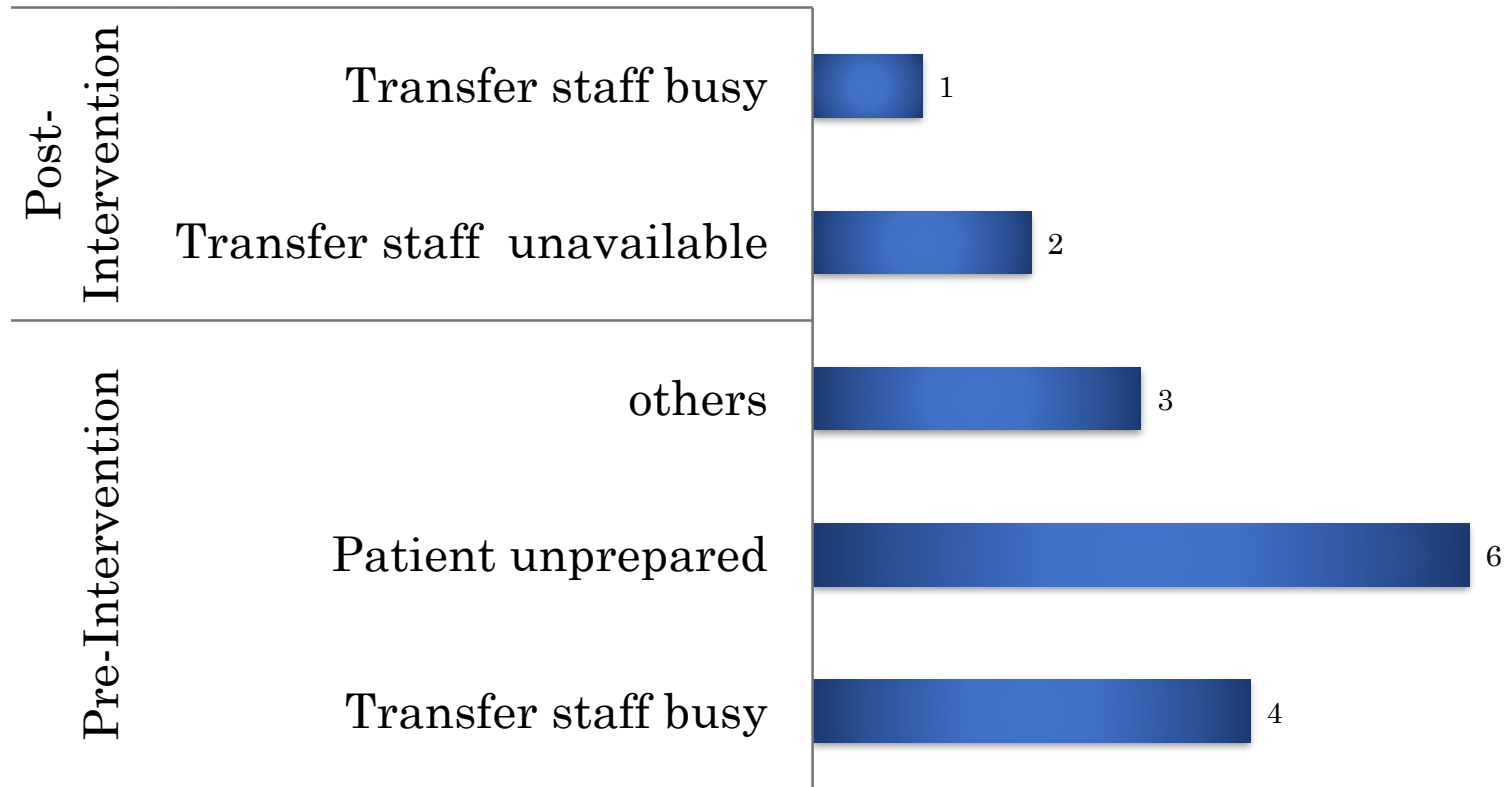


Shifted within 31-60 mins



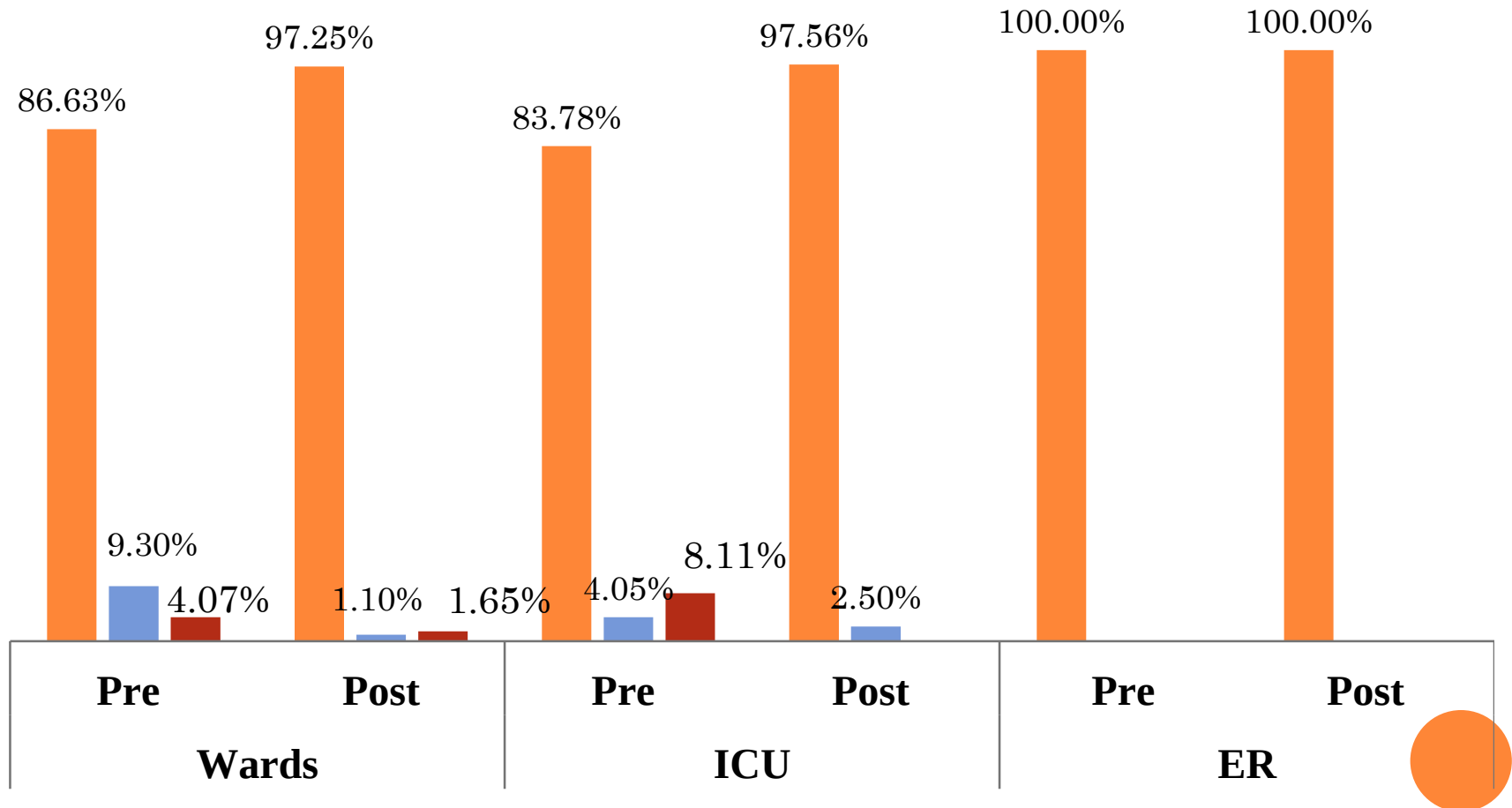
Shifted after an Hour

■ Series1



Pre V/S Post Intervention

■ Shifted within 30 mins ■ Shifted in 31-60 mins ■ Shifted after an hour



RESULTS

- There was an improvement in the Smooth Process Flow of Patients i.e. from 55.38 % to 78 % in Pre and post intervention respectively.
- The study was focused on the factors influencing delay; there was reduction in every segment of delay, when it comes to the total number of delays it has dropped down from 44.53 % to 22 %.
- Also, some changes were seen in the percentage of factors causing delay
- Patient unpreparedness 10% to 1.60 %,
- Availability of transfer staff 9.23% to 5.60 %,
- Transfer delays 2.30 to 0.40%,
- Engagement of transfer attendants 6.92 % to 4%.
- MO Engrossed in rounds 2.30% to 0.80 %
- Delayed System Entries 4.23% to 2.80 %
- When it comes to the minute wise distribution of shifting process
- Improvement is seen in one segment i.e.
 - Within 30 minutes- 144 to 195 patients



RESULTS(CONT)

Reduction in other two segments i.e.

- Within 31-60 minutes -19 to 3 patients
- >60 minutes- 13 to 3 patients

And last but not least , when it comes to the ward wise categorization

Improvement is seen in shifting of patients

- Within 30 minutes

Wards- 86.63 to 97.25%,

ICU's- 83.78% to 97.56 %

Reduction in cases in other segments i.e.

- Within 31 to 60 minutes

Wards- 9.30% to 1.10 %

ICU's- 4.05 % to 2.50 %

- >60 minutes

Wards- 4.0 % to 1.65%

ICU's- 8.11% to 0 %

Whereas Emergency Department is concerned , none of the patient got shifted in more than 31 minutes during pre and post intervention study.



CONCLUSION

Various factors contribute to patient delays in Radiology Department. It is a complex work environment to be maintained as all the dimensions jump in to the pool (IP, OP, ER & Health Check Up).. There was an improvement in the process flow but radiology being an ongoing department and sustaining improvement interventions being one of the biggest challenges. However, a data-driven approach can be used to reduce patient delays and process flow bottlenecks.



LIMITATIONS

- Sundays and gazette holidays were excluded during the study.
- Single handed study
- Less study duration



RECOMMENDATIONS

- On Job Training Programs must be conducted periodically so as to improve and brush up the knowledge of individuals, also continuous improvement techniques will improve the quality of your department there by reducing errors and delays.
- Also, electronic patient tracking system and more advancement of information Technology must be introduced for better process flow.



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INVESTIGATION	PATIENT PREPARATION FOR RADIOLOGY PROCEDURES
USG ABDOMEN	Fasting preferably overnight
	Plain water can be given, At least 2 hours before
	Give laxative previous night if feasible
	No water within 2 hours of study
USG KUB & PVR, USG KUB	Fasting preferred
	Give fluids to fill the bladder if fluid intake restriction is not there
	Full bladder required
USG PELVIS (OB & GYNEC)	Full bladder required
RENAL DOPPLER	Strict overnight fasting
	Give laxative previous night if feasible
BMD	No calcium preparation to be given on day of procedure
	No contrast study before 2 days of BMD procedure

INVESTIGATION	PATIENT PREPARATION FOR RADIOLOGY PROCEDURES
X RAY IVP	Nil by mouth
	Serum creatinine
BARIUM STUDIES (BARIUM MEAL, BARIUM SWALLOW)	Nil by mouth
MRI STUDIES WITH CONTRAST	Serum creatinine
	Fasting for 3-4 hours
MRI STUDY WITH SEDATION	Fasting for 4 hours
CT STUDIES WITH CONTRAST	Fasting for 4 hours
	Serum creatinine
CT IVP	Fasting for 4 hours
	Full bladder required
	Serum creatinine required if contrast study is there
CT KUB	Full bladder required

THANK YOU

