



## **CHAIN CHEST X RAY SOP**

CHN: CHAIN SOP for Chest X-ray indications and Interpretation

### **Purpose**

The purpose of this SOP is to describe the reasons for requesting a chest x-ray in a hospitalized CHAIN participant, interpretation and possible storage of chest x-ray. Hospitalized participants may require a chest x ray at enrollment or if there is a deterioration during admission.

### **Responsibility**

This SOP applies to doctors and clinical officers for the CHAIN study.

The Principal Investigator (through the study coordinator when applicable) retains the overall responsibility of implementation of these standard procedures.

The study clinical coordinator is responsible for answering questions you may have about the content of this SOP and any other relevant study documentation. Please contact that study clinical coordinator through your site coordinator.

### **Abbreviations/Definitions**

CRF Case report form

### **Materials**

Clinical examination and vital signs SOPs  
Enrollment and Daily Record CRF  
Stethoscope  
Pulse oximeter  
CHAIN Chest X ray request form

### **Indications for Chest x-ray**

Children who have the following signs and symptoms should have a chest x-ray unless they are too unwell to attend the x-ray department and there is no portable x-ray service available, or if the x-ray department is unable, e.g. no radiographer, machine broken. All children who have a chest x-ray should have antero-posterior and lateral views.

Symptoms:

Cough  
Difficulty breathing  
Poor feeding  
Known contact with TB

Vital signs:

Temperature > 38C  
Respiratory rate > normal range for age as indicated in SOP for vital signs



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Oxygen Saturations <90% in room air

Examination:

Nasal flaring

Head nodding

In-drawing or tracheal tug

Asymmetric air entry on listening with stethoscope

Crackles or wheeze on listening with stethoscope

Dullness to percussion

### Interpretation of Chest X-ray

The findings of the chest x-ray should be documented in the investigation results CRF. Two clinicians (doctor or clinical officer) with experience in chest x-ray interpretation should review the x-ray and agree on findings. If there is disagreement an opinion should be sought from the PI.

1) Assess the quality of the x-ray:

- Rotation – check if the ribs appear symmetrical, and if there is equal distance on both sides between the medial border of the clavicle and the vertebra. If there is asymmetry this is suggestive of rotation.
- Penetration – The vertebral bodies should be just visible behind the cardiac silhouette. An over penetrated x-ray will be black, an under penetrated x-ray will be white. Be aware that pleural effusions and severe air-space opacification may result in white lung-fields, however, the vertebrae should be visible unless there is midline shift.
- If there is rotation or incorrect penetration consider repeating the x ray

2) Look for abnormalities on the chest x-ray.

- The cardiac silhouette should be central and to the left. The right lung has 3 lobes, upper, middle and lower.
- Assess the position of the trachea – it should be central if there is no rotation.
- First look at the lung fields. The pulmonary vessels should reach the ribs. If they do not, consider pneumothorax
- Look at the horizontal fissure and the costophrenic angles to determine if there are any signs of fluid overload/ cardiac failure or pleural effusion.
- A normal chest x ray

CHEST X RAY: ALL SITES					
<b>Date</b> (DD/MM/YY)	Rotated?	Over penetrated	Under penetrated	<b>Repeated?</b>	<b>Lateral view?</b>
	Y N	Y N	Y N	Y N	Y N



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<b>Result after review by 2 clinicians</b>	Normal	Abnormality on left	Abnormality on right	Bilateral abnormality	Abnormality seen on lateral view only
<b>Midline</b>	Trachea central Y N				
<b>Abnormality, circle all that apply</b>	Airway compression and / or tracheal displacement	Soft tissue density suggestive of lymphadenopathy	Air space opacification	Nodular picture / Miliary	Pleural effusion suspected
<b>Other abnormality</b>	Cardiomegaly	Rib fracture	Mediastinal mass	Pneumothorax	Rib features consistent with rickets

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## Document history

Version 1	Author	Approved by	Dated	SOP No:
1.01 CHAIN GPS Machine Use SOP	KDT			CHN21
1.02				

## Site training record

All sites are required to maintain a master copy of this SOP that documents the site staff that have been trained on this SOP.

<b>Document History</b>				
<b>Version No.</b>	<b>Trained staff initials</b>	<b>Signature of trained staff</b>	<b>Date</b>	<b>Trainer's Initials</b>
1.01	KDT	Example row	1 <sup>st</sup> Jan 2016	DM