Diagnostic Imaging Pathways - Chest X-Ray (Pre-Operative)

Population Covered By The Guidance

This pathway provides guidance on the appropriate use of preoperative chest radiographs in adult patients.

Date reviewed: March 2018

Date of next review: March 2021

Published: May 2018

Quick User Guide

Move the mouse cursor over the PINK text boxes inside the flow chart to bring up a pop up box with salient points.
Clicking on the PINK text box will bring up the full text.
The relative radiation level (RRL) of each imaging investigation is displayed in the pop up box.

SYMBOL	RRL	EFFECTIVE DOSE RANGE
	None	0
	Minimal	< 1 millisieverts
	Low	1-5 mSv
	Medium	5-10 mSv
	High	>10 mSv

Pathway Diagram

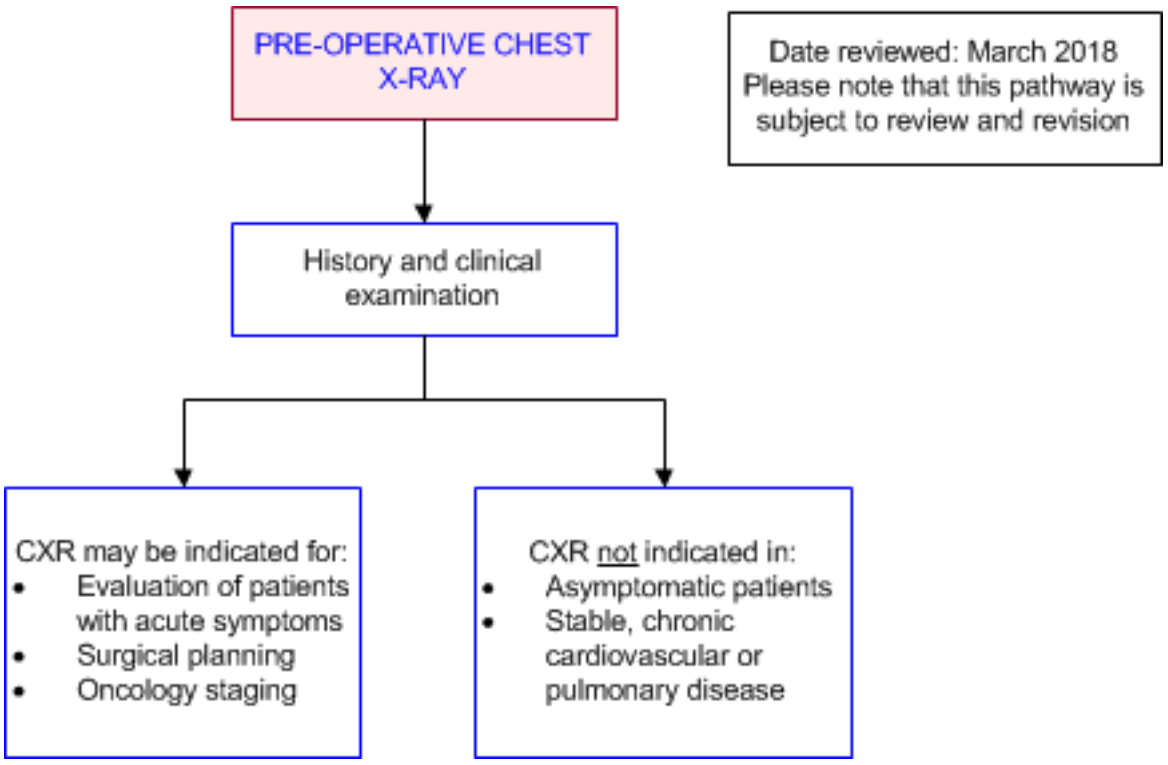

Image Gallery

Note: Images coming soon.

Teaching Points

Take Home Point

- Routine CXR is not indicated in the pre-anaesthetic assessment of asymptomatic patients 1-6
- Preoperative CXR for anaesthetic evaluation should be based on history and clinical examination, and should be reserved for patients with symptoms of acute illness requiring investigation 1, 2
- CXR may be indicated for surgical planning or oncology staging in some cases 1-4

About Preoperative Chest Radiography (CXR)

- History and examination have been shown to predict most clinically significant abnormalities that would be detected on CXR 7
- Disadvantages of extensive routine preoperative testing include 8
    - patient discomfort
    - unnecessary waiting times for some procedures
    - unnecessary direct costs and potential for unnecessary subsequent tests related to false-positive abnormal findings
- In asymptomatic patients, the yield of CXR is low 9 and abnormal findings rarely change management 7, 10-13
- Even in older patients, most detected abnormalities reflect chronic disorders and do not impact on anaesthetic management or perioperative outcome 3

- Routine CXR is a poor predictor of post-operative pulmonary complications 1, 3, 14
- A randomized, single-blind, prospective, controlled pilot study showed that there was no increase in the perioperative adverse events as a result of no preoperative testing 15

References

Date of literature search: March 2018

References are graded from Level I to V according to the Oxford Centre for Evidence-Based Medicine, Levels of Evidence. Download the document

1. McComb BL, Chung JH, Crabtree TD, Heitkamp DE, Iannettoni MD, Jokerst C, et al. **ACR appropriateness criteria(R) routine chest radiography** J Thorac Imaging. 2016;31(2):W13-5. (Guideline). View the reference
2. Canadian Anesthesiologists' Society. **Anesthesiology. Five things physicians and patients should question:** Choosing Wisely Canada; 2017 [updated June 2017]. (Guideline). View the reference
3. Australian and New Zealand College of Anaesthetists. **Australian and New Zealand college of anaesthetists: tests, treatments and procedures clinicians and consumers should question** 2017 [updated Jan 2017]. (Guideline). View the reference
4. Merchant R, Chartrand D, Dain S, Dobson G, Kurrek MM, Lagace A, et al. **Guidelines to the practice of anesthesia - revised edition 2016.** Can J Anaesth. 2016;63(1):86-112. (Guideline). View the reference
5. Smith I, Al-Mohammad A, Clark L, Crook M, Dhesi J, Howard L, et al. **Preoperative tests (update); routine preoperative tests for elective surgery.** National Institute for Health and Care Excellence; 2016. (Guideline). View the reference
6. **Practice advisory for preanesthesia evaluation. An updated report by the American society of anesthesiologists task force on preanesthesia evaluation.** Anesthesiology. 2012;116(3):522-38. (Guideline). View the reference
7. Archer C, Levy AR, McGregor M. **Value of routine preoperative chest x-rays: a meta-analysis.** Can J Anaesth. 1993;40(11):1022-7. (Level I evidence). View the reference
8. Garcia-Miguel FJ, Serrano-Aguilar PG, Lopez-Bastida J. **Preoperative assessment.** Lancet. 2003;362(9397):1749-57. (Review article). View the reference
9. Joo HS, Wong J, Naik VN, Savoldelli GL. **The value of screening preoperative chest x-rays: a systematic review.** Can J Anaesth. 2005;52(6):568-74. (Level I evidence). View the reference
10. den Harder AM, de Heer LM, de Jong PA, Suyker WJ, Leiner T, Budde RPJ. **Frequency of abnormal findings on routine chest radiography before cardiac surgery.** J Thorac Cardiovasc Surg. 2018 (Level III evidence). View the reference
11. Mikhael A, Patell R, Tabet M, Bena J, Berber E, Nasr C. **Chest x-ray prior to thyroidectomy: is it really needed?** World J Surg. 2017 (Level III evidence). View the reference
12. Loggers SAI, Giannakopoulos GF, Vandewalle E, Erwteman M, Berger F, Zuidema WP. **Preoperative chest radiographs in hip fracture patients: is there any additional value?** European journal of orthopaedic surgery & traumatology : orthopedie traumatologie. 2017 (Level III evidence). View the reference
13. Ali IS, Khan M, Khan MA. **Routine preoperative chest x-ray and its impact on decision making in patients undergoing elective surgical procedures.** Journal of Ayub Medical College, Abbottabad : JAMC. 2013;25(1-2):23-5. (Level III evidence). View the reference
14. Boghosian SG, Mooradian AD. **Usefulness of routine preoperative chest roentgenograms in elderly patients.** J Am Geriatr Soc. 1987;35(2):142-6. (Level III evidence). View the reference
15. Chung F, Yuan H, Yin L, Vairavanathan S, Wong DT. **Elimination of preoperative testing in**

ambulatory surgery. Anesth Analg. 2009;108(2):467-75. (Level II evidence). View the reference

Information for Consumers

Information from this website	Information from the Royal Australian and New Zealand College of Radiologists' website
Consent to Procedure or Treatment Radiation Risks of X-rays and Scans Chest Radiograph (X-ray)	Plain Radiography/X-rays Radiation Risk of Medical Imaging During Pregnancy Radiation Risk of Medical Imaging for Adults and Children

File Formats

Some documents for download on this website are in a Portable Document Format (PDF). To read these files you might need to download Adobe Acrobat Reader.

Legal Matters