



Background & Objectives

- Many pre-operative chest radiographs (CXR) contribute little to patient management in elective surgery.
- Screening preoperative CXR is indicated in patients undergoing elective cardiothoracic surgery (RCR-iRefer)
- This audit evaluates our institution compliance (St Bartholomew's Hospital) to the Royal College of Radiologist's iRefer guidelines.

The Standard

A locally agreed standard (not present) based on local guidelines



Target

- 90% of preoperative CXR requests should have a valid indication (iRefer).
- 100% of elective cardiothoracic surgery patients should have preoperative CXR (RCR).
- 100% of CXR findings to be documented preoperatively in patients' notes (RCR).
- 100% of CT Chest findings to be documented preoperatively in patients' notes.
- 100% CXR pre-operative Reporting by radiology.
- 100% CT pre-operative Reporting by Radiology.
- 100% of all CXR quality parameters should be "good".

Method

- Prospective study over 14 days period in November 2023
- PACS, OR notes & patients' electronic records (CRS)
- Targeted groups:
 - Elective cardiac surgery patients at St Barts (n=25): CABG, MVR, AVR, TVR, etc
 - Elective thoracic surgery patients at St Barts (n=25): VATS pleural biopsy, Lobectomy, etc
- Exclusion criteria: Urgent surgeries, Bronchoscopies.
- A total of 50 patients undergoing elective surgery were audited, divided equally between cardiac (n=25) and thoracic (n=25) surgery groups.

Results: Preoperative Imaging

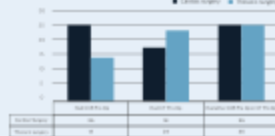
In the cardiac surgery group:

- 100% (25/25) of patients had a preoperative CXR.
- 72% (18/25) had a preoperative CT scan.

In the thoracic surgery group:

- 52% (13/25) had a preoperative CXR.
- 96% (24/25) had a preoperative CT scan

Both cardiac and thoracic surgery groups; all 50 patients (100%) had either a preoperative CXR or CT scan with valid indications, respectively.



Results : Reporting & Documentation of Chest Imaging

In the cardiac surgery group:

- All 25 patients in the cardiac group had a preoperative CXR, only (3/25) %12 reported preoperatively.
- All acquired preoperative CT scans in the cardiac group (18/18) %100 were reported preoperatively.
- Preoperative CXR interpretations by clinicians were documented in patients' clinical notes in 60% (15/25)
- Preoperative CT interpretations by clinicians were documented in 100% of patients (18/18)

In the thoracic group:

- 52% (13/25) of patients had a preoperative CXR, with (6/25) %24 reported preoperatively.
- Only (24/25) %96 of patients had preoperative CT scans, with (23/24) %96 reported preoperatively.
- Preoperative CXR interpretations by clinicians were documented in patients' clinical notes in 36% (4/25) of patients
- Preoperative CT interpretations by clinicians were documented in 100% of patients (24/24)



Results: Quality

All preoperative chest radiographs and CT scans were rated by our radiography quality assurance team as having optimal quality measures:

	Cardiac surgery group	Thoracic surgery group
Optimal Exposure	100% Good	100% Good
Optimal Positioning	100% Good	100% Good
Sufficient Inspiration	100% Good	100% Good
Anatomical Markers & Orientation	100% Good	100% Good

Discussion: Time from Chest X ray to surgery

- All cardiac patients had a CXR before their surgery (3 reported prep)
- Average time from CXR to cardiac surgery: 16 (SD: 9, Max: 17, Min: 0)
- 52% of Thoracic Patients had a CXR before surgery (6 reported prep)
- Average time from CXR to thoracic surgery: 9 (SD: 14.4, Max: 53, Min: 1)
- Average time from CXR to cardiothoracic surgery: 13 (SD: 11.3)

Discussion

- All elective surgical patients, cardiac and thoracic, had at least one modality of chest imaging prior to their operation.
- Although only 52% of the thoracic patients had pre-op CXR, 96% of the thoracic patients had Chest CT prior to their operation
- Except for one thoracic patient, all the chest CTs (cardiac & thoracic) were reported pre-operatively by radiology
- There is a clear documentation of checking all the performed pre-operative chest CTs in the clinical notes (100%)
- Variable time from imaging to surgery might have played a role in the rates of preoperative reporting.

Assessment

- 90% of preoperative CXR requests should have a valid indication (RCR) - 100%
- 100% of elective cardiothoracic surgery patients should have a preoperative CXR (RCR) - 76%
- 100% of CXR findings to be documented preoperatively in patients' notes (RCR) - 37%
- 100% of CT Chest findings to be documented preoperatively in patients' notes - 100%
- 100% of all CXR quality parameters should be "good". - 100%
- 100% CXR pre-operative reporting by radiology - 24%
- 100% CT pre-operative reporting by radiology - 98%

Suggested interventions

- Dedicated plain film sessions for radiologists and reporting radiographers.
- Flagging system to highlight preoperative imaging for in & out-sourcing reports.
- Consider new technologies for auto-reporting and imaging process:
 - AI solutions in PACS
 - New photon-counting (super-low dose) unenhanced CT scan.

References

- NICE Guidelines (NG 45): Routine preoperative tests for elective surgery. Available at: NICE Guidelines.
- iRefer Guidelines (Adult CC18). Available at: iRefer.