Indications

Patients with clinical signs and symptoms of tension pneumothorax.

Precautions:

1. Tension pneumothorax is a rare condition, but can occur traumatically or spontaneously. It can be rapidly fatal if left untreated.
2. Early signs of tension pneumothorax in a spontaneously breathing patient include difficulty breathing with tachypnea and decreasing SPO2. In an intubated patient, poor bag compliance and decreasing SPO2 are signs to watch for.
3. Tracheal deviation is a very late sign. Don't count on it as an assessment tool.

Technique:

1. Expose the chest and determine which side is more likely to have the injury.
2. Clean the chest wall with alcohol, betadine or chlorhexadine if time permits.
3. Two locations may be considered. The preferred location is the 2nd intercostal space on the mid-clavicular line. The 4th intercostal space on the mid-axillary line may also be used but is more difficult to locate and access.
4. Insert the catheter just above the rib. Be sure to avoid the area beneath the rib, as this location contains important nervous and circulatory structures. The insertion may require a surprising amount of force and will be painful to the patient.
5. Remove the needle. A rush of air may or may not be heard. Success can be determined by improvement in the patient's condition.
6. Leave the catheter open and secure with tape.

Notes:

1. Complications include: creation or a pneumothorax if none previously existed, laceration of lung, laceration of blood vessels, and severe pain. The potential benefits of decompression usually far outweigh the risks.

2. Tension pneumothorax can be precipitated by complete occlusion of an open chest wound.
3. The catheter may clot off and allow the tension pneumothorax to re-form. Chest decompression can be performed several times if necessary.
4. Bilateral chest decompression should be restricted to patients in extremis, in cardiac arrest or who are already intubated.