



When *not* to order Chest X-ray



Objective

To enhance appropriate use of chest X-ray

Scope

Common clinical contexts in which chest X-ray is unlikely to confer clinical benefits

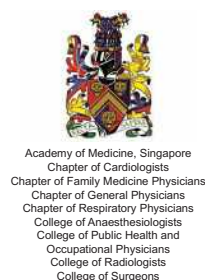
Target audience

This clinical guideline is relevant to all healthcare professionals ordering chest X-ray

Chest X-ray (CXR) is one of the most common imaging tests performed in clinical practice worldwide, including in Singapore. Its widespread use across various settings encompasses diverse indications. However, for most individuals with neither symptoms nor significant findings from history and physical examination suggesting that CXR may be required, current evidence shows that the test does not confer clinical benefits.

Statement of Intent

This ACE Clinical Guideline (ACG) provides concise, evidence-based recommendations and serves as a common starting point nationally for clinical decision-making. It is underpinned by a wide array of considerations contextualised to Singapore, based on best available evidence at the time of development. The ACG is not exhaustive of the subject matter and does not replace clinical judgement. The recommendations in the ACG are not mandatory, and the responsibility for making decisions appropriate to the circumstances of the individual patient remains at all times with the healthcare professional.



Clinical utility of CXR

The decision regarding whether to order CXR, like any clinical decision-making, involves weighing the expected benefits against the potential risks. The potential risks with CXR include adverse effects of radiation exposure and morbidity arising from investigation or management of incidental findings.¹⁻⁴

CXR is typically not indicated for individuals with neither symptoms nor significant findings from history and physical examination suggesting a clinical need for it. In such instances, CXR is generally of low yield, not adding meaningful information to reliable history and physical examination.¹ Conversely, CXR can be a helpful test when used in a **targeted** manner in response to an identified clinical need.

This clinical guideline outlines some common clinical contexts in which CXR is unlikely to confer clinical benefits.

CXR for general medical examination

Recommendation 1

General medical examination

 CXR may not be indicated

CXR is common as part of general medical examination, including for employment and admission into higher learning institutions.¹⁻³ Historically, the main reason for CXR in general medical examination has been to screen for possible underlying pathology, particularly active pulmonary tuberculosis (TB).¹

Current evidence points to CXR contributing little to detection of new TB cases in the absence of risk factors for or symptoms of active pulmonary TB.⁵⁻⁷ In line with this evidence, the World Health Organization (WHO) recommends **targeted** screening for active pulmonary TB, namely in individuals at higher risk of active pulmonary TB (such as those with human immunodeficiency virus (HIV) or close contacts of TB cases).⁸

Other examples of **targeted** use of CXR as part of general medical examination in Singapore may include:

- Individuals undergoing pre-employment or pre-enrolment medical examination for certain jobs or courses, including those involving interaction with vulnerable populations (such as healthcare or early childhood education)
- Individuals employed for particular vocations (such as commercial divers or those with occupational exposure to respiratory hazards)
- Foreigners applying for work pass, dependent pass, student pass, or long-term visit pass⁹



Note on general medical examination in Singapore

Individuals should be advised to check and adhere to prevailing medical examination requirements stipulated by the employer, admitting higher learning institution, or other relevant agencies (for example, Ministry of Manpower or Ministry of Education).

CXR for preoperative testing

Recommendation 2

Preoperative testing



When there are no symptoms and no significant findings from history and physical examination suggesting that CXR may be required, CXR findings usually do not alter the management decision or clinical outcomes.^{1,10} CXR would still be useful for specific clinical presentations, with some examples below of **targeted** use of CXR for preoperative assessment:

- Chest-related surgery
- Suspicion of acute or potentially unstable chronic cardiopulmonary disease
- Elderly patients (especially those aged 70 years and older)
- Increased patient-related or procedure-related risk (such as history of cardiopulmonary disease, unreliable history or physical examination, high-risk surgery)

CXR for lung cancer screening

Recommendation 3

Lung cancer screening



Lung cancer screening is aimed at detecting lung cancer in individuals at higher risk of the disease before symptom onset. Not having adequate sensitivity or specificity as a lung cancer screening test,¹¹ CXR has not been found to be beneficial in lung cancer screening.^{12,13} Low-dose computed tomography (CT) is the imaging modality and test of choice to screen for lung cancer in individuals at higher risk of the disease.¹⁴

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