Pneumothorax

Reason for this Guideline

The severity of symptoms arising from pneumothorax ranges from the immediate life-threat of tension, to mild apical discomfort. Many patients with this condition receive a significant proportion of their care from the emergency department. This includes those with severe symptoms who have their pneumothoraces drained in the resuscitation area and many others who are followed up as outpatients after aspiration. This guideline is designed to assist the clinicians in the ED when they have to decide on the appropriate care and follow up of such patients. Clinicians should maintain a significant index of suspicion for this condition, which is surprisingly common in emergency department practice.

When to use this Guideline

This guideline should be used in all patients in whom a pneumothorax is suspected or diagnosed

How to use this Guideline

The first step in this guideline is the exclusion of tension pneumothorax. In most cases this can be achieved by simply observing that the patient is not distressed, but in patients with severe dyspnoea the presence of unilateral decreased air entry, unilateral hyper-resonant percussion note and tracheal deviation should be excluded. Patients with possible tension should have immediate decompression in the resuscitation room. Patients in whom tension pneumothorax has been ruled-out should proceed to chest x-ray. Once the result of the chest x-ray is known a clinical risk assessment can be undertaken. This takes into account the degree of lung collapse, the severity of symptoms and past history of lung disease. Patients at high risk should undergo needle aspiration. The success of aspiration determines the further management of the high risk patients and this should be assessed by re x-ray. Patients who have not had their lungs fully or almost fully reinflated will need chest drainage and readmission. Those in whom aspiration is successful should be admitted to the Clinical Decision Unit for observation and further chest x-ray at 6-12 hours as should patients with chronic lung disease and a rim of air. Assuming all remains well then all these patients and those at low risk at presentation can be managed as out patients with clinic reassessment at 1 week.

Guideline FAQs

What is a pneumothorax?

Pneumothorax is a collection of air between the pleural layers. It may be small, moderate or large, symptomatic or non-symptomatic.

Which patients should this guideline be used for?

This guideline should be used for all patients with suspected pneumothorax and those in whom a pneumothorax has been diagnosed.

Should I always take a chest x-ray?

Tension pneumothorax is a clinical diagnosis and a life-threatening condition. Once diagnosed immediate treatment (needle thoracocentesis followed by tube thoracostomy) should not be delayed for chest x-ray. In all other circumstances a chest x-ray is indicated

How do I judge the degree of collapse of the lung?

Assessment of the percentage of lung collapse is very unreliable. Fortunately for the purposes of decision making it is unnecessary. All that is required is recognition of complete collapse (no lung visible), minor collapse (a small rim of air only) and moderate collapse (lung edge half way to the heart border).

Special points of interest:

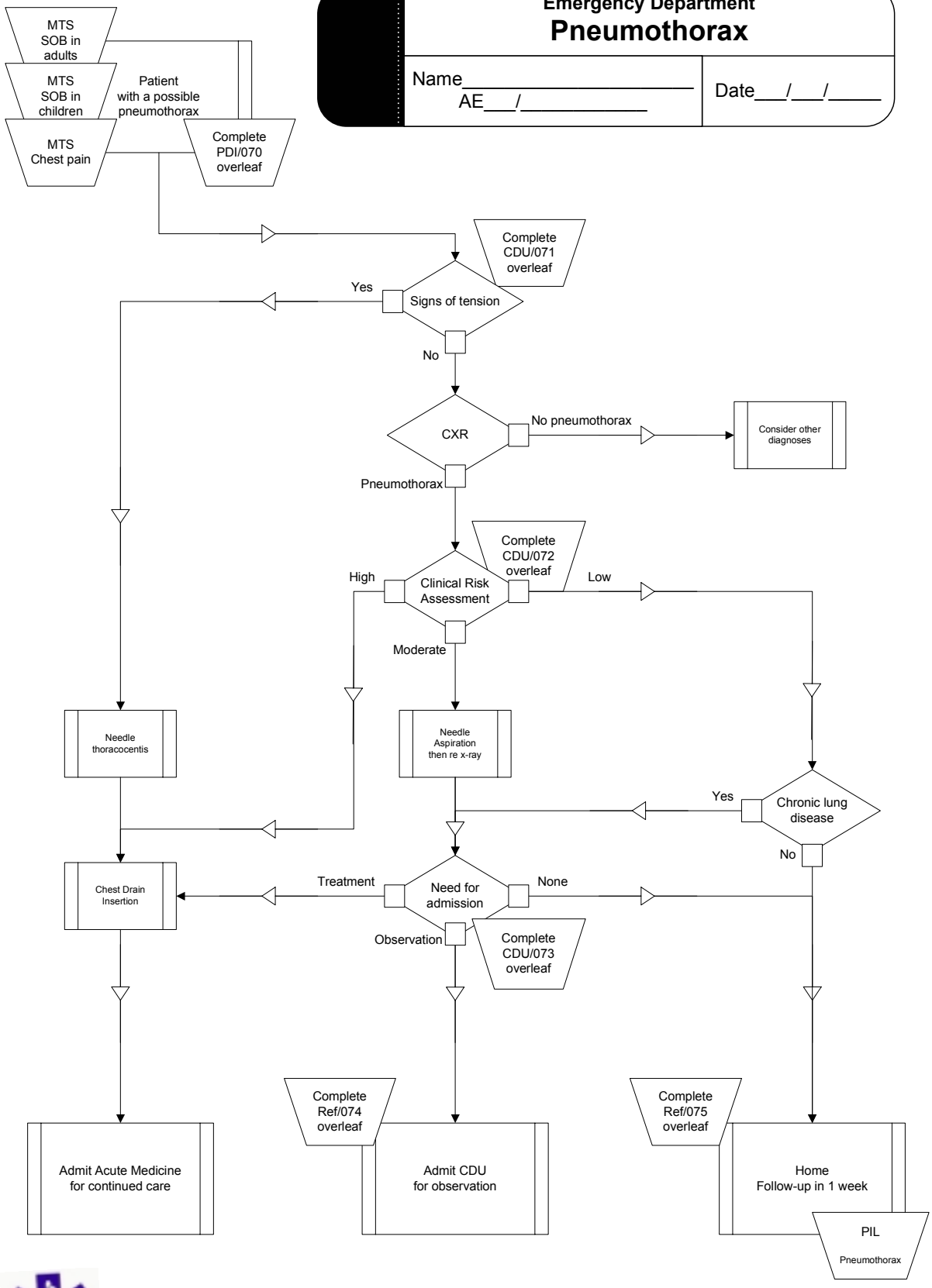
- Tension pneumothorax is a clinical diagnosis and needs immediate treatment
- Chest x-ray findings together with degree of symptoms and past history are used to form a risk assessment
- Aspiration is the first treatment for all high risk patients
- Patients successfully treated by aspiration can be allowed home after a period of observation.

Emergency Department

Pneumothorax

Name_____ Date___/___/_____

AE___/_____



PDI/080: SUITABILITY FOR PROTOCOL DRIVEN INVESTIGATION (ALL YES)

No need for immediate resuscitation	Yes
Pneumothorax the most likely diagnosis	Yes

Order: T, P, BP, R, S_aO_2,

CDU/071: CLINICAL RISK OF TENSION PNEUMOTHORAX (ALL YES)

Gross dyspnoea	Yes
Unilateral decreased air entry	Yes
Unilateral hyper-resonance to percussion	Yes
Tracheal deviation	Yes

If **NO** order: CXR

CDU/072: CLINICAL RISK ASSESSMENT of Pneumothorax (ANY YES)

	H	M	L
Complete or moderate collapse of the lung and chronic lung disease			
Complete or moderate collapse of the lung			
Any collapse of the lung with significant dyspnoea (any reduction in exercise tolerance)			
Minor collapse of the lung			

High if any of **H**, **M** if no **H** and any **M**, **L** if no **H** or **M** and any **L**

Moderate collapse if halfway to heart border, minor if a small rim of air only

CDU/073: Need for Admission (ANY YES)

	Treat	Observe
Failure of aspiration to reinflate the lung completely or to small rim only		
Chest drain inserted		
Pneumothorax in a patient with chronic lung disease not requiring active treatment		

Ref/074: Suitable for CDU admission	
Ref/075: Suitable for Discharge and clinic follow-up	

Evidence Base

This guideline is based primarily on the following sources:

M Henry, T Arnold, J Harvey, on behalf of the British Thoracic Society Pleural Disease Group, a subgroup of the British Thoracic Society Standards of Care Committee Thorax 2003; 58 (Suppl II): ii39 -ii52

There are no relevant Cochrane reviews:

Additional reviews (BestBETs) have been undertaken as follows:

BB 58. Needle aspiration better than chest drain for spontaneous pneumothorax http://www.bestbets.org/cgi-bin/bets.pl?record=00058

BB 63. Can any intervention effectively reduce the pain associated with chest drain removal? http://www.bestbets.org/cgi-bin/bets.pl?record=00063

BB 326. Seldinger technique chest drains and complication rate http://www.bestbets.org/cgi-bin/bets.pl?record=00326

BB 752. Does it matter whether a chest drain is aimed upwards or downwards for the optimum drainage of fluid or air from the pleural cavity? http://www.bestbets.org/cgi-bin/bets.pl?record=00752

Additional sources of interest include:

Nice guidance is extant / pending / **NOT CURRENTLY PLANNED**

Disclaimer

This guideline has been developed by clinicians and its content has been reviewed by the Clinical Effectiveness Committee of the British Association for Emergency Medicine. Guidelines cannot always contain all the information necessary for determining appropriate care and cannot address all individual situations, therefore individuals using these guidelines must ensure they have the appropriate knowledge and skills to enable interpretation. Guidelines can never substitute for sound clinical judgement. This guideline may not reflect changes in clinical practice that have occurred since it was last reviewed.