Advisory 16-08 Needle Thoracostomy

To: All ALS Providers

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Although needle thoracostomy has been a mainstay of paramedic practice, recent regional patient safety initiatives have identified some areas worthy of educational reinforcement as nearly 50% of prehospital needle decompression thoracostomies have not been indicated.

Indications: Needle decompression thoracostomy should only be performed if the patient exhibits evidence of a tension pneumothorax. This is indicated by decreased breath sounds on one side **AND** tension physiology such as hypotension, with tachycardia, and jugular venous distention. Performing decompression because of decreased breath sounds on one side without evidence of tension physiology is not necessary, not indicated, and can cause patient harm. Although certainly a patient with a concern for pneumothorax should be closely monitored for developing a tension pneumothorax, they should not be "prophylactically" decompressed. The exception is for patients with blunt torso trauma who are in cardiopulmonary arrest, where the potential for tension pneumothorax exists and is unable to be reliably assessed during the initial resuscitative efforts.

Equipment: Needle decompression thoracostomy should be performed with a 3.25 or 3.5 inch (8.9 cm) 14g or larger catheter. Commonly used vascular access catheters that are optimal for large volume fluid resuscitation (1.7 inch or 4.4 cm) are not appropriate for needle decompression. One United States study found the mean chest wall thickness was 4.5 cm and concluded that the standard 4.4 cm catheter would not be successful in 50% (95% CI 40.1-59.3%) of those patients requiring emergent decompression.[1] Other studies, and our local trauma center experience, reinforce these findings.

Do not hesitate to contact your Agency Medical Director or the Regional Program Agency with any questions regarding this guidance.

[1] Stevens RL, Rochester AA, Busko J, et al. Needle thoracostomy for tension pneumothorax: Failure predicted by chest computed tomography. *Prehospital Emergency Care* 2009;13(1):14-17

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