

# Primary Spontaneous Pneumothorax Pathway (DE)

## INCLUSION CRITERIA

- $\geq 12$  years old
- First episode of primary spontaneous pneumothorax (PSP)

## EXCLUSION CRITERIA

- Pneumothorax secondary to a comorbid condition (underlying pulmonary disease, malignancy, trauma).
- Unstable patient in need of emergent intervention

## TARGETS

- Process Measure
- Rate of Observation / Pigtail Trial
- Outcome Measures
- Hospital LOS
  - Time to VATS
- Balancing Measure
- 30 day ED returns
  - CTT

## <sup>1</sup>CLINICAL INDICATIONS

- Worsening pain, tachypnea and/or increased work of breathing,  $SpO_2 < 92\%$ , hypotension

## <sup>2</sup>PIGTAIL PLACEMENT

- The procedure may be performed with local anesthetic, with or without sedation, and with or without image guidance (i.e. ultrasound or fluoroscopy).

## <sup>3</sup>IN ZONE

- Lung is adequately expanded at least to top of 4th rib apically and top of 6th rib laterally

## OUT OF ZONE

- CXR doesn't meet criteria for adequate lung expansion.

## <sup>4</sup>CXR for PSP

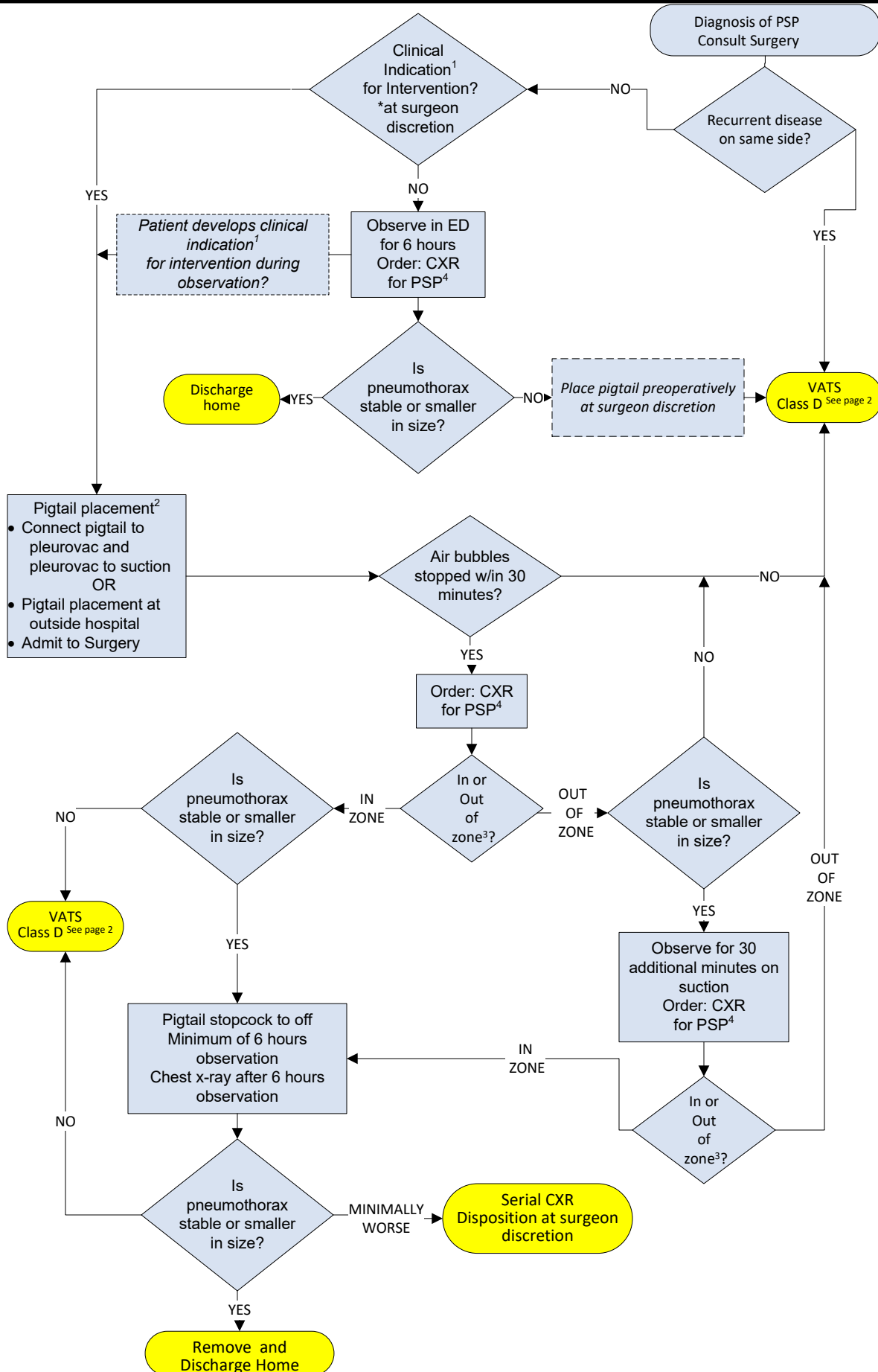
- IMG2189 XR CHEST 1VW FOR PRIMARY SPONTANEOUS PNEUMOTHORAX

## DISCHARGE CRITERIA

- Chest x-ray meets definition for adequate lung expansion
- Pigtail removed

## FOLLOW UP PLAN

- CXR in 4 weeks or sooner in patients with planned flight travel



## VATS: INTRAOPERATIVE/ POST-OPERATIVE STEPS

- Ethicon Echelon 45 mm stapler
- Use the BLUE load for the typical apical wedge resection
- Utilize the SLR (staple line re-enforcement)
- Pleurodesis should be performed for all VATS for PSP with either mechanical and/ or chemical pleurodesis, at surgeon discretion.
- Size chest tube 20 F
- Prior to leaving OR, the chest tube should be secured to the Pleur-evac connection using the zip ties available in the OR
- Post-op X-ray plans: (1) Upon arrival to post-op unit, (2) prior to placing the tube on water seal, and (3) after being on water seal x 4 hours. ALL x-rays should be performed with the patient sitting as upright as possible.
- Chest tube to remain to suction for POD 1-2. As long as there is no air leak, the chest tube can be placed to water seal on POD 2. Chest x-ray to be done 4 hours after placement to water seal. If no increase in PTX, then chest can be removed and patient should be observed 4-6 hours after removal.

## REFERENCES: PRIMARY SPONTANEOUS PNEUMOTHORAX PROTOCOL

Brown, S. G., Ball, E. L., Perrin, K., Asha, S. E., Braithwaite, I., Egerton-Warburton, D., ... & Beasley, R. (2020). Conservative versus interventional treatment for spontaneous pneumothorax. *New England Journal of Medicine*, 382(5), 405-415.

Leys, C. M., Hirschl, R. B., Kohler, J. E., Cherney-Stafford, L., Marka, N., Fallat, M. E., ... Ostlie, D. J. (2019). Changing the Paradigm for Management of Pediatric Primary Spontaneous Pneumothorax: A Simple Aspiration Test Predicts Need for Operation. *Journal of Pediatric Surgery*. <https://doi.org/10.1016/j.jpedsurg.2019.09.043>

## EDUCATION MATERIALS

Midwest Pediatric Surgery Consortium (MWPSC): A Trial of Initial Observation for Primary Spontaneous Pneumothorax in Children. PowerPoint presentation September 2024. (Located on [nemoursonline.sharepoint.com](https://nemoursonline.sharepoint.com), PSWP-Pediatric Surgery-Pediatric Surgery Protocols)

**Authors:** Brian Duffy<sup>1</sup>, Alexa Turpin<sup>1</sup>

<sup>1</sup> Department of Surgery

**Questions about this protocol** should be directed to [Brian.duffy@nemours.org](mailto:Brian.duffy@nemours.org)

**Legal Disclaimer:** These clinical practice guidelines are based upon the opinions of staff members of Nemours Children's Health System. Treatment should be individualized and based upon the clinical conditions of each patient.