SIMULATION with SKILLS: needle thoracocentesis CASE T-1

History *{initial candidate briefing prior to arrival of child}*

An obviously post pubertal boy who says he is fourteen is brought into the Emergency department by friends who leave rapidly. They say he has been in a fight.

Initial Impression *{to tell candidate as child arrives}*

He is conscious but unable to stand when unsupported by his friends. He looks pale and is short of breath. There is a small amount of blood on his T-shirt. Estimated weight 60kg

Clinical Course *{to be given to candidate as he/she progresses through the assessment and treatment of the child}*

Pulse 115, RR 40 with accessory muscle use, SaO_2 in high flow oxygen 90%, BP 120/90. Trachea deviated to R, hyperresonant L hemithorax. Two small wounds can be seen on the upper L chest and the lower L chest.
If needle thoracocentesis is not performed, he becomes increasingly hypoxic and eventually has a cardiac arrest.
If needle thoracocentesis is performed, he has immediate relief of the respiratory distress but subsequent upper left quadrant abdominal pain and increase in pulse rate. He stabilises with 500 + 500 mls N/S

INSTRUCTORS INFORMATION

Key Treatment Points

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<C>Airway & C-spine	Establish airway patency	
	Protect cervical spine	
Breathing	High flow O_2 via face mask	
	Needle thoracocentesis	
Circulation	Blood for cross-match etc	
	Early IV access with wide-bore cannulae	
	IV crystalloid bolus followed by blood (if available)	
	Consider blood transfusion	
Specific Therapy	Call surgeon	
	Consider pain relief	
	Insert chest drain	
	Trauma imaging including CT	

Diagnosis

He has been stabbed twice in the L chest, causing a tension pneumothorax and splenic bleeding.

Skills to be practised and assessed in this simulation: needle thoracostomy. Instructors should slow the simulation down and ask candidates to show clearly how they are doing the skill.

Following the closure of the simulation with any teaching points clarified as necessary, all candidates should perform the needle thoracocentesis skill only, until competent.

A chest drain/Thoracocentesis trainer, cleansing swabs, over the needle cannulae, syringes and tape will be required

NEEDLE THORACOCENTESIS

1. Identify the second intercostal space in the midclavicular line on the side of the pneumothorax (the *opposite* side to the direction of tracheal deviation).
2. Swab the chest wall with surgical prep or an alcohol swab.
3. Attach the syringe to the cannula.
4. Insert the cannula into the chest wall, just above the rib below, aspirating all the time
5. If air is aspirated remove the needle, leaving the plastic cannula in place.
6. Tape the cannula in place and proceed to chest drain insertion as soon as possible.