

Guideline



CCHMC Trauma Service Guidelines

Title: Blunt Traumatic Pneumothorax Guideline

Effective Date: 2/4/2021

Number: TR-33

Page: 1 of 3

1.0 SCOPE

- 1.1. Care of the Trauma Services Patient at CCHMC.
- 1.2. This is the recommended guideline for any patient with suspected or confirmed pneumothorax following blunt trauma.

2.0 DEFINITIONS

- 2.1. Pneumothorax: Presence of air/gas in the cavity between the lungs and the chest wall. Any evidence of pneumothorax on chest x-ray (CXR).
- 2.2. Respiratory Distress: Symptoms include difficulty breathing, tachypnea, oxygen desaturation, shortness of breath, retractions, unable to speak in full sentences, nasal flaring, and/or altered mental status.
- 2.3. RA: Room air without supplemental oxygen.
- 2.4. AP View: Anterior to posterior xray method.

3.0 GUIDELINE

- 3.1. CXR completed upon trauma work up
- 3.2. Small pneumothorax without signs/symptoms of respiratory distress
 - 3.2.1. Repeat CXR in 6 hours
 - 3.2.2. Stable or improved CXR. Stable on RA without signs/symptoms of respiratory distress
 - 3.2.3. PO challenge and able to ambulate
 - 3.2.4. Discharge home
- 3.3. Moderate/large pneumothorax
 - 3.3.1. Chest tube placement based on clinical symptoms
 - 3.3.1.1. Chest tube not indicated
 - 3.3.1.1.1. Admit for observation and repeat CXR in 6 hours
 - 3.3.1.1.2. If stable or improved CXR, go to 3.2.2.
 - 3.3.1.1.3. If increased size of pneumothorax got to 3.3.1.
 - 3.3.1.2. Chest tube indicated based on clinical symptoms
 - 3.3.1.2.1. Supplement oxygen/ventilatory support as needed
 - 3.3.1.2.2. Chest tube placement to -20 cm H2O
 - 3.3.1.2.3. Repeat AP view CXR to confirm evacuation of pneumothorax and tube placement
 - 3.3.1.2.4. If pneumothorax not significantly improved or there is an air leak, consider bronchial or airway injury and exit guideline.
 - 3.3.1.2.5. If pneumothorax is significantly improved, repeat AP view CXR in 24 and when there is no air leak.
 - 3.3.1.2.5.1. If pneumothorax is resolved, place chest tube to water seal and repeat CXR in 4-6 hours.
 - 3.3.1.2.5.2. If CXR is stable and patient is stable without signs/symptoms of respiratory distress, remove chest tube.
 - 3.3.1.2.5.3. No routine post pull CXR is needed. Observe patient for 4-6 hours.
 - 3.3.1.2.5.4. If stable on RA without signs/symptoms of respiratory distress patient may be discharged.
 - 3.3.1.2.5.5. If patient develops signs/symptoms of respiratory distress after chest tube is removed, obtain a repeat CXR and got to 3.3.1.
 - 3.3.1.2.6. If pneumothorax in not resolved, continue chest tube to -20 cm sxn and repeat CXR in 24 hours and when no visible air leak
 - 3.3.1.2.6.1. When pneumothorax is resolved, go to 3.3.1.2.5.1.
- 3.4. Discharge Instructions
 - 3.4.1. Follow-up in trauma clinic or telehealth in 1-2 weeks 636-8556
 - 3.4.2. Follow-up CXR in 1 week if residual pneumothorax at discharge
 - 3.4.3. No flying/scuba diving for 2 weeks after normal CXR
 - 3.4.4. No contact/competitive sports for 2 weeks

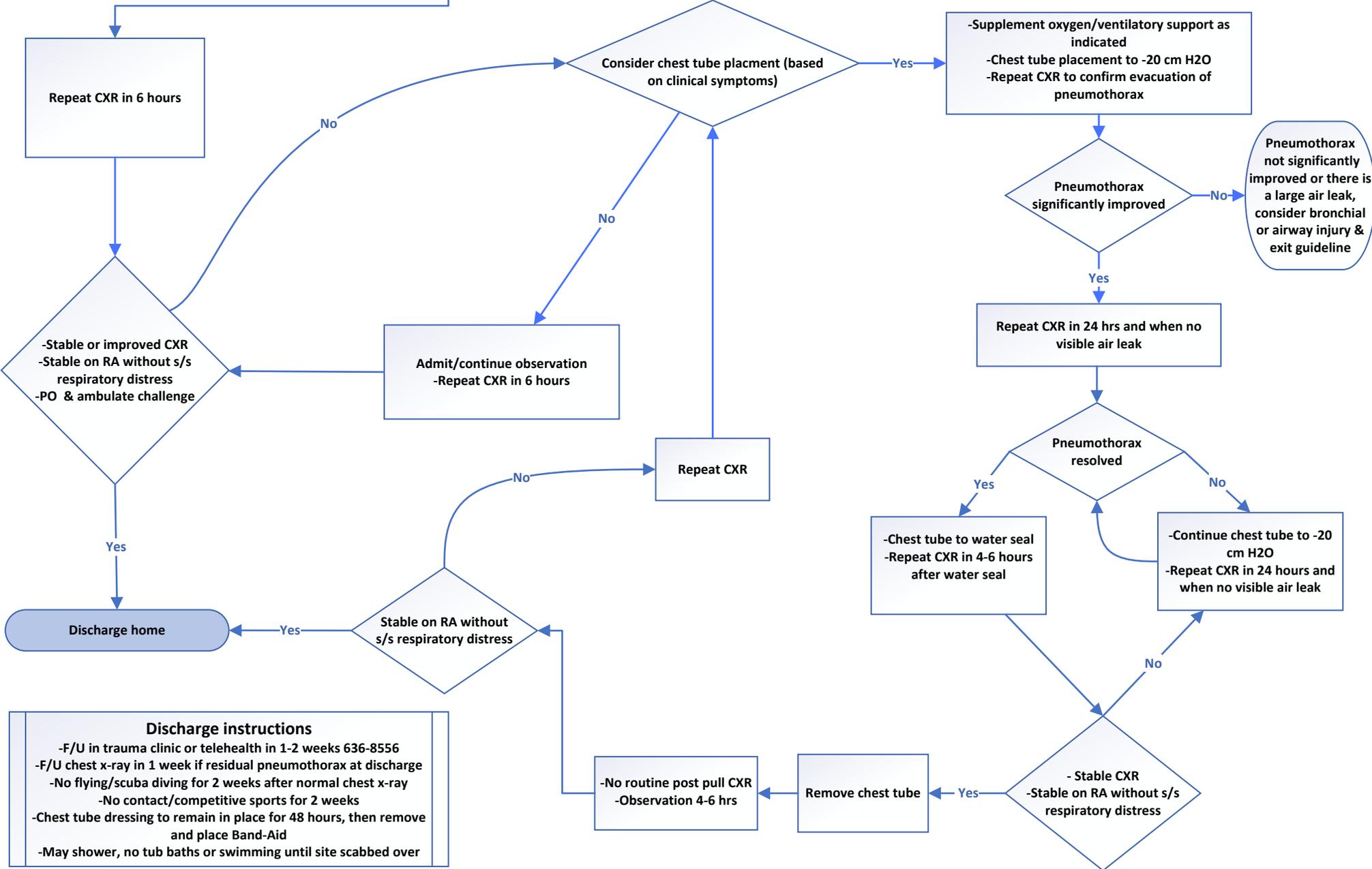
Blunt Traumatic Pneumothorax Guideline

Chest X-ray**

Small pneumothorax without s/s respiratory distress

Moderate/large pneumothorax

****If pneumothorax only seen on CT without s/s respiratory distress**
 -No repeat imaging needed
 -If patient requiring OR intervention repeat imaging as clinically indicated



4.0 REFERENCES

- 4.1. Ayoub F., et al. Use of prophylactic antibiotic in preventing complications for blunt and penetrating chest trauma requiring chest drain insertion: a systematic review and meta-analysis. *Trauma Surg Acute Care Open* 2019; 4:e000246. doi:10.1136/tsaco-2018-000246
- 4.2. Axtman B.C., et al. Prehospital needle thoracostomy: What are the indications and is a post-trauma center arrival chest tube required? *The American Journal of Surgery*. Volume 218, Issue 6, December 2019, Pages 1138-1142.
- 4.3. Bertoglio P., et al. Chest drain and thoracotomy for chest trauma. *J Thorac Dis* 2019;11(Suppl 2):S186-S191
- 4.4. Bouzat P. et al. Chest trauma: first 48 hours management. *Anaesthesia Critical Care & Pain Medicine*. Volume 36, Issue 2, April 2017, Pages 135-145.
- 4.5. Cunningham, J. P., Knott, E. M., Gasiior, A. C., Juang, D., Snyder, C. L., Peter, S. D. S., & Ostlie, D. J. (2014). Is routine chest radiograph necessary after chest tube removal?. *Journal of pediatric surgery*, 49(10), 1493-1495.
- 4.6. de Lesquena H., et al. Surgical management for the first 48 h following blunt chest trauma: state of the art (excluding vascular injuries). *Interactive Cardio Vascular and Thoracic Surgery*. 20(2015)399–408.
- 4.7. Goodman, M. D., Huber, N. L., Johannigman, J. A., & Pritts, T. A. (2010). Omission of routine chest x-ray after chest tube removal is safe in selected trauma patients. *The American journal of surgery*, 199(2), 199-203.
- 4.8. Harrison M. Traumatic pneumothorax: a review of current practices. *British Journal of Hospital Medicine*, Vol 75, No 3, March 2014.
- 4.9. Johnson B. et al. Do X-rays after chest tube removal change patient management? *Journal of Pediatric Surgery*. Volume 52, Issue 5, May 2017, Pages 813-815.
- 4.10. Pacharn, P., Heller, D. N., Kammen, B. F., Bryce, T. J., Reddy, M. V., Bailey, R. A., & Brasch, R. C. (2002). Are chest radiographs routinely necessary following thoracostomy tube removal?. *Pediatric radiology*, 32(2), 138-142.
- 4.11. Parker M.H., et al. Chest Tube Management Practices by Trauma Surgeons. *Journal of Surgical Research*. Volume 244, December 2019, Pages 225-23.
- 4.12. Sacco F & Calero K.R. Safety of early air travel after treatment of traumatic pneumothorax. *Int J Circumpolar Health*. 73: 24178, 2014.
- 4.13. Zonies, D, et al. Trauma patients are safe to fly 72 hours after tube thoracostomy removal. *J Trauma Acute Care Surg*. Volume 85, Number 3, 2018.

5.0 APPROVALS

All revisions of this guideline are approved by the Trauma Services Department. This guideline is reviewed every three years or sooner if deemed necessary. Authority for this document resides with the Trauma Service Department. This guideline is approved by the Trauma Service Manager and Director of Trauma Services.

HISTORY	
Original Date	
	2/2021
Revision Date	
Review Date	