

Spontaneous Pneumothorax Care Guideline

Inclusion Criteria:

- Primary spontaneous pneumothorax
- Secondary spontaneous, pneumothorax due to underlying pulmonary disease, i.e cystic fibrosis, asthma, connective tissues disorders
- Children 1 yr and older

Exclusion Criteria: Trauma, iatrogenic pneumothorax

Assessment

- Respiratory Status, O2 saturation, Vital Signs
- History and Physical
- CXR - Upright, AP/lateral

Interventions for Small Pneumothorax, Stable Patient

- Admit
- Oxygen 15 liters, FiO2 100% via non-rebreather mask up to 48hrs
- Repeat CXR in 12 hrs
- Stat CXR for acute respiratory distress
- Peds Surgery Consult
- Pulmonary consult if secondary pneumothorax or recurrent pneumothorax

If pneumothorax worsens

Interventions for Large Pneumothorax or Unstable Patient

- Admit
- Chest tube or pigtail catheter insertion. Place to water seal if no air leak after placement or to -20cm of suction if air leak continues
- Stat CXR and in 12 hours
- If placing tube to water seal with no improvement or worsening pneumothorax, apply suction to water seal.
- Peds surgery consult
- Pulmonary consult

CT scan (lungs without contrast)

- If persistent air leak > 4 days post chest tube placement
- Recurrent spontaneous pneumothorax once lung is well expanded

Surgical Intervention after CT scan

- If blebs seen on CT, perform VATS with blebectomy and pleurodesis, chemical and/or mechanical
- If no blebs, VATS with pleurodesis, chemical and/or mechanical

Discharge Criteria

- Off supplemental oxygen
- For patient treated with conservative approach, repeat CXR in 12 hours shows stable or smaller pneumothorax
- For patient treated with chest tube or pigtail insertion, CXR 4 hrs after tube removal shows stable or smaller pneumothorax
- If changed to Heimlich valve, CXR next am shows stable or smaller pneumothorax*
- Pain controlled
- Stable vital signs
- Tolerating diet
- Discharge education complete

Recommendations/ Considerations

- Symptoms include shortness of breath, pleuritic chest pain
- Consider pleurodesis if 1st pneumothorax with high risk activities (ie pilot, deep sea diving)
- Post surgical air leak > 7 days, convert chest tube to heimlich valve and repeat CXR, if stable discharge home

Criteria for chest tube to waterseal or removal

- No air leak
- CXR stable or improved

If concerned for possible Marfan Syndrome (thin, tall patients whose arms, legs, fingers, and toes seem out of proportion for rest of body), obtain echocardiogram. If ECHO reveals an aortic root diameter measurement Z-score at the sinuses of Valsalva at 2 or more, then order a genetics evaluation

Patient/Family Education

Kids health – Pneumothorax

Discharge Instructions/ Follow-up Recommendations

- May resume normal activities 2 weeks after pneumothorax is resolved
- No contact sports, flying, or breath-holding for 2weeks after pneumothorax is resolved
- No deep sea diving unless after undergoing pleurodesis

*If pt discharged with heimlich valve, follow-up weekly with peds surgery and weekly CXR

Reassess the appropriateness of Care Guidelines as condition changes and 24 hrs after admission. This guideline is a tool to aid clinical decision making. It is not a standard of care. The physician should deviate from the guideline when clinical judgment so indicates.

References

Spontaneous Pneumothorax Care Guideline

- Baumann, M., Strange, C., Heffner, J. E., Light, R., Kirby, T. J., Klein, J., . . . Sahn, S. A. (2001). Management of Spontaneous Pneumothorax; An American College of Chest Physicians Delphi Consensus Statement. *Chest*, 590-602.
- Janahi, I. (2015). Spontaneous Pneumothorax in Children. *UpToDate*.
- Qureshi, F. G., Sandulache, V. C., Richardson, W., Ergun, O., Ford, H. R., & Hackam, D. J. (2005). Primary vs delayed surgery for spontaneous pneumothorax in children: which is better? *Journal of Pediatric Surgery*, 166-169.
- Robinson, P. D., Cooper, P., & Ranganathan, S. C. (2009). Evidence-based management of paediatric primary spontaneous pneumothorax. *Paediatric Respiratory Reviews*, 110-117.
- Shaw, K. S., Prasil, P., Nguyen, L. T., & Laberge, J.-M. (2003). Pediatric Spontaneous Pneumothorax. *Seminars in Pediatric Surgery*, 55-61.