

Needle Decompression for Tension Pneumothorax

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Preamble

Tension pneumothorax may rapidly progress to cardiorespiratory arrest and death if not immediately treated. Needle decompression is indicated to prevent or treat cardiorespiratory arrest in this setting.

Requirements

1. Fully licensed Technician-Advanced Paramedic.
2. Certification in Needle Decompression for Tension Pneumothorax protocol by the Medical Director.

Indications

Any clinical setting in which tension pneumothorax is suspected:

- lung disease (e.g. asthma, emphysema) or thoracic trauma that predisposes to the development of tension pneumothorax
- diminished breath sounds to one side of the chest with no obvious explanation
- hyperresonant percussion on the same side of the chest as diminished breath sounds
- tracheal deviation away from the affected side of the chest
- jugular venous distension
- pulseless electrical activity (particularly in patients with lung disease or trauma)

Contraindications

1. Patient age less than 16 years.

Required Equipment

1. 14-gauge intravenous catheter
2. Heimlich valve assembly (including adapter and tubing)

Procedure

1. Perform patient assessment and record vital signs, level of consciousness, and oxygen saturation.
2. Assess that patient meets criteria for this protocol.
3. Ensure there are no contraindications to use of this protocol.
4. Initiate basic life support treatment measures, including supplemental oxygen.
 - these take precedence over management using this protocol
5. Identify the following anatomical landmark on the affected side:
 - 2nd rib interspace (lateral to the sternal angle), immediately superior to the rib, at the midclavicular line
6. Using aseptic technique, insert 14-gauge intravenous catheter at the identified landmark. Insert the catheter up to the hub.
7. Remove the trochar from the catheter.
8. Attach the tubing of the Heimlich valve assembly to the hub.
9. Use tape to securely fasten the catheter hub and Heimlich valve to the patient.
10. For PEA arrest in a trauma patient, or a history of lung disease, may repeat procedure on opposite side if there is no response to the initial decompression attempt.

Documentation Requirements

The following information must be documented on the patient care report form:

1. Patient's presenting signs and symptoms, including vital signs, level of consciousness and oxygen saturation.
2. Indications for protocol use.
3. Location of catheter insertion.
4. Number of attempts.
5. Repeat assessment and vital signs, as indicated.

6. Changes from baseline, if any, that occur during treatment or transport.
7. Signature and license number of Technician-Advanced Paramedic performing any transfer of function skills.

Certification Requirements

1. Attend in-depth classes and lectures on chest anatomy, respiratory physiology, and trauma management.
2. Be able to identify:
 - criteria for needle decompression
 - contraindications to needle decompression
 - complications of needle decompression
3. Pass a written examination.
4. Pass practical scenarios incorporating indications and potential complications related to needle decompression.
5. Certification is by the Medical Director.

Recertification Requirements

1. Review class and recertification is done every 12 months.
2. A record will be kept to document all cases where this protocol is used.

Decertification

1. Decertification is at the discretion of the Medical Director or the Provincial Medical Director, Emergency Medical Services, Manitoba Health & Healthy Living.

Quality Assurance Requirements

1. Appropriate quality assurance policies must be in place. The Medical Director or designate must review all instances where this protocol is used. As a minimum, the following must be assessed:
 - i) appropriateness of implementation
 - ii) adherence to protocol
 - iii) any deviation from the protocol
 - iv) corrective measures taken, if indicated

2. Yearly statistics for protocol use compiled and forwarded to Emergency Medical Services, Manitoba Health & Healthy Living.