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NURSING DISCHARGE PLAN: PREVENT FURTHER PULMONARY EMBOLISM

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Abstract:

Pulmonary embolism is a serious condition that can cause permanent damage to the affected lung, low oxygen levels in blood, damage to other organs in body from not getting enough oxygen and if a clot is large, or if there are many clots, pulmonary embolism can cause death. Pulmonary embolism (PE) usually is treated in a hospital. After patient leaving from the hospital, may need to take medicine for 6 months or longer at home. Nursing discharge plan should include very important instructions and teaching as perform exercise at least 30 minutes on most days, avoid sitting for long periods of time, when traveling by car, make frequent stops to get up and move around, on long airplane rides, get up and move around when possible. If the patient can't get up, wiggle his/her toes, move your ankles and tighten your calves to keep blood moving. Avoid crossing the legs and ankles when you sit. Keep his/her legs raised when you are in bed or sitting down. Leg elevation promotes the return of blood through the leg veins. Other instructions wearing elastic stockings and teach patient how wear it correctly.

Keywords: Pulmonary embolism, Nursing discharges pl

Introduction:

Pulmonary embolism (PE)—as a subset of venous thromboembolism (VTE)—is a common, potentially lethal disorder that affects hospitalized and non-hospitalized patients. It recurs frequently and is often overlooked, resulting in long-term complications. PE is the third most common cause of hospital-related death and the most common preventable cause of hospital-related death (1).

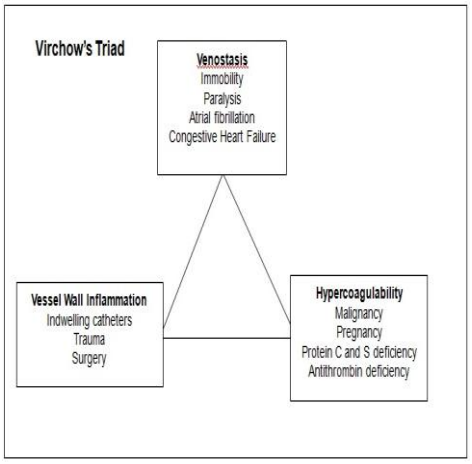
Pulmonary emboli usually arise from the thrombi that originated in the deep venous system of the lower extremities. PE occurs in approximately 15% to 32% of cases following deep vein thrombosis (DVT) in the lower extremities (2). Although the pathophysiology of PE is not well understood, the predisposing factors broadly fit Virchow's triad of blood stasis, endothelial injury, and enhanced blood coagulability (3).

The main cause of pulmonary embolism (PE) usually is blood clot in a deep vein of the leg or deep vein thrombosis. The clot can break free, travel through the bloodstream to the lungs, and block an artery. Blood clots can form in the deep veins of the legs if blood flow is restricted and slows down. This can happen if you don't move around for long periods, such as; after some types of surgery, during a long trip in a car or airplane, prolonged bedridden or immobility (4).

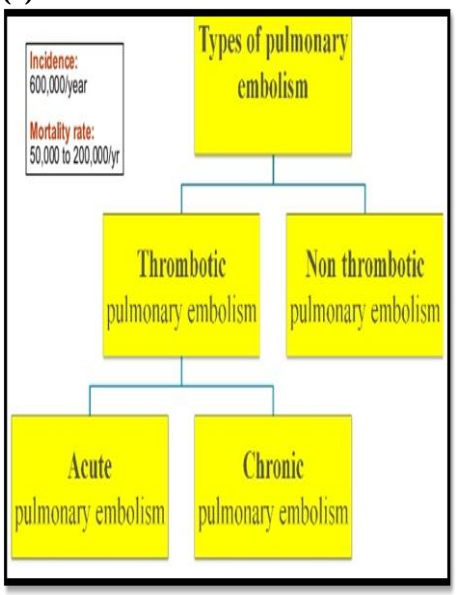
Other Causes; rarely, an air bubble, part of a tumor, or other tissue travels to the lungs and causes it. Also, if a large bone in the body (such as the thigh bone) breaks, fat from the bone marrow can travel through the blood. If the fat reaches the lungs, it can cause PE. Furthermore PE risk factors are age, personal history of venous thromboembolism, active malignancy, or

other disabling conditions such as heart or respiratory failure, coagulation disorders, hormone replacement therapy, oral contraception, immobilization, and surgery or trauma within the last 3 months (5).

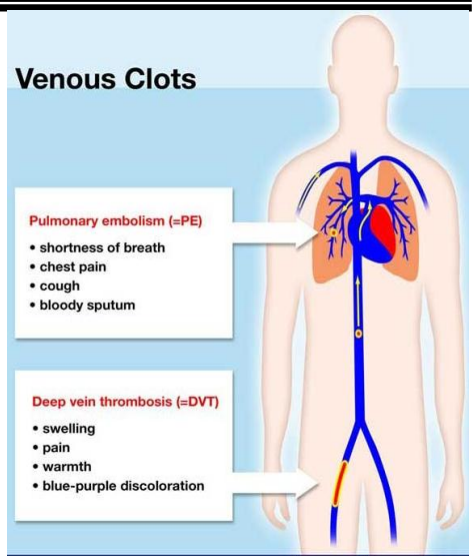
1.1. Diagram (1) Risk factors of PE (6).



1.2. Table (1) Types of pulmonary embolism, incidence and mortality rate (7).

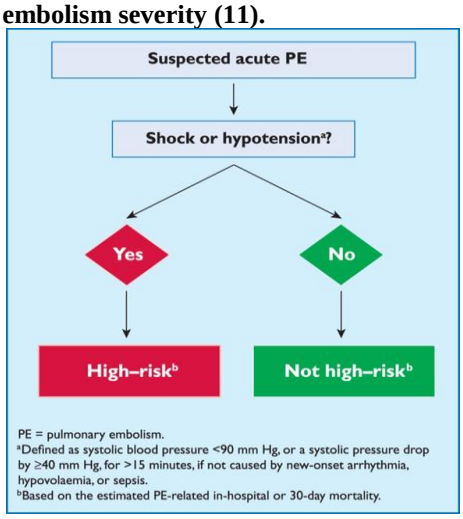


1.3. Figure (1) for Signs and symptoms of pulmonary embolism (PE) (7&8)



Pulmonary Embolism Rule out Criteria (PERC) is as follows; age greater than or equal to 50 years, heart rate greater than or equal to 100 beats per minute, arterial oxygen saturation (SaO_2) on room air less than 95%, venous thromboembolism, recent (<28 days) trauma or surgery, unilateral leg swelling, hemoptysis and oral hormone use
(9&10).

1.4. Clinical classification of pulmonary embolism severity (11).



1.5. **Diagnostic criteria for pulmonary embolism**

PE diagnosis was established by multi-detector computed tomographic angiography (CTA), perfusion lung scintigraphy, or ventilation-perfusion scintigraphy. Angiographic criteria included the identification of an embolus obstructing a vessel or the outline of an embolus within a vessel. Perfusion scans were considered positive for PE if showing segmental (wedge-shaped) perfusion defects (12). Ventilation-perfusion scans were rated "high-probability" for PE if they featured segmental perfusion defects with normal ventilation (13).

PE was classified as provoked if associated with known risk factors such as recent trauma, bone fracture, major surgery, pregnancy/post-partum, active cancer, use of oral contraceptives, or immobilization for longer than 3 consecutive days. In all other instances, it was considered unprovoked (14).

In 2015, the American College of Physicians (ACP) released guidelines for the evaluation of patients with suspected acute PE, which included the following recommendations:

- Plasma D-dimer tests for patients at risk to PE.
- Use either the Wells or Geneva rules to choose tests based on a patient's risk for PE (15).
- If a patient meets all eight criteria, the risks of testing are greater than the risk for embolism, and no testing is needed.
- For patients at intermediate risk use a high-sensitivity plasma D-dimer test as the initial test.
- In patients older than 50 years, use an age-adjusted threshold (age × 10 mg/mL, rather than a blanket 500 mg/mL), because normal D-dimer levels increase with age (15 & 16).
- Patients with a D-dimer level below the age-adjusted cutoff should not receive any imaging studies.
- Patients with elevated D-dimer levels should then receive imaging.
- Patients at high risk should skip the D-dimer test and proceed to CT pulmonary angiography (15).
- Clinicians should only obtain ventilation-perfusion scans in patients with a contraindication to CT pulmonary angiography.
- Clinicians should use validated clinical prediction rules to estimate pretest probability in patients in whom acute PE is being considered (14&15).

Prevention of pulmonary embolism; minimizing the risk of deep vein thrombosis minimizes the risk of pulmonary embolism. The embolism cannot occur without the initial DVT. In the hospital setting, the nursing staff works hard to minimize the potential for clot formation in immobilized patients. Compression stockings are routinely used. Surgery patients are out of bed walking (ambulatory) earlier and low dose heparin or enoxaparin is being used for deep vein thrombosis prophylaxis (17) .

Measures taken to prevent deep vein thrombosis) as; for those who travel, it is recommended that they get up and walk every couple of hours during a long trip. Compression stockings may be helpful in preventing future deep vein thrombus formation in patients with a previous history of a clot and smoking is a risk factor for DVT formation, especially in women who are on the birth (18).

1.6. Advanced treatment strategies for pulmonary embolism

The optimal treatment strategy for acute pulmonary embolism relies upon a multidisciplinary team that rapidly assesses available data, performs additional testing if necessary, weighs treatment options, and recommends an appropriate therapeutic plan to the patient and family. Management options include anticoagulation alone, thrombolysis plus anticoagulation, insertion of an inferior vena cava filter, catheter embolectomy, or surgical embolectomy (19).

The decision-making process requires accurate risk stratification, which is comprised of several crucial components: clinical evaluation that includes history and physical examination, biomarker measurement especially of troponin, as well as assessment of right ventricular size and function based upon chest CT scanning and echocardiography (20).

The 'old school' approach of declaring a benign prognosis based solely upon the presence of normal systemic arterial pressure can delay advanced therapy until after the onset of irreversible cardiogenic shock. The now formulated a more contemporary, comprehensive, and multifaceted strategy to prognosticate. The advanced approach' uses advanced treatment strategies in addition to anticoagulation for those pulmonary embolism patients deemed to be at high risk for a poor outcome (19).

1.7. Nursing care for patient with pulmonary embolism

Nursing Assessment; all patients are evaluated for risk factors for thrombus formation and pulmonary embolus. The nurse collects data as health history. Health history is assessed to determine any previous cardiovascular disease. Family history; history of any cardiovascular disease in the family may predispose the patient to PE. Medication record; for certain medications that can increase the risk for PE. Physical exam; extremities are evaluated for warmth, redness, and inflammation (21).

Nursing diagnosis; based on the assessment data, the following nursing diagnoses are; ineffective peripheral tissue perfusion related to obstructed pulmonary artery; risk for shock related to increased workload of the right ventricle and acute pain related to pleuritic origin (22).

Planning and goals include the following; Increase perfusion; verbalize understanding of condition, therapy regimen, and medication side effects; display hemodynamic stability; report pain is relieved or controlled and follow prescribed pharmacologic regimen (22).

Nursing care for a patient with pulmonary embolism includes; prevent venous stasis. Encourage ambulation and active and passive leg exercises to prevent venous stasis. Monitor thrombolytic therapy. Monitoring thrombolytic and anticoagulant therapy through INR or PTT. Manage pain. Turn patient frequently and reposition to improve ventilation-perfusion ratio. Manage oxygen therapy. Assess for signs of hypoxemia and monitor the pulse oximetry values. Relieve anxiety. Encourage the patient to talk about any fears or concerns related to this frightening episode (23).

Evaluation; success of the treatment plan will be evaluated perfusion, medication side effects, hemodynamic stability, reported pain is relieved or controlled and effect of prescribed pharmacologic regimen on disease prognosis (21).

1.8. Nursing discharge plan

Pulmonary embolism (PE) usually is treated in a hospital. After patient leaving from the hospital, may need to take medicine for 6 months or longer at home. So it's important that the nurses established discharge planning. It is an interdisciplinary approach established by nursing to continuity of care; it is a process that includes identification, assessment, goal setting, planning, implementation, coordination, and evaluation and is the quality link between hospital care and home care (24).

Nursing Discharge plan depended on the patient needs; effective discharge planning supports the continuity of health care between the health-care setting and the home care. In addition, the aim of discharge planning is to reduce hospital length of stay and unplanned readmission to hospital, as well as to improve the coordination of services following discharge from hospital (25).

1.8.1. Process of discharge planning

It includes the following steps: (1) first identification and assessment of patients requiring assistance with planning for discharge; (2) collaborating with the patient, family, and health-care team to facilitate planning for discharge; (3) recommending options for the continuing care of the patient and referring to accommodations, programs, or services that meet the patient's needs and preferences; (4) liaising with community agencies and care facilities to promote patient access and to address gaps in service; and (5) providing support and encouragement to patients and families during the stages of assessment from the hospital (26).

1.8.2. Nursing discharge plan to prevent further pulmonary embolism

After discharge, there are some guidelines that the nurse must teach the patient. They are preventing recurrence the nurse should instruct the patient about preventing recurrence and reporting signs and symptoms. Adherence; the nurse should monitor the patient's adherence to the prescribed management plan and enforces previous instructions. Residual effects; the nurse should also monitor for residual effects of the PE and recovery. Follow-up checkups; the nurse should remind the patient about keeping up with follow-up appointments for coagulation tests and appointments with the nursing care provider (23).

Nursing discharge plan should include very important instructions and teaching as perform exercise at least 30 minutes on most days, avoid sitting for long periods of time, when traveling by car, make frequent stops to get up and move around, on long airplane rides, get up and move around when possible. If the patient can't get up, wiggle his/her toes, move the ankles and tighten calves to keep the blood moving. Avoid crossing his/her legs and ankles when sit. Keep the legs raised when he/she is in bed or sitting down. Leg elevation promotes the return of blood through the leg veins (27).

Other instructions are follow activity restrictions, such as not driving or operating machinery, as recommended by healthcare provider or pharmacist, especially if he/she is taking pain medicines. Wearing elastic stockings to help prevent clots and teach patient how wear it correctly. Instruct patient if feels with signs and symptoms of recurrent DVT, do not massage his/her legs and come immediately into the hospital. Take blood thinners as ordered; if bleed more than usual. To help prevent cuts: Wear rubber gloves or garden gloves for household and outdoor work. Don't walk barefoot (28).

1.8.3. Documentation Guidelines

The documentation should include individual findings, noting nature, extent, and duration of the problem, effects on independence and lifestyle, characteristics of pain, precipitators, and what relieves pain, pulses and BP. Plan of care, teaching plan, response to interventions, teaching and actions performed attainment or progress toward desired outcomes and modifications to plan of care (23).

1. CONCULSION

Pulmonary emboli usually arise from the thrombi that originated in the deep venous system of the lower extremities. After discharge, there are some guidelines that the nurse must teach the patient. They are preventing recurrence the nurse should instruct the patient about preventing recurrence and reporting signs and symptoms. Follow-up checkups; the nurse should remind the patient about keeping up with follow-up appointments for coagulation tests and appointments with the primary care provider.

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