

Project Title

Reducing unnecessary radiographic investigation during 11pm to 6 am

Project Lead and Members

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Organisation(s) Involved

National University Hospital

Project Period

Start date : July/2019

Completed date : Dec/2019

Aims

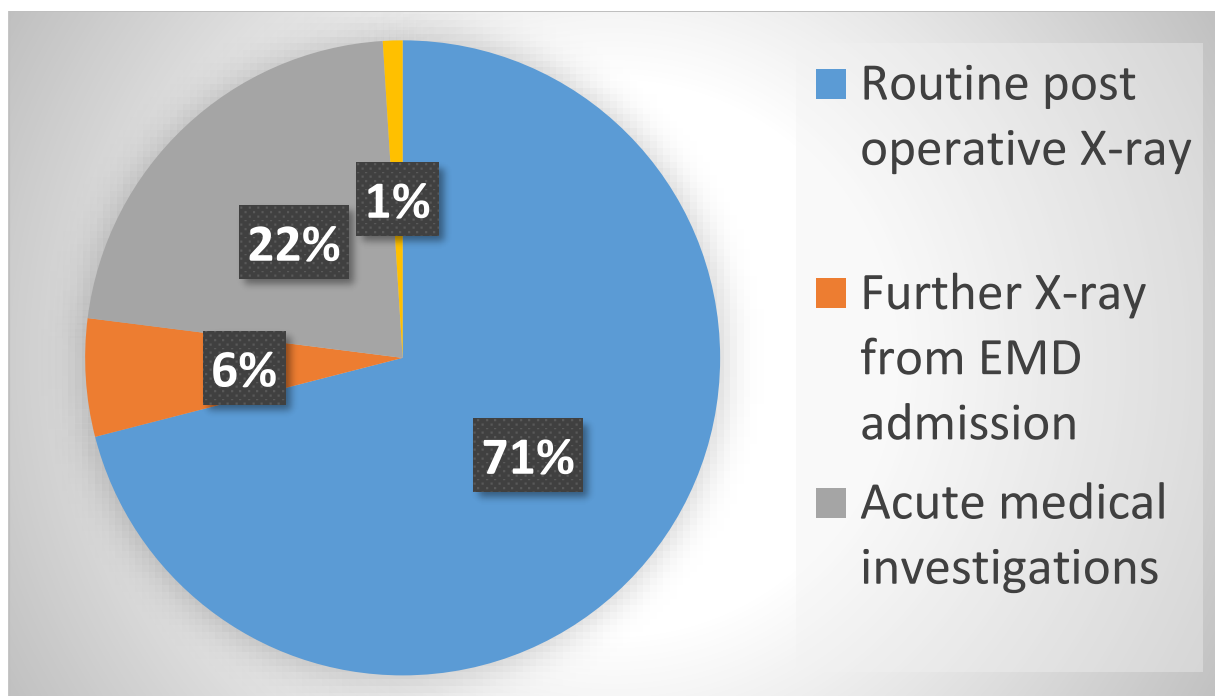
To reduce unnecessary midnight radiographic investigations from 76% to 30% in Orthopaedic surgery within 3 months.

Background

- Radiographic investigations are commonly ordered by clinicians and especially orthopaedic surgeons.
- Some of these radiographs were unnecessarily performed at midnight (11pm-6am), which might not be cost effective and might impose safety issues.
- It adds additional charges to patients when the radiographs are conducted during the midnight period.

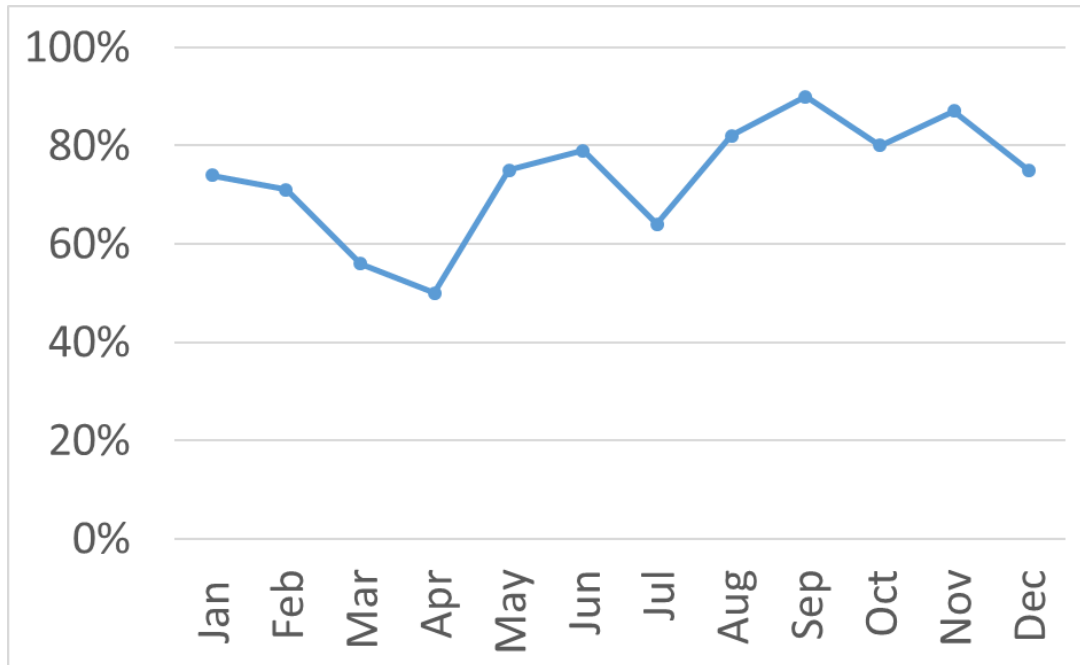
- It might potentially cause safety issues in elderly patients with fall risks.
- It requires extra manpower (nurse and porter) to send patient down to radiology department which will strain the manpower further at midnight.
- During Jan-Dec/2018, there were 147 radiographs performed during midnight in orthopaedic department. 76% (112) of them were avoidable and could be performed at day time.
- To better spend our resources at night and save unnecessary cost, it is important to establish a protocol to prioritise the X-rays performed at night.

2018 midnight xray	Total number	Avoidable	Necessary
Total	147	112(76%)	35(24%)
Routine post operative X-ray	104	104	0
Further X-ray from EMD admission	8	6	2
Acute medical investigations	33	0	33
Others	2	2	0

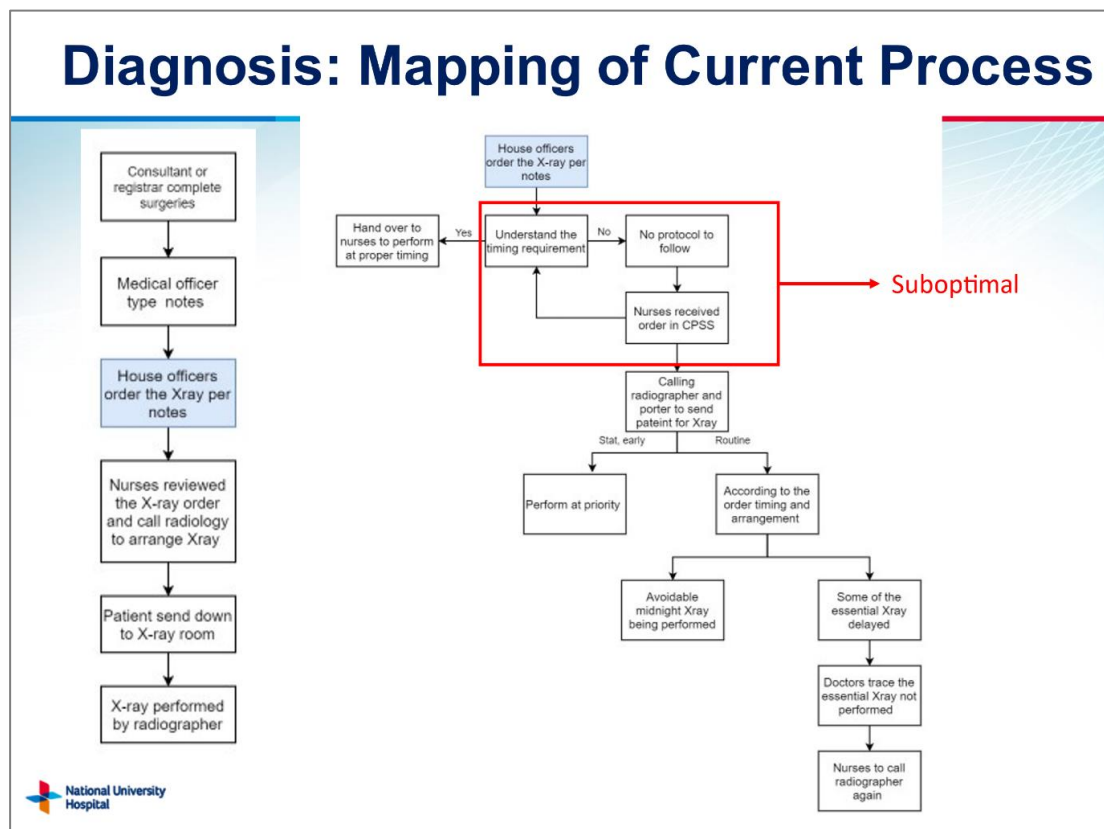


Break down of indications for midnight X-ray

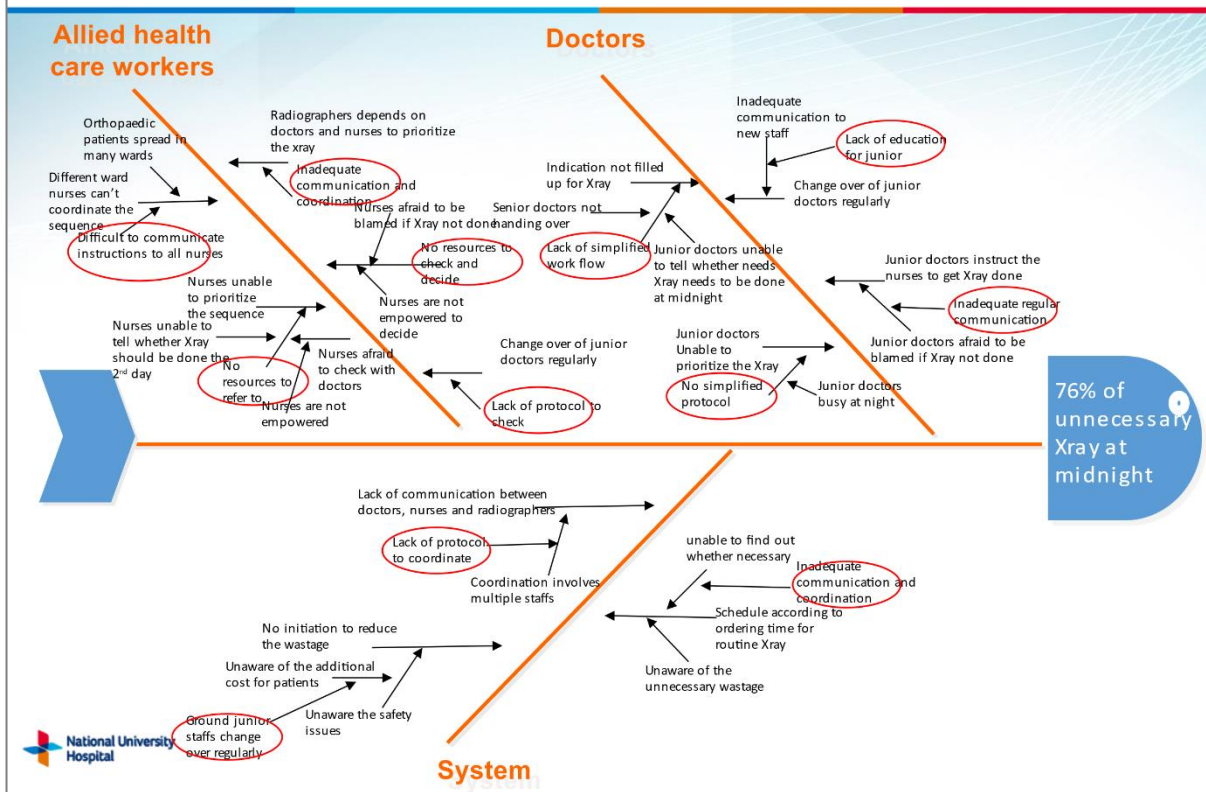
Percentage of the avoidable midnight X-ray per month in 2018



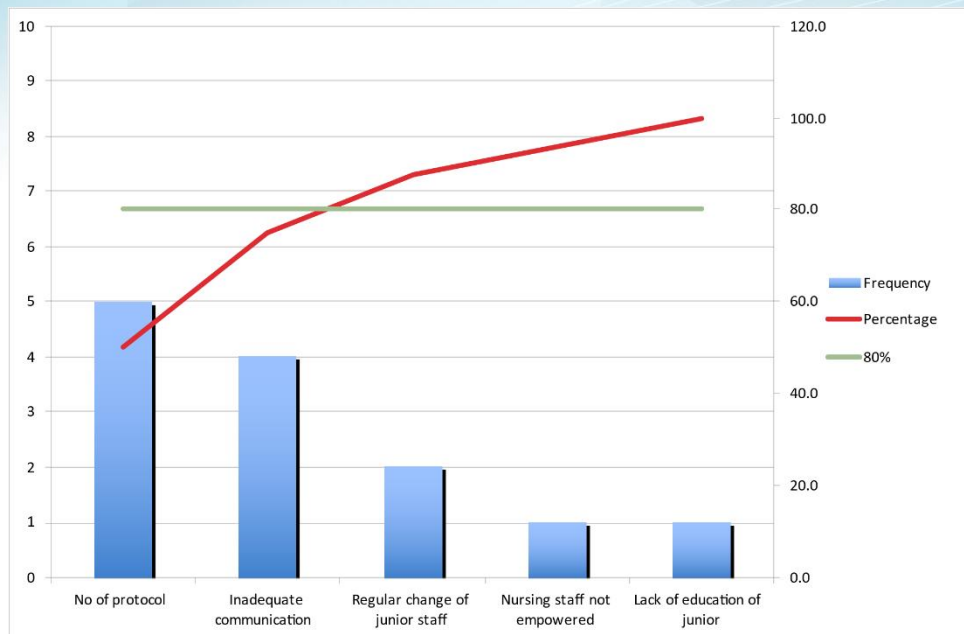
Methods



Diagnosis: Cause and Effect Diagram



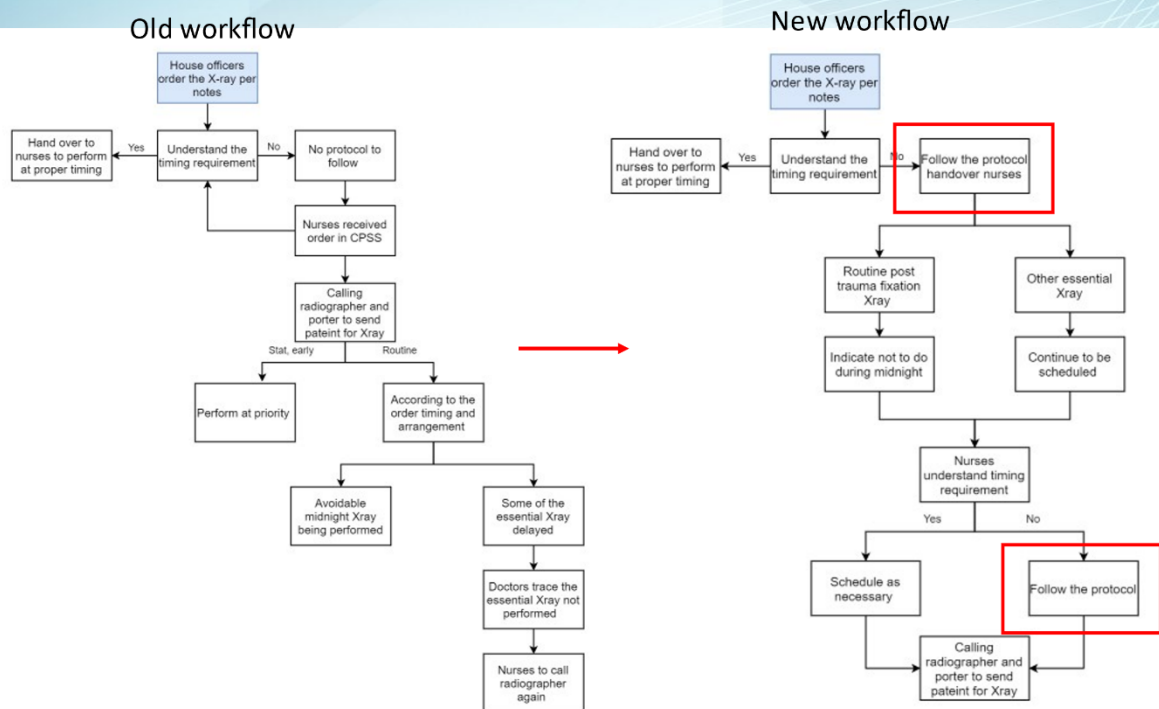
Diagnosis Phase: Pareto Chart



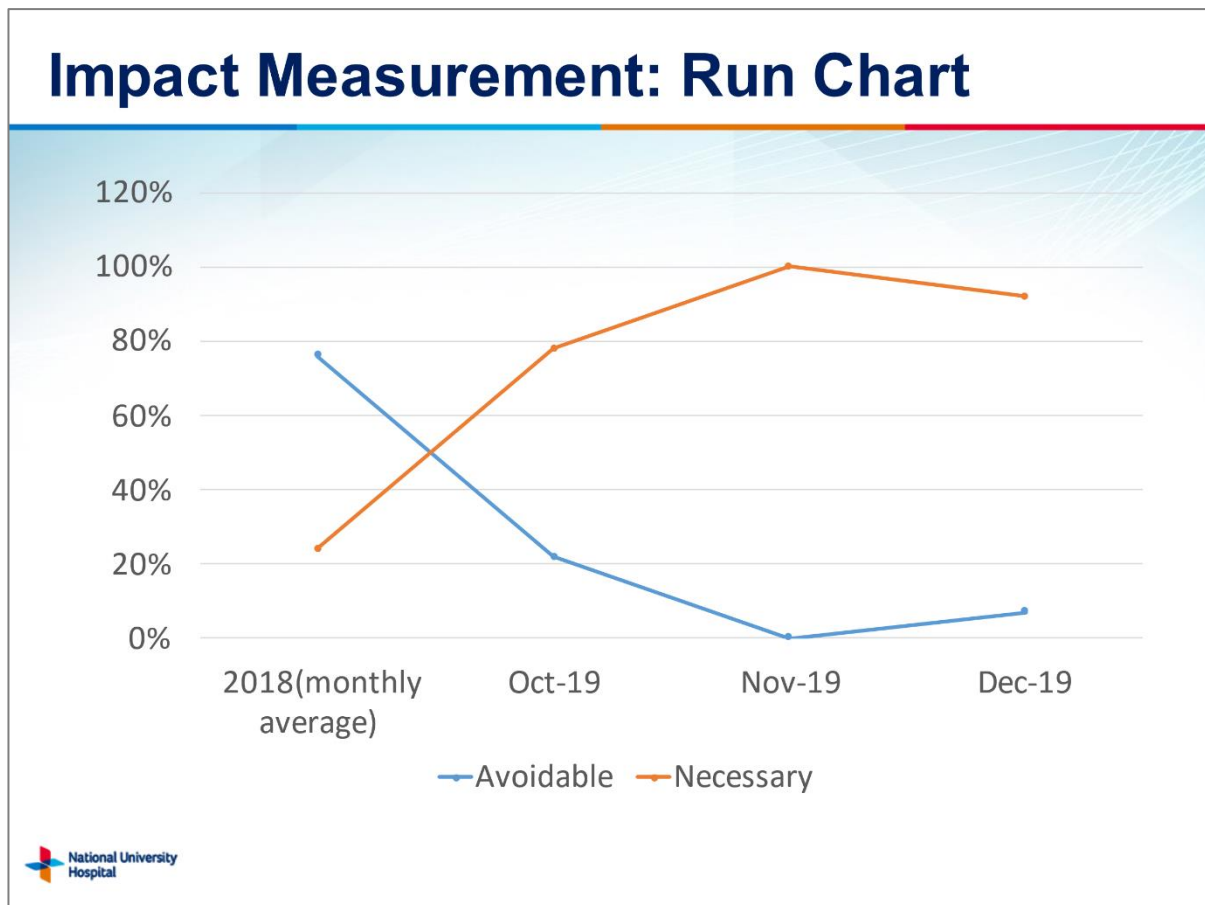
Interventions

PROBLEM	INTERVENTION	DATE OF IMPLEMENTATION
Lack of protocol	Establish protocol for both juniors and nurses, disseminate via email.	9/2019
Inadequate communication	Disseminate the protocol through trauma meeting and emails to doctors and orthopaedic nursing staffs(Via orthopaedic ward sister).	9/2019
Regular change of junior staff	Regular email and meeting after manpower changeover to maintain the awareness.	9/2019

Mapping of Improved Process



Results



- **Cost saving**

- Monthly avoidable Xrays performed at midnight reduced from 9.3 (2018) to 1 post intervention.
- The surcharge for one Xray performed at after office hour is 150 dollars.
- Total cost saving per month is estimated to be 1245 dollars.
- Total cost saving per annum is estimated to be 14940 dollars.

- **Safety enhancement**

- It improves patient safety by avoiding sending patients from ward to radiology department at middle of night.

- **Free up manpower to run other essential service**

- Reduce manpower wastage at night.

- Porters can be available to fetch other patients from ward to OT or other essential services to avoid unnecessary delay.

Lessons Learnt

- Include the protocol in the orientation for the junior doctors.
- Continue regular email communication with junior doctors and nurses to reinforce the protocol.
- Ward sister will continue to educate the ward nurses to follow the protocol.
- Future plan to upload the protocol to the intranet for staff to refer to.

Conclusion

It reduces healthcare cost and enhances patient safety by avoiding the unnecessary radiograph performed from 11pm to 6am. It doesn't affect quality and efficacy of patient care. Therefore it should be utilized in a broader scope to maximize the limited resource we have.

Project Category

Process Improvement, Safety, Productivity

Keywords

Process Improvement, Safety, Productivity, Workflow Improvement, Quality Improvement, Manpower Savings, Cost Savings, Cause and Effect Diagram, Pareto Chart, Radiology, Medical Services, Nursing, Ancillary Services, National University Hospital, Radiographic Investigation, Orthopaedic Surgery

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