Heart Failure

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Recommended Citation
Louden, Meredith, "Heart Failure" (2021). Nursing Student Class Projects (Formerly MSN). 469.
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Heart Failure
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Pathophysiology

Pathophysiology of CHF is dependent upon the cause: diastolic or systolic, left sided or right sided, preserved EF or reduced EF (HFrEF or HFrEF).

- **HFrEF** involves left ventricular diastolic dysfunction, resulting from impaired left ventricular relaxation and increased stiffness, which contributes to elevated left atrial pressure (Normand et al., 2019, p. 1046).
- Blood remains upstream of ventricles, which results in increased filling pressures (congestion) that impair organ function (Harjola et al., 2018).
  - "Pulmonary congestion and pulmonary edema occur when blood remains upstream of the left ventricle due to elevated left atrial pressure; congestion of organs in abdominal cavity ensues when blood remains upstream of the right ventricle" (Harjola et al., 2018, p. 3).
- CHF causes inadequate perfusion due to low cardiac output, which results in tissue hypoxia, cell death, and organ dysfunction (Harjola et al., 2018).

<table>
<thead>
<tr>
<th>Sign or Symptom</th>
<th>Clinical Significance</th>
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<tr>
<td>Fatigue, weakness, exercise intolerance</td>
<td>Causes &quot;loss of diastolic function that results in kidney injury and &quot;with the worsening of symptoms with increasing number of older adults and the irreversible nature of heart failure, it poses an overwhelming burden requiring further efforts to reduce adverse health outcomes and improve quality of life.&quot; (Son et al., 2020, p. 2)</td>
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**Treating CHF**

- **Nursing Care**
  - "Nurse-led heart failure management programs reduced the heart failure specific readmission rate by 32%" (Son et al., 2020, p. 2).
  - Evidence recommends patients with EF <35% and symptoms despite >3 months of regimens, medical treatment have a cardiac resynchronization implanted to reduce sudden cardiac death and mortality (Brink, 2018).
  - Joint Commission recommends inclusion of family caregivers in discharge education (Son et al., 2020, p. 11).

**Treatments**

- Remove excess fluid in patients with volume overload with loop diuretics (Harjola et al., 2018).
- Pharmacological therapies include "angiotensin converting enzyme inhibitors (ACEs) and, when ACEs are contraindicated, angiotensin receptor blockers (ARBs) and loop diuretics" which have been shown to reduce mortality and hospitalizations (Aggarray & Samuelson, 2018, p. 8).
- "Unless contraindicated, all patients with a reduced EF should receive a beta-blocker and an ACE inhibitor or ARB" (Brink, 2018, p. 2).
- "VASodilators improve ventricular function by reducing afterload and decrease symptoms by reducing cardiac filling pressure. Nitrates (nitroglycerin, nitroprusside) are direct-acting vasodilators" (Harjola et al., 2018, p. 13).
- Early recognition of symptoms/worsening of symptoms with consecutive interventions helps minimize hospitalizations (Vuckovic et al., 2020).
- Digoxin can help to reduce exercise intolerance but has no effect on reducing mortality (Brink, 2018).
- Inotropic agents, such as Dobutamine and Milrinone, can be used in severe states of hypoperfusion (Harjola et al., 2018).
- Patients should be enrolled in cardiac rehabilitation programs partake in home exercise programs (Aggarwal et al., 2018).

**Outcomes**

- **Heart failure decompensation can be precipitated by factors contributing to the Risk of Heart Failure and Opportunities for Therapeutic Interventions**
- **Combinations**
  - "Heart-related quality of life is known to be much worse in people with heart failure than those with other chronic conditions" (Son et al., 2020, p. 1).
  - "Evidence has shown that CHF can be prevented by the maintenance of lifestyle changes and modifications (Aggarwal et al., 2018)."
  - "66% of the causes of CHF decompensation are preventable (Verdu-Rotellar, 2020).
  - "With the rapidly increasing number of older adults and the irreversible nature of heart failure, it poses an overwhelming burden requiring further efforts to reduce adverse health outcomes and improve quality of life." (Son et al., 2020, p. 2).

**References**