

direction: down

```
insults: {  
  label: "Initial cardiac/systemic insults"  
  grid-columns: 6  
  
  ischemic: "Ischemic\ninjury / MI"  
  hypertension: "Hypertension /\npressure overload"  
  valvular: "Valvular\ndisease"  
  cardiomyopathy: "Cardiomyopathy /\nmyocarditis"  
  arrhythmia: "Arrhythmia"  
  toxic: "Toxic / metabolic /\ninfiltrative causes"  
}
```

```
cardiac: {  
  label: "Cardiac dysfunction"  
}
```

```
neurohormonal: {  
  label: "Compensatory neurohormonal activation"  
  
  cns: "CNS"  
  raas: "RAAS"  
  aldosterone: "Aldosterone"  
  vasopressin: "Vasopressin"  
  inflammation: "Inflammation /\nendothelin"  
}
```

```
remodeling: {  
  label: "Ventricular remodeling"  
  
  hypertrophy: "Hypertrophy"  
  fibrosis: "Fibrosis"  
  dilation: "Dilation /\nspherical geometry"  
  functional: "Functional\nMR / TR"  
  arrhythmogenic: "Arrhythmogenic\nsubstrate"  
  wallstress: "Increased\nwall stress"  
}
```

```
left_pathway: {  
  label: "Left-sided (pulmonary) pathway"  
  
  consequences: {  
    label: "Consequences"  
  
    dyspnea: "Dyspnea"  
    orthopnea: "Orthopnea"  
    pnd: "PND"  
    edema: "Interstitial\nalveolar edema"  
    pleural: "Pleural\neffusions"  
  }  
}
```

```
right_pathway: {
```

```

label: "Right-sided (systemic venous) pathway"

consequences: {
  label: "Consequences"

  jvp: "JVP\nelevation"
  peripheral: "Peripheral\nedema"
  ascites: "Ascites"
  hepatomegaly: "Hepatomegaly"
}
}

cardiorenal: {
  label: "Cardiorenal syndrome"

  consequences: {
    label: "Consequences"

    perfusion: "Reduced renal\nperfusion"
    retention: "Na+/water\nretention"
    azotemia: "Azotemia"
  }
}

hepatic: {
  label: "Congestive hepatopathy /\nlow-flow injury"

  consequences: {
    label: "Consequences"

    enzymes: "Elevated liver\nenzymes"
    bilirubin: "Bilirubin\nelevation"
    synthetic: "Impaired\nsynthetic function"
  }
}

systemic: {
  label: "Systemic consequences"

  consequences: {
    label: "Consequences"

    fatigue: "Fatigue"
    cachexia: "Cachexia"
    cognitive: "Cognitive\nimpairment"
  }
}

cycle: {
  label: "Self-amplifying vicious cycle"

  text: "Myocardial dysfunction → neurohormonal activation →
congestion → end-organ dysfunction → further worsening heart
failure"
}

```

}

insults -> cardiac

cardiac -> neurohormonal

neurohormonal -> remodeling

remodeling -> cardiac: "Progressive\ndeterioration"

cardiac -> left_pathway

cardiac -> right_pathway

cardiac -> cardiorenal

cardiac -> hepatic

neurohormonal -> systemic

cardiorenal -> cardiorenal

left_pathway -> cycle

right_pathway -> cycle

hepatic -> cycle

systemic -> cycle

cycle -> cardiac