Anterior Mediastinal Mass Pathway

Pathway Purpose: The purpose of the pathway is to minimize complications from patients with an anterior mediastinal mass and to make the diagnosis and provide optimal therapy in a timely manner.

Inclusion Criteria:
- Newly diagnosed anterior mediastinal mass

Exclusion Criteria:
None

Patient Placement Evaluation

Patient with anterior mediastinal mass on CXR referred to Oncology and evaluated in the ED

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Discussion with PICU and ED regarding placement of patient after initial evaluation

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Symptoms	Labs	Imaging

▪ Dyspnea
▪ Orthopnea
▪ Chest pain
▪ Hypoxia or other abnormal vital sign changes
▪ Plethora on examination
	▪ Evidence of tumor lysis (uric acid >7 mg/dL)
	▪ Hyperleukocytosis
	▪ Renal insufficiency
		▪ Chest CT (performed in the ED, if possible) demonstrating:
		  ○ Airway compression
		  ○ Major vessel compression
		  ○ Cardiac structure
		▪ Thrombosis
		▪ Pericardial effusion
		▪ Pleural effusion

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Does the patient meet PICU admission criteria? (*see page 2*)

No → Admit to the floor and alert anesthesiology prior to scheduling biopsy by IR or general surgery

Yes → Admit to PICU and initiate anterior mediastinal mass pathway

Feedback?

Owner: Kate Steffen (PICU)
Pathway Team: Kathleen Sakamoto; Michael Link (Oncology)
Pathway Liaison: Hannah Bassett
Date Approved: 3/12/2020 **Last Updated:** 8/12/2026
Associated Order Set: N/A **Associated Policies:** N/A

Packard Clinical Pathway Program

Anterior Mediastinal Mass Pathway

PICU Initial Management

PICU Admission Criteria:

- **Potential airway compromise:** evidenced by orthopnea, dyspnea, stridor, hoarseness, cough, wheeze, or desaturation, or concern based on imaging **OR**
- **Hemodynamic compromise:** evidenced by superior vena cava syndrome, tachycardia, hypotension, syncope or evidence of decreased peripheral or end organ perfusion

On admission

Oncology, PICU and Anesthesiology discuss patient during the intake call. Team receiving intake call arranges multidisciplinary huddle and communicates time, location, and call-in information.

Lab studies:

- CBC diff and slide review
- CMP + mag + phos
- Uric Acid, LDH (refer to Tumor Lysis Syndrome pathway)
- Coag panel, type and screen
- B-HCG, AFP, ESR
- Peripheral blood flow cytometry

Imaging studies:

- Chest X-ray (AP and Lateral)
- Echocardiogram
- CT chest w/ and w/o contrast (if able to lay flat in scanner, consider prone positioning) – imaging to be reviewed by individual providers prior to team huddle

Within 4 hours

Team huddle with appropriate team members:

- ICU: attending, fellow, RN
- Oncology: attending, fellow
- Anesthesia (voalte ARC)
- Interventional Radiology
- Peds surgery: attending, fellow
- Hemepath fellow on call*

As needed:

- ENT (involvement at the discretion of ENT, onc to page ENT)
- Radiation Oncology

*Onc and hemepath to discuss surgical plan, studies to perform, and urgency of specimen processing

Discuss contingency plans:

- Determine airway and sedation risk category (see flowchart on next page)
- Is this patient an ECMO candidate? (ICU to discuss with anes and peds surg)
- Should this patient be intubated?
- Should this patient receive treatment emergently (e.g. recommended steroid dosing - Solumedrol 60 mg/m^2)?
- Who will perform tissue biopsy?
- Are additional diagnostic procedures indicated?
- Document the multidisciplinary discussion and agreed-upon plan in EPIC using dot phrase .mediastinalmasshuddle

Within 24 hours

- Oncology and Pathology to review slides
- Review flow cytometry
- Perform bone marrow aspirate/biopsy (if indicated)
- Perform lumbar puncture (if indicated)
- PICC line placement
- Additional imaging as indicated
- Contact the Clinical Research Associate on call to notify them of the biopsy of tissue for studies

Discharge from pathway when:

- All required diagnostic studies performed

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Anterior Mediastinal Mass Pathway

Definitions:

- Any mass (in children, usually T-cell acute lymphoblastic leukemia (ALL) or non-Hodgkin lymphoma) occupying the anterior compartment of the mediastinum

Pathophysiology:

- Mediastinum is divided into 3 compartments that are discernible on chest X-ray (see image), but they are not anatomically separate
- Cardiovascular effects: mass can compress right cardiac chambers, superior vena cava, pulmonary arteries or veins -> decreased preload and cardiac output, hypoxemia, pulmonary edema
- Pulmonary effects: mass can compress trachea or bronchi -> shortness of breath, cough, stridor
- These effects are worsened when patient is supine (effects of gravity) or under anesthesia (bronchial and tracheal smooth muscle relaxation)

Anesthetic Risk Assessment

Clinical Assessment

Clinically high risk if following symptoms or signs present:

- Stridor
- Orthopnea
- Wheeze
- SVC obstruction
- Collapse/dizziness

Mandatory Special Investigations

- CT scan of chest
- Echocardiogram

High risk if results of special investigations show:

- Tracheal cross-sectional area ≤70% and/or carinal/bronchial compression
- Significant of near-complete SVC obstruction
- Pericardial effusion/tamponade
- Pulmonary artery outflow obstruction
- Ventricular dysfunction

High risk?

Consider biopsy under local anesthetic:

- Bone marrow aspirate ± LP
- Pleural fluid aspirate
- Lymph node
- Other tissue?

Not possible/no diagnosis? Consider steroids:

- Defer to oncology for dosing, duration, and additional treatment (e.g. rasburicase)

Low risk?

Per anesthesia consult:

- Maintain spontaneous ventilation if able
- Fiberoptic bronchoscope available
- Prepare for obstruction distal to ETT – consider rigid bronchoscope or one lung ventilation
- Consider changing patient position if clinical deterioration

References:

- Hack, et al. *Anesthesia* 2008, 63:837-846
- Pearson, et al. *Seminars in Cardiothoracic and Vascular Anesthesia* 2015, 19(3):248-54
- Perger, et al. *Journal of Pediatric Surgery* 2008, 43:1990-1997
- Baue, et al. *Glenn's Thoracic and Cardiovascular Surgery. 5th ed.* 1991

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