Acute HF syndrome

**Definition**
AHF is defined as a rapid onset of signs and symptoms secondary to abnormal cardiac functions. It may occur in patients with or without previous cardiac disease. It is always life threatening and need urgent management.

**Presentation**
AHF may present with any of the following:
1. Worsening or decompensated CHF
2. Acute pulmonary edema
3. Hypertensive AHF
4. Cardiogenic shock
5. Acute right sided HF
6. ACS with AHF

**Clinical profiles AHFS**

**Events usually leading to rapid deterioration**
- Rapid arrhythmia or severe bradycardia/conduction disturbance
- Acute coronary syndrome
- Mechanical complication of acute coronary syndrome (e.g., rupture of IV septum, MV chordal rupture, RV infarction)
- Acute pulmonary embolism
- Hypertensive crisis
- Cardiac tamponade
- Aortic dissection
- Surgery and perioperative problems
- Peripartum cardiomyopathy

**Events usually leading to less rapid deterioration**
- Infection (including infective endocarditis)
- Exacerbation of COPD/asthma
- Anaemia
- Kidney dysfunction
- Non-adherence to diet/drug therapy
- Iatrogenic causes (e.g., prescription of an NSAID or corticosteroid; drug interactions)
- Dysrhythmias not leading to sudden, severe change in heart rate
- Uncontrolled hypertension
- Hyperthyroidism or hypothyroidism
- Alcohol and drug abuse

**Precipitant and causes of AHFS**

**Clinical severity classification.**

<table>
<thead>
<tr>
<th>Class</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>warm and dry</td>
</tr>
<tr>
<td>II</td>
<td>warm and wet</td>
</tr>
<tr>
<td>III</td>
<td>cold and dry</td>
</tr>
<tr>
<td>IV</td>
<td>cold and wet</td>
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</tbody>
</table>

This classification has been validated in Cardiomyopathy

**Diagnosis of AHF**
Three parallel assessments must be made during the initial evaluation of the patient, aided by the investigations:
- Does the patient have HF or is there an alternative cause for their symptoms and signs (e.g. chronic lung disease, anaemia, kidney failure, or pulmonary embolism)?
- If the patient does have HF, is there a precipitant and does it require immediate treatment or correction (e.g. arrhythmia or ACS)?
- Is the patient's condition immediately life-threatening because of hypoxaemia or hypotension leading to underperfusion of the vital organs (heart, kidneys, and brain)?

**Lab investigations**

<table>
<thead>
<tr>
<th>Hematological</th>
<th>CBC</th>
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<tbody>
<tr>
<td></td>
<td>D-Dimer</td>
</tr>
<tr>
<td></td>
<td>INR</td>
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</tbody>
</table>

**Biochemical**

- BUN & serum creatinine
- Electrolytes
- Blood glucose

**Biomarkers**

- CRP
- Tn & CPK
- BNP

**Arterial blood gases**
### Monitoring in AHF

- ECG
- BP
- Pulse oximetry
- Urine output
- Body temperature
- CVP
- Arterial BP
- PCWP

### Goals & phases of AHFS management

<table>
<thead>
<tr>
<th>Phase I</th>
<th>Emergency management:</th>
<th>Rapid diagnostic workup with control of symptoms and life threatening condition</th>
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<tbody>
<tr>
<td>Phase II</td>
<td>In hospital management:</td>
<td>Continued treatment in hospital</td>
</tr>
<tr>
<td></td>
<td>1. Treatment of the correctable causes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Implementation of evidence based treatment</td>
<td></td>
</tr>
<tr>
<td>Phase III</td>
<td>Post discharge phase with close monitoring in this vulnerable period</td>
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### Lines of treatment of AHFS

1. Patient positioning
2. O2
3. IV diuretics
4. Opiates
5. Vasodilators
6. Inotropes
7. Vasopressors
8. Digitalis

### Treatment Options for Acute Decompensated Heart Failure

- Diuretics, Aquaretics, & Ultrafiltration
- Vasodilators
- Inotropes
- Natruretic Peptides

### Surgery in AHF

1. ACS and its complications
2. Acute valve lesions
3. Prosthetic valve dysfunctions
4. Acute aortic dissection

### Cardiac mechanical assist devices

- Intra-aortic balloon counter pulsations (IABP)
- Ventricular assist devices
  - Extracorporeal
    - Continuous
    - Centrifugal
    - Pulsatile
  - Intracorporeal
    - Implantable pulsatile
    - Total artificial heart

### Conclusions & take home message

- Acute HF is a common cardiac emergency that may face most of medical specialties
- Understanding of etiology precipitating factors and hemodynamic changes is very crucial in proper management of this emergency
- Early and energetic management is very important for improving the prognosis in this life-threatening condition
- The logic thinking and use of the guidelines can improve patient care and survival in this situation
- Clinical assessment, proper use of diagnostic modalities and good hemodynamic monitoring had markedly improve the management of this urgent situation
- Proper use of the different therapeutic modalities (medical, interventional and surgical) has definitely change the gloomy prognosis of AHF
- The new trend of establishment of HF clinics will add much in prevention and follow up of those patients

### ESC 2012 HF guidelines

*refer lecture*