Thromboembolic Pulmonary Embolism Algorithm
Please review definition and pathophysiology when using the algorithm

Assess for the presence of risk factors, both major and minor or contributing

Risk factors for DVT (see DVT algorithm)
Wells’ Criteria for Assessment of Pretest Probability for Pulmonary Embolism > 2

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suspected DVT</td>
<td>3.0</td>
</tr>
<tr>
<td>An alternative diagnosis is less likely than PE</td>
<td>3.0</td>
</tr>
<tr>
<td>Heart rate &gt;100 beats per minute</td>
<td>1.5</td>
</tr>
<tr>
<td>Immobilization or surgery in the previous four weeks</td>
<td>1.5</td>
</tr>
<tr>
<td>Previous DVT or PE</td>
<td>1.5</td>
</tr>
<tr>
<td>Hemoptyis</td>
<td>1.0</td>
</tr>
<tr>
<td>Malignancy (on treatment, treated in the past six months or palliative)</td>
<td>1.0</td>
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</table>


Are Risk Factors Present?

NO

YES

Perform Duplex ultrasound

Monitor for presence of signs/ symptoms:
- Chest pain, shortness of breath, tachypnea, hemoptyis
- Chest wall tenderness, wheezing or rales, dysrhythmia
- Tachycardia and hypotension
- Atypical presentations may occur including cough, fever

Are positive findings present?

NO

YES

Follow collaborative plan of care PC: pulmonary embolism/cardiogenic shock

Initiate the plan of care for a Risk for Ineffective Therapeutic Regimen management:
- Teach client about course and progression of PE, that when treated emboli will resolve over time.
- Discuss that PE can be recurrent
- Include teaching from Box 1
- Teach about anticoagulation therapy and thrombolytic therapy to correct the disorder and supportive care using oxygen therapy and vasoactive agents to minimize complications of cor pulmonale and hypoxemia
- Discuss that IVC filters may be considered by their physician
- Teach s/s of recurrent PE, cor pulmonale and hemodynamic compromise to report

Initiate client education for Health Seeking Behaviors to identify:
- Teach strategies to modify risk factors for DVT
- Teach client to report s/s of unilateral edema, Leg pain and pain with dorsiflexion of the foot (Homans sign), warmth or erythema of skin over the area of thrombosis
- Box 1
Collaborative Problem

OUTCOMES/BENCHMARKS:
RR 12-20, eupneic, pulse oximetry > 90-95%
HR: 60-100 no dysrhythmia, chest pain free
100 <SBP < 140

Potential Complication: pulmonary embolism/ cardiogenic shock

<table>
<thead>
<tr>
<th>ASSESS s/s of PE/pulmonary infarction</th>
<th>Monitor for presence of the disorder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chest pain, shortness of breath, tachypnea, hemoptysis</td>
<td>Monitor VS for tachypnea, tachycardia, hypotension</td>
</tr>
<tr>
<td>Chest wall tenderness, wheezing or rales, dysrhythmia</td>
<td>Monitor pulse oximetry and call MD if PO&lt; 90%</td>
</tr>
<tr>
<td>Tachycardia and hypotension</td>
<td>Evaluate ABGs for hypoxemia, and alterations to A-a gradient</td>
</tr>
<tr>
<td>Atypical presentations may occur including cough, fever</td>
<td>Perform 12 lead EKG</td>
</tr>
<tr>
<td>Analyze Wells predictive score:</td>
<td>Apply continuous cardiac monitor and evaluate for dysrhythmia</td>
</tr>
<tr>
<td>Score range</td>
<td>Mean probability of PE, %</td>
</tr>
<tr>
<td>&lt;2 points</td>
<td>3.6</td>
</tr>
<tr>
<td>2 to 6 points</td>
<td>20.5</td>
</tr>
<tr>
<td>&gt;6 points</td>
<td>66.7</td>
</tr>
</tbody>
</table>

Monitor results of D Dimer assay
Monitor results of CT angiography or V-Q scan if pulmonary angiography is not available.

Additional assessment includes monitoring from presence of complications of an exacerbation of the disorder/treatment
Monitor results of chest x-ray and echocardiography to evaluate cor pulmonale and decreased cardiac output
Perform hemodynamic monitoring if right heart catheter is inserted and report alterations in PCWP and CO.
Monitor for s/s of decreased renal perfusion; I/O weight, serum creatinine and GFR.
Monitor CBC for declining H & H and platelets, prolong bleeding times

DO

Initiate oxygen therapy and titrate to maintain pulse oximetry >90-95%
Prepare to intubate of client develops impaired consciousness and hypoxemia
Establish IV access
Administer anticoagulation therapy or fibrinolytic therapy according to hospital protocol
Administer IV fluids and vasoactive agents as prescribed according to results of hemodynamic monitoring
Apply sequential TEDS as ordered

Performs nursing actions to minimize complications of an exacerbation of the disorder

Initiate bleeding precautions
Implement ventilator bundle if intubated
Administer antidysrhythmics as prescribed

CALL

Evaluate for the presence of refractory hypoxemia, worsening chest pain & dysrhythmia, hemorrhage, hemodynamic instability and signs of MODS
Initiate ACLS protocol and shock management, call the ready response team and MD