

# SPONTANEOUS PNEUMOTHORAX

## RECOGNITION AND ASSESSMENT

### Symptoms and signs

- Sudden onset, occasionally at rest
- Chest pain (unilateral)
- Dyspnoea
- Resonance on percussion, with reduced vocal fremitus and breath sounds (if moderate-large)

If patient *in extremis*, very dyspnoeic with circulatory compromise, and trachea or mediastinum (apex beat) displaced, consider TENSION PNEUMOTHORAX (very rare). Give O<sub>2</sub> (10 L/min) through a high concentration (60-100%) mask. Insert a large bore cannula of at least 4.5 cm in length into second anterior intercostal space, midclavicular line, and insert intercostal tube. The triangle of safety is an alternative site: fourth or fifth intercostal space (ICS), mid-axillary line, bordered by anterior border of latissimus dorsi, lateral border of the pectoralis major, a line superior to the horizontal level of the nipple and apex below axilla. – see Practical procedures – Intercostal tube drainage guideline. Remove emergency cannula when bubbling in underwater seal system confirms intercostal tube system functioning

***BEWARE: suspected basal pneumothorax usually implies a bulla. CT scan and previous chest X-rays will differentiate bullae from pneumothorax***

### Investigations

- PA chest X-ray
- If findings obscured by surgical emphysema or complex bulla disease, CT scan may help. Discuss with Respiratory Team.
- Insertion of an Intercostal Chest Drain should not be delayed by the arrangement of thoracic ultrasound (unlike pleural fluid drainage)

## IMMEDIATE TREATMENT

- Assess the degree of clinical compromise.
- Assess if pneumothorax is Primary (no underlying lung disease) or secondary (underlying lung disease).
- Secondary Pneumothorax carries a significant mortality (10%) and should be managed more aggressively. Treat also the underlying disease. Note, pneumothorax may be the first presentation of the underlying lung disease.

**PRIMARY PNEUMOTHORAX – see flow chart on next page**

**SECONDARY PNEUMOTHORAX – see flow chart on next page**

## INTERCOSTAL TUBE DRAINAGE

- See **Intercostal Tube Drainage** Guidelines
- Seldinger chest drain technique is an appropriate first line drainage technique
- Should only be inserted by a competent person
- Formal written consent should be obtained (unless patient in extremis)

## **SUBSEQUENT MANAGEMENT AND DISCHARGE**

- Admit to a Respiratory ward D19, D20
- Discuss with Respiratory SpR / Consultant next working day
- Smoking cessation advice – smoking is associated with a 12% risk of development of pneumothorax in men healthy men compared to 0.1% in non-smokers.

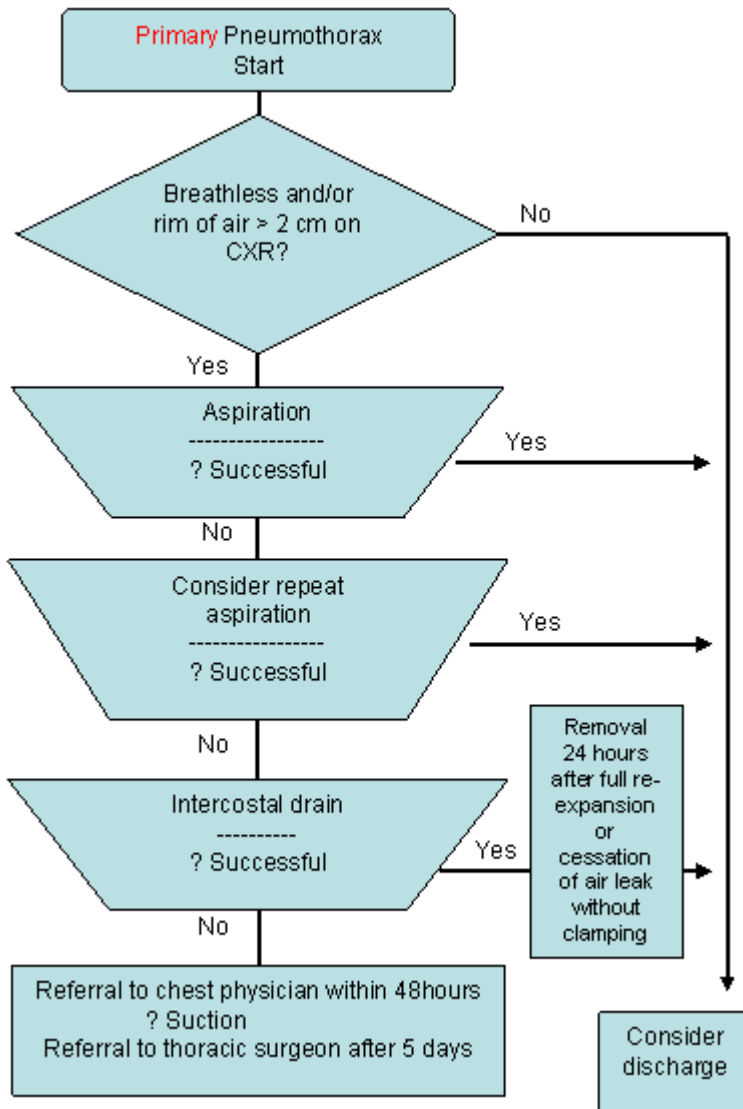
### **Chronic lung disease after aspiration**

- In-patient care until stable

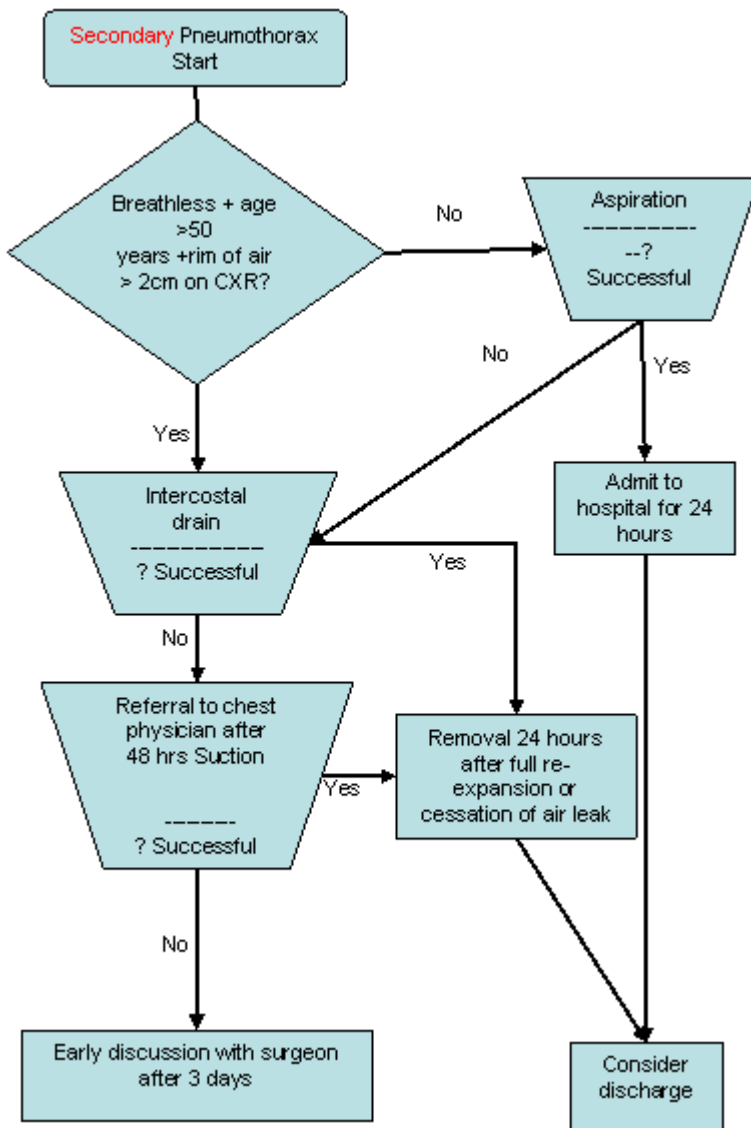
### ***Recurrent pneumothorax***

- If second or subsequent pneumothorax, institute immediate management and refer directly to thoracic surgeon
- On discharge, follow-up in clinic after 14 days with repeat CXR
- Give patient discharge letter and advise to return immediately if deteriorates
- No air travel until CXR resolved. Most insurance/flight travel companies will not provide cover until 6 weeks after pneumothorax
- No scuba diving ever

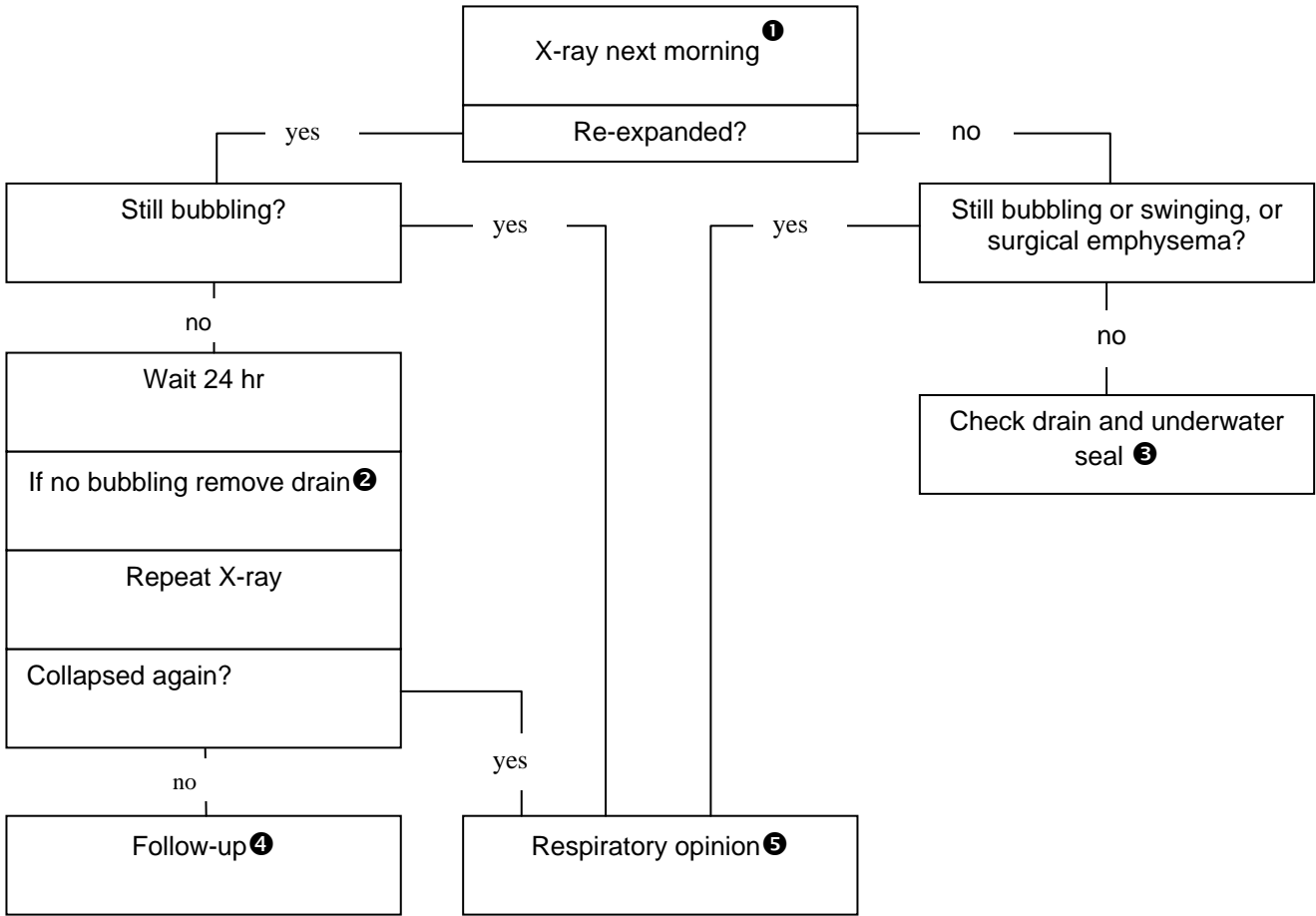
# PRIMARY PNEUMOTHORAX FLOW CHART



## SECONDARY PNEUMOTHORAX FLOW CHART



## Management of intercostal drains



***Do not clamp chest tube unless advised by respiratory physician or thoracic surgeon***

**1: Chest X-ray (non-portable):**

- **Always** keep underwater seal below chest

**2: Removal of chest drain:**

- Bubbling stopped for at least 24 hr
- Cut drain-securing suture
- Withdraw tube while patient holds breath against a closed glottis as part of Valsalva manoeuvre
- Close wound with remaining sutures

**3: Check drain:**

- **If lung not re-inflated and no bubbling in underwater bottle:** Try to remove **block** or **kink**
- If unsuccessful, remove drain. Insert new drain through new clean incision – return to step 6 under **Immediate treatment**

**4: Follow-up:**

- At clinic in 7-10 days
- Patient given discharge letter and written advice to return immediately if deteriorates
- No air travel until chest X-ray resolved

**5: Respiratory physician's opinion:**

- Why no re-expansion (e.g. air leak, displaced/blocked tube, broncho-pulmonary fistula, underlying pulmonary disease)?

## Spont Pneumothorax 2010

- Use of high volume/low pressure suction,  $-1$  to  $-2$  kPa/Barr, (equals  $-8$  to  $-16$  mmHg;  $-8$  to  $-20$  cm  $H_2O$ )
- Early thoracic surgery. Refer when pneumothorax fails to resolve after five days of above management or after three days if patient has chronic lung disease

Reference BTS Guidelines:<http://www.brit-thoracic.org.uk/Portals/0/Clinical%20Information/Pleural%20Disease/Guidelines/PleuralDiseaseSpontaneous.pdf>