NR283 Quiz 5

Pneumonia

- an infection of the alveoli in the lungs
    - causes an increase in fluid or exudate in the lungs
    - this prevents the transfer of oxygen to capillaries & movement of CO2 into alveoli
- may developed from fungus, bacteria, and virus
    - viral: SARS CoV-2 (COVID-19), influenza (flu), respiratory syncytial virus (RSV), human parainfluenza viruses (HPIVS)
    - bacterial: streptococcus pneumoniae, mycoplasma pneumoniae, legionella
    - fungal: pneumocystis pneumonia, coccidioidomycosis (Valley fever), histoplasmosis
    - parasitic: ascaris, toxoplasmosis
- empiric treatment – treat the most likely cause and adapt based on client's response or new information
    - "is predicted and the treatment is based on what is suspected"
- Bacterial pneumonia
    - Bacteria grow and reproduce in warm moist places like in the lungs
    - Bacteria grow outside cells
    - Types:
        - Community-acquired pneumonia (CAP)
            - Widespread; from people interacting in community
            - Cause: bacteria called *streptococcus pneumoniae* is the most common
            - People at risk: immunocompromised including the elderly, children, and those with chronic illnesses
        - Ventilator-acquired pneumonia (VAP)
            - common in those who require mechanical ventilation
            - clients who might temporarily require assistance to breathe or people with chronic conditions dependent upon a ventilator

                - cause: bacterial called *pseudomonas aeruginosa*, *escherichia coli*, and *klebsiella pneumoniae*
                - people at risk: critically ill on mechanical ventilation
            - Hospital-acquired pneumonia (HAP)
                - AKA: nosocomial pneumonia
                - found in clients who acquired pneumonia while being in the hospital
                - Cause: bacteria called *staphylococcus aureus* (including *methicillin-resistant S. aureus* [MRSA])
                - People at risk: hospitalized clients
            - Aspiration pneumonia
                - Cause: *streptococcus pneumoniae*, *haemophilus influenza*, *staphylococcus aureus*, and gram-negative bacteria found in oral pharynx
                - Occurs when when food gets caught in the lung due to dysphagia
                - People at risk: clients experiencing dysphagia due to stroke, neurological disease, or facial trauma
        - Viral pneumonia
            - Occurs when viruses take over cells in the body and make them their own
            - Treatment can include: potential anti-viral medications and supportive therapy
                - Supportive therapy is used to minimize the amount of damage and symptoms experienced
            - Cause: SARS-CoV-2 (COVID), influenza (several strains of the flu), and respiratory syncytial virus (RSV)
- Signs and symptoms
    - Viral pneumonia
        - Symptoms
            - muscle aches
            - headache
            - nausea and vomiting

        - dry cough
        - weakness
    - Fungal pneumonia
        - Symptoms
            - Night sweats
            - Rash
    - Symptoms in general
        - cough (usually productive with a discolored sputum)
        - shortness of breath
        - sharp pain at the site of inflammation (chest or side)
        - fever
        - chills
        - loss of energy or appetite
        - not feeling well (malaise)
    - signs in general
        - decreased oxygen saturation
        - fever
        - increased pulse rate
        - increased blood pressure
        - abnormal chest x-ray
        - abnormal lung sounds
        - lymph node enlargement
    - Testing for pneumonia
        - Bacterial pneumonia
            - culture and sensitivity test
                - obtaining samples of the affected area in the alveoli and growing these samples in a petri dish to determine the cause
                - Collection includes sputum samples or collected fluid from a bronchoscopy test
                - Antibiotics are then tested on these samples to determine the best treatment
        - Viral pneumonia
            - blood testing may be used
            - tested using polymerase chain reaction (PCR) tests

            - look for specific genetic material to determine if it matches a known virus
        - fungal pneumonia
            - Blood testing to measure immunoglobin M and G (IgM and IgG) levels
            - infections are difficult to treat and may require months of anti-fungal medications
        - parasitic pneumonia
            - usually includes cultures of blood and body fluids including sputum, urine, and stool
    - Treatments
        - antibiotic, antiviral, or antifungal therapy should be started immediately
        - advanced treatment
            - **Chest physiotherapy**: a process by which tapping on the back and sides of someone helps loosen secretions for easier removal with coughing
            - **Small volume nebulizer (SVN)**: a way of delivering medication deeper into the lung
            - **Proning**: repositioning someone on their stomach for a period of time to allow for better oxygenation of the upper lungs
            - **High-flow oxygen**: oxygen delivery using a higher flow rate
            - **Artificial ventilation**: using a separate machine to deliver premeasured breaths, pushing them directly into the lung
            - **Extracorporeal membrane oxygenation (ECMO)**: bypassing the lungs by pulling blood from the body, oxygenating the blood, then returning it to the body
- Preventions
    - Frequent hand washing
    - Social distancing
    - Vaccines

    - Good air filtration
    - Personal protective equipment (PPE)
- High risk factors
    - older than 65 years of age
    - declining or poor kidney function
    - low blood pressure (systolic blood pressure below 90 mmHg)
    - tachypnea (increased respiratory rate over 30 breaths per minute)
    - hypothermic (low temperature)
    - abnormal heart rate (heart rate below 50 or more than 100)
    - needing assistance with breathing

Asthma

- an obstructive condition that causes shortness of breath due to an inflammatory response in the lungs.
- a disease with reversible bronchial obstruction usually caused by an inflammatory response to environmental or internal triggers
- affects all ages but is most common in children and younger adults
- area affected is small bronchi or bronchioles
- Poorly treated acute asthma may lead to irreversible damage to the lungs over years
- occurs in people with hypersensitive or hyperresponsive airways
- Acute asthma is a single episode; chronic asthma is the long-term condition
- Symptoms
    - difficulty breathing (also called dyspnea)
    - wheezing
    - cough
    - excess mucus production
    - fatigue
- when asthma attacks
    - experiences a “flare” or exacerbation triggered by something intrinsic or extrinsic