

## **Nursing Management for Patients with Cardiovascular Disorders**

### **Main symptoms and signs of heart diseases**

- chest pain/discomfort, dyspnoea, palpitations, cyanosis, dizziness and syncope, edema, cough, hemoptysis, fatigue and tiredness, puls changes, ↓urination during day, ↑urination during night (nocturia)

#### 1-Chest Pain or Discomfort history

is very important although a cardinal manifestation of heart disease, also originates from Non-cardiac intrathoracic structures aorta, pulmonary artery, bronchopulmonary tree, pleura, mediastinum, oesophagus and diaphragm tissues of the neck and thoracic wall skin, thoracic muscles, cervicodorsal spine

Chest Pain Points to note in the history location radiation character aggravating factors relieving factors time relationships duration, frequency and pattern of occurrence setting in which it occurs associated factors

#### 2-Breathlessness(dyspnoea)

abnormally uncomfortable awareness of breathing regarded as abnormal only when it occurs at rest or at level of physical activity not expected to cause it associated with diseases of heart lungs chest wall respiratory muscles also associated with anxiety

Breathlessness(dyspnoea) Exertional dyspnoea Comes on during exertion and subsides with rest Commonly due to HF or lung disease Orthopnoea breathlessness on lying flat A symptom of left ventricular failure due to redistribution of fluid from the lower extremities to the lungs

Breathlessness(dyspnoea) Paroxysmal Nocturnal dyspnoea a variant of orthopnoea patient awakes from sleep

severely breathless persistent cough, may have white frothy sputum a manifestation of left ventricular failure

#### 3-Oedema Peripheral Oedema a feature of chronic heart failure due to excessive salt and water retention In patients found in the ankles, legs, thighs and lower abdomen and over the sacrum associated with other features of heart failure

Oedema Causes of peripheral oedema cardiac failure Chronic venous insufficiency Hypoalbuminaemia – nephrotic syndrome, liver disease, protein losing Drugs retaining sodium

4-Palpitations definition rapid beating of the heart caused by disorders of cardiac rhythm and rate history in palpitation beginning, rapid heart rate with regular or irregular rhythm

Palpitations associated with drug use tobacco, coffee, tea, alcohol  
epinephrine, aminophylline, associated with anxiety state

5-Syncope definition sudden temporary loss of consciousness associated with loss of postural tone with spontaneous recovery not requiring electrical or chemical cardioversion due to sudden vasodilation or sudden fall in cardiac output

6-Cough defined as cough is a sudden, usually involuntary, expulsion of air from the lungs with a characteristic and easily recognizable sound

Cough the nature of the sputum is often helpful pink frothy sputum - pulmonary oedema clear white mucoid sputum –viral infection or longstanding bronchial irritation thick, yellowish sputum – infection rusty sputum – pneumococcal pneumonia blood streaked sputum – tuberculosis, bronchiectasis, Ca lung or pulmonary infarction

7-fatigue non-specific common in patients with impaired cardiovascular function consequent to a reduced cardiac output associated with muscular weakness may be caused by drugs e.g.  $\beta$ -blockers may also result for excessive blood pressure reduction in patients with hypertension or heart failure caused by excessive diuresis or diuretic induced hypokalaemia

8-Other symptoms Nocturia common in early heart failure Anorexia  
Abdominal fullness right upper quadrant abdominal discomfort weight loss

# Diagnostic Tests for Cardiovascular Function

- **ECG**
  - Monitors arrhythmias, MI, infection, pericarditis
  - Studies conduction activation and systemic abnormalities
- **Auscultation**
  - Studies heart sounds using stethoscope
- **Exercise stress test**
  - Assess general cardiovascular function
  - Checks for exercise-induced problems
- **Chest X-ray Film**
  - Shows shape, size of heart
  - Evidence of pulmonary congestion associated with heart failure
  - Nuclear imaging



Cardiac Catheterization ■

Visualize inside of heart, measure pressure, assess valve and heart function ■

Determine blood flow to and from heart ■

Angiography ■

Visualization of blood flow in coronary artery ■

Obstruction assessed and treated ■

Basic catheterization ■

Balloon angioplasty ■

Doppler Studies ■

Assessment of blood flow in peripheral vessels ■

Microphone records sounds of blood flow ■

Can detect obstruction ■

Blood tests ■

Assess triglyceride and cholesterol levels ■

Electrolytes ■

Hb, hematocrit, CBCs ■

Arterial Blood Gas Determination ■

Essential for pts with shock, MI ■

Check current oxygen levels, acid-base balance ■

## **Coronary Artery Disease**

### **Atherosclerosis**

Define: thickness and hardening of the arteries caused by deposits of fat and fibrin which harden. Leads to decreased lumen and decreased blood flow and ischemia and death of the tissue

Signs and Symptoms

Pain usual symptom but may experience dyspnea

May have irregular heart rate

N/V may also accompany the other symptoms

Called angina

Unstable – persistent, even at rest

Prinzmetal's – variant, and may occur without atherosclerosis

### **Risk Factors**

1. Modifiable risk factors:

- Cholesterol levels
- Cigarette smoking
- Hypertension
- Diabetes mellitus

2. Nonmodifiable risk factors:

- Age
- Gender
- Family history

- Race

Medical Treatment

Decrease risk factors

Diet

Control cholesterol/triglycerides

Exercise

Smoking

Hypertension

### **Drugs**

Calcium channel blockers

Nitroglycerin

Low dose ASA

Surgery

### **Myocardial Infarction**

Myocardial infarction is the necrosis of an area of cardiac tissue as a result of obstruction of blood flow through a coronary artery or one of its branches

The myocardial tissue dies as a result of the occlusion

#### **Signs/Symptoms:**

1. Chest pain, substernally with radiation to arm, neck, jaw, or back; and unrelieved by rest or nitrates.
2. Diaphoresis and cool, clammy, pale skin.
3. Nausea and vomiting.
4. Dyspnea.
5. Palpitations or syncope.
6. Restlessness and anxiety.
7. Tachycardia or bradycardia.

8. Decreased.

## Assessment for Chest Pain

### Subjective

Tightness, heaviness, squeezing, or crushing pain in the substernal area, which can radiate to the jaw, neck, left arm, or shoulder

Determine if pain is precipitated by an event (exercise, stress or exertion)

Is the pain relieved by rest or drugs?

Is there any predisposing factors?

Patient may experience anxiety and feeling of doom

### Objective

Dyspnea

Profuse diaphoresis

Adventurous breath sounds

Tachycardia, decreased B/P, ^ temp

Elevation of cardiac enzymes (CPK, CPK-MB, AST, LDH, Troponin)

EKG changes

### **Medical Treatment**

Early treatment is important

Nitroglycerin

Dilates coronary arteries

Morphine sulfate – 2-4 mg titrated for pain relief

decreases blood return to the heart

decreases anxiety

relaxes smooth muscle in the lungs

has analgesic effect

Oxygen at 2-4 L/min

Thrombolytic therapy – must meet criteria

Streptokinase

Heparin

Lidocaine, Calcium channel blockers, Digoxin, Beta blockers, Dopamine, Dobutamine

Angioplasty/Stent placement

Coronary Artery Bypass Grafting

### **Nursing Management**

Provide quiet, calm environment

Keep client on bedrest for 24-48 hours

Give medications as ordered –analgesics, O2, Nitroglycerin

Elevate head of bed

Watch for any more chest pain

Maintain IV line

Monitor for signs of CHF, cardiogenic shock, and pulmonary edema

Evaluate signs of MI

Skin color, and temperature

Monitor vitals

Observe EKG for dysrhythmias

Monitor fluid volume levels

Check labs

### **Home care**

Teach about medications

Include follow-up with physician

May need to teach about CAD

Teach modification of risk factors –weight, diet, smoking, exercise, etc.

Notify of any chest pain

**Problem and nursing care for patients with myocardial infarction (nursing care in the CCU)**

**Problem-1-Chest pain**

- Assess chest pain
- Obtain a 12 Leads ECG recording
- Give analgesic and nitrates order
- Oxygen therapy
- Cardiac monitor
- Provide physical and emotional rest

**Problem-2- Risk for decreased cardiac output**

- Assess for signs and symptoms of decreased cardiac output hourly and reported to the physician following hypotension ,tachycardia, fatigability ,reduced urine output ,cool moist ,cyanotic extremities
- Promote rest
- Administered O2 and nitrates as ordered
- Monitor heart rhythm

**Problem-3- Respiratory difficulties**

- Assess the patient every 4 hours for chest discomfort

Administered O2

- Liquid diet for 24 hours as prescribed

Teach adhere to the diet and activity prescription

**Problem-4- Anxiety and fear of death**

- Allow patient to express Anxiety and fear
  - Use of flexible visiting hours allows the presence of supportive family
  - Administer communication by answering questions
  - Administer Sedative and anti anxiety medication as ordered
- Encouraged active participation in hospital cardiac rehabilitation program

**CHF is inability of the heart to pump adequate amount of blood to all vital organs. The incidence increases with aging.**

**CHF Classification:**

Left- sided (or left ventricular)

Right- sided (or right ventricular)



**Signs/Symptom Left- sided (or left ventricular)s:**

1. Dyspnea upon exertion, paroxysmal nocturnal dyspnea or orthopnea.
2. Pale, cool extremities.
3. Decreased peripheral pulses.
4. Tachycardia.
5. Oliguria(<30 ml/hour)
6. Insomnia and restlessness.

**Signs/Symptoms Right- sided (or right ventricular):**

1. Dependent pitting edema.
2. Jugular vein distention.
3. Hepatomegaly.
4. Ascites.
5. Weakness, anorexia, and nausea.
6. Weight gain.

Risk Factors

CAD

Age

HTN

Obesity

Cigarette smoking

Diabetes mellitus

High cholesterol

**Congestive Heart Failure**

**Etiology**

May be caused by any interference with normal mechanisms regulating cardiac output (CO)

Common causes

HTN

Myocardial infarction

Dysrhythmias

Valvular disorders

Types of Congestive Heart Failure

Left-sided failure

Most common form

Blood backs up through the left atrium into the pulmonary veins

Pulmonary congestion and edema

leads to biventricular failure

Left-sided failure

Most common cause:

HTN

Cardiomyopathy

Valvular disorders

CAD (myocardial infarction)

**Right-sided failure**

Results from diseased right ventricle

Blood backs up into right atrium and venous circulation

**Causes**

LVF

Cor pulmonale

RV infarction

## **Congestive Heart Failure**

### **Classification**

Based on the person's tolerance to physical activity

Class 1: No limitation of physical activity

Class 2: Slight limitation

Class 3: Marked limitation

Class 4: Inability to carry on any physical activity without discomfort

### **Treat underlying cause**

Alleviate symptoms

Oxygen treatment

Rest

Biventricular pacing

Cardiac transplantation

Chronic Congestive Heart Failure

Drug Therapy

ACE inhibitors

Diuretics

Inotropic drugs

Vasodilators

$\beta$ -Adrenergic blockers

Fluid restrictions not commonly prescribed

Sodium restriction

2 g sodium diet

Daily weights

Same time each day

Wearing same type of clothing

## Chronic Congestive Heart Failure

### **Nursing Management**

Administer prescribed medications, diuretics, digitalis, anticoagulants, vasodilators.

2. Check intake and output.
3. Weigh daily.
4. Provide a low- sodium diet.
5. Auscultate lung sounds.
6. Determine degree of JVD.
7. Assess dependent edema.
8. Monitor vital signs.
9. Administer oxygen as prescribed.
- 10 Psychological support.

**Hypertension** is intermittent or sustained elevation in systolic or diastolic blood pressure.

There are two major types, primary (essential) hypertension and secondary hypertension.

### **Etiology:**

1. Primary hypertension.
  - a. Non modifiable risk factors.
    - Family history.
    - Gender. Men > women.
    - Age.
    - Race.
  - . Modifiable risk factors.
    - Stress.
    - Obesity.
    - High dietary intake of sodium or saturated fats.

- Excessive caffeine, alcohol, or cigarette smoking.
  - Oral contraceptives use.
2. Secondary hypertension.
- Renal vascular diseases.
  - Coarctation of aorta.
  - Primary hyperaldosteronism.
  - Hyperthyroidism.
  - Medications, such as estrogen, antidepressants, steroids.

Signs/Symptoms:

1. Usually asymptomatic.
2. May cause headache, dizziness, blurred vision.

Nursing Management:

1. Administer medications as prescribed, such as diuretics, antihypertensive...etc
  2. Provide patient and family teaching.
    - Advise the patient to reduce weight.
    - Instruct the patient to restrict sodium alcohol and caffeine intake.
- Smoking cessation.
  - Discuss the importance of regular blood pressure monitoring.
  - Discuss the importance of lifelong medical follow up examination.

Cardiac Rehab defined:

A progressive program with a goal of helping patients restore and maintain optimal health while helping to reduce the risk of future heart problems.

*Structure of*

**Cardiac Rehabilitation**

Phase I- (inpatient) assessment and mobilization, education on risk factors and a discharge plan

Phase II- (outpatient) exercise, risk factor reduction, reduce morbidity/mortality, improve function and quality of life and build confidence

Phase III&IV- maintenance program

Understanding of condition

Information & education

Risk factor assessment

Personalised health plan

Psychological assessment/support

Referral

Phase 2: This phase encompasses the immediate post discharge period, which is typically a period of four to six weeks. It focuses on health education and resumption of physical activity, Drug therapy

Increase the patient's exercise work capacity

. Teach the patient to monitor himself/herself during an exercise period.

Patient Education. Topics that can be discussed are : risk factor modification, stress management, dietary modifications to lower fat intake, smoking cessation, anatomy of the heart, sexual activity, cardiac medications, and what do they do when they feel symptoms

Phase III is often referred to as the maintenance phase of cardiac rehab because it emphasizes long-term lifestyle changes, such as a regular exercise program. The program will help practice and keep healthy behaviors and habits.

goals for phase III of cardiac rehab are to:

Learn lifestyle changes to lower risk of future heart problems.

Continue exercising to regain physical function

The duration of Phase 3 may vary from six to 12 weeks,

with patients required to attend a CR unit two to three times weekly

for structured exercise and other lifestyle interventions


phase 4: This phase constitutes the components of long-term maintenance of lifestyle changes and professional monitoring of clinical status. It is when

patients leave the structured Phase 3 programme and continue exercise and other lifestyle modifications indefinitely. This may be facilitated in the CR unit itself or in a local leisure centre.

### Infective Endocarditis

inflammatory process on-going inside endocardium due to infection after endothelium damage most often involving aortic and mitral valves

**CHART**  
**29-3**



## Risk Factors for Infective Endocarditis

- Prosthetic cardiac valves or prosthetic material used for cardiac valve repair
- History of bacterial endocarditis (even without heart disease)
- Congenital heart disease
- Unrepaired cyanotic congenital heart disease, including patients with palliative shunts and conduits
- Repaired congenital heart disease with prosthetic material or device either by surgery or catheter intervention during the first 6 months after the procedure
- Repaired congenital heart disease with residual defects at the site or adjacent to the site of a prosthetic patch or device
- Cardiac transplant recipients with valvulopathy

Adapted from MAFRA, WITTE, KLEIN, GORON, MURPHY, 1997

*Staphylococcus aureus* is the most common pathogen ■

*Streptococcal* IE is still the most common ■  
in developing countries

[Enterococci](#) ■

[Pseudomonas](#)

**Fungal and Viral** ■

, a [yeast albicansCandida](#) ■

Viral infections of the heart are usually associated with [viral myocarditis](#) or [viral pericarditis](#) *Histoplasma capsulatum* and *Aspergillus*

### Signs and symptoms

occurs in 97% of people; [malaise](#) and endurance [fatigue](#) in 90% of [Fever](#) people.<sup>[4]</sup>

A new or changing [heart murmur](#), weight loss, and coughing occurs in 35% of people.<sup>[4]</sup>

Vascular phenomena: [septic embolism](#) (causing thromboembolic problems such as [stroke](#) in the [parietal lobe](#) of the [brain](#) or [gangrene](#) of fingers), [Janeway lesions](#) (painless hemorrhagic cutaneous lesions on the palms and soles), intracranial

hemorrhage, [conjunctival](#) hemorrhage, [splinter hemorrhages](#), renal infarcts, and splenic infarcts.

Immunologic phenomena: [Glomerulonephritis](#) which allows for blood and albumin to enter the urine,<sup>[1]</sup> [Osler's nodes](#) (painful subcutaneous [lesions](#) in the distal fingers), [Roth's spots](#) on the [retina](#), positive serum [rheumatoid factor](#)

Other signs may include; night sweats, rigors, anemia, splenomegaly

### Treatment

High dose [antibiotics](#) are administered by the intravenous route

typically two to six weeks depending on the characteristics of the infection and the causative micro-organisms.

### Complications

Most common complication

Main indication to surgical treatment

~60% of IE patients

Uncontrolled infection

Persisting infection

Perivalvular extension in infective endocarditis

Systemic embolism



Brain, spleen and lungs •

30% of IE patients •

May be the first symptom •

Neurologic events .۳

Acute renal failure .۴

Rheumatic problems .۵

Myocarditis .۶

### **Nursing Implementation**

Identify those at risk

Assessment of history and understanding of disease process

Teach importance of adherence to treatment regimen

Assessment of nonspecific manifestations

Monitor laboratory data

Monitor signs/symptoms of superinfection related to antibiotics

Monitor patency of IV

Hygiene

Nutrition

### **Rheumatic fever**

is an inflammatory disease that may develop after an infection with group A *Streptococcus* bacteria. The disease can affect the heart, joints, skin, and brain.

### **Symptoms**

Abdominal pain

#### [Fever](#)

Heart (cardiac) problems, which may not have symptoms, or may result in shortness of breath and chest pain

Joint pain, [arthritis](#) (mainly in the knees, elbows, ankles, and wrists)

Joint swelling; redness or warmth

Nosebleeds ([epistaxis](#))

Skin nodules

Skin rash (erythema marginatum)

Skin eruption on the trunk and upper part of the arms or legs

Eruptions that look ring-shaped or snake-like

Sydenham [chorea](#) (emotional instability, muscle weakness and quick, uncoordinated jerky movements that mainly affect the face, feet, and hands)

### **Exams and Tests**

Tests may include:

Blood test for recurrent strep infection (such as)

[Complete blood count](#)

[Electrocardiogram](#)

(ESR) [Sedimentation rate](#)

### **Treatment**

will be treated with antibiotics.

Anti-inflammatory medications such as aspirin or corticosteroids reduce inflammation to help manage acute rheumatic fever.

And take low doses of antibiotics (such as penicillin, sulfadiazine, or erythromycin) over the long term to prevent strep throat from returning.

### **Complications**

[Arrhythmias](#)

Damage to heart valves (in particular, [mitral stenosis](#) and aortic stenosis)

[Endocarditis](#)

[Heart failure](#)

[Pericarditis](#)

Sydenham chorea