UNIT 9 BUILDING CLINICAL COMPETENCE
Responses to Altered Cardiac Function

FUNCTIONAL HEALTH PATTERN: Activity-Exercise

Think about clients with cardiac disorders and altered activity and/or exercise patterns for whom you have cared in your clinical experiences.

- What were the clients’ major pathophysiologic conditions (medical diagnoses) (e.g., myocardial infarction, heart failure, valvular heart disease)?
- What manifestations did each of these clients have? Were these manifestations similar or different?
- How did each of these clients respond to activities such as talking, eating, completing activities of daily living (ADLs), moving from bed to chair or bathroom, ambulating? Did their heart rates increase or decrease? How about their respiratory rates and effort? Did any of your clients become light-headed or develop chest pain during activity? Did their oxygen saturation levels remain stable or drop during activity?

The Activity-Exercise Pattern includes ADLs and patterns of exercise and activity—all of which require the expenditure of energy. The heart functions as a pump to deliver fuel for energy production to the cells. Cardiac disorders affect the heart’s pumping ability in two primary ways:

- The heart muscle is directly damaged by ischemic processes (e.g., coronary heart disease), inflammatory responses (e.g., rheumatic carditis, endocarditis), or a primary cardiac muscle disorder (cardiomyopathy).
- Excessive cardiac work (e.g., resulting from hypertension, valve disorders, or congenital defects) prompts compensatory mechanisms to meet cellular needs for fuel; over time, these compensatory mechanisms damage the heart muscle.

When the cardiac pump fails, less fuel is delivered to the cells and energy production falls. This in turn affects the client’s ability to exercise and maintain ADLs, leading to manifestations such as:

- Fatigue (decreased oxygen and glucose delivery to cells ➤ decreased ATP production)
- Shortness of breath, dyspnea (decreased cardiac output ➤ decreased pulmonary blood flow ➤ carbon dioxide retention stimulates the respiratory center; decreased cellular oxygen ➤ shift to anaerobic cellular metabolism ➤ increased production of nonvolatile acids and stimulation of the respiratory center)
- Tachycardia (decreased stroke volume ➤ decreased cardiac output ➤ catecholamine release ➤ increased heart rate and contractility ➤ increased cardiac work)

Priority nursing diagnoses within the Activity-Exercise Pattern that may be appropriate for clients with cardiac disease include:

- Decreased Cardiac Output as evidenced by increased heart rate, fatigue, shortness of breath, decreased urine output, impaired mental processing, decreased level of consciousness
- Activity Intolerance as evidenced by prolonged heart rate increases following activity, shortness of breath with exercise, activity-related chest pain, fatigue
- Fatigue as evidenced by inability to consume a full meal without resting, frequent napping or dozing, expressions of tiredness, weakness
- Ineffective Tissue Perfusion as evidenced by cool, dusky skin, decreased urine output, chest pain.

Two nursing diagnoses from other functional health patterns often are of high priority for the client with heart disease because the physiologic responses to these problems increase cardiac work:

- Acute Pain (Cognitive-Perceptual)
- Anxiety (Coping-Stress-Tolerance)