CIRCULATORY SHOCK OYO handout

(Text info begins p. 740 / 719 with excellent flow chart p. 741 / 720)

Great article at http://www.mhhe.com/biosci/ap/vdgconcepts/cardio/reading9.mhtml

- **Definition: Inadequate BF throughout the body or inadequate perfusion to meet the needs of the tissues**

- **Tissues become ischemic and hypoxic.**
  - **If severe enough... tissues could be damaged or die (infarction).**
  - **Brain, Heart, and Kidneys are especially vulnerable.**

- **Many types with names based on cause:**
  - **Hypovolemic shock (a.k.a. hemorrhagic shock) – loss of blood volume causes the drop in BP**

  - **Vascular shock – vasodilation causes BP to fall.**
    This category includes:
    - **Neurogenic shock – vasodilation due to damage of vasomotor center or spinal cord ↓sympathetic impulses to vessels**
    - **Anaphylactic shock – allergic reaction causes vasodilation**
    - **Septic shock – bacterial toxins cause vasodilation**

  - **Cardiogenic shock– poor pumping action of the heart cannot generate sufficient BP**

3 STAGES OF SHOCK **OYO handout**

1. **COMPENSATED STAGE**

   Has been a <u>temporary deficit</u> of BP / BF but your homeostatic mechanisms regulating BP have kicked in and are maintaining sufficient BF

   - **Baroreceptor reflexes & possibly Chemoreceptor reflexes**
   - **Renin-angiotensin-aldosterone mechanism**
   - **Vasopressin / ADH**
   - **Fluid Shift**

   Some or all of above may be involved depending on severity.

2. **PROGRESSIVE STAGE**

   - **reduced BF <u>to the heart</u> reduces pumping efficiency of the heart**
   - **slow moving blood might clot in smaller vessels**
   - **Hypoxic tissues try to regulate their BF <u>locally</u> by ↑perm. of nearby capillaries and by dilating nearby vessels thus systemic BP ↓ even further and ↓BF to heart even more.... (a PFBM)**

   Treatment:

   - **"<u>fluid challenge</u>" Give fluids by IV to boost BV and BP**
   - **give <u>vasoconstrictive drugs</u> such as dopamine to boost BP**
   - **<u>anti-inflammatory meds</u> to reduce dilation and permeability of vessels**

3. **IRREVERSIBLE STAGE**

   - **Damage has been done.**
   - **Ischemia and hypoxia have produced <u>multiple infarctions</u> in <u>multiple organs.</u>**
   - **Even if BV and BP are restored by medical care, tissues will continue to progressively fail.**
   - **Organ failure and death are inevitable.**