SHOCK

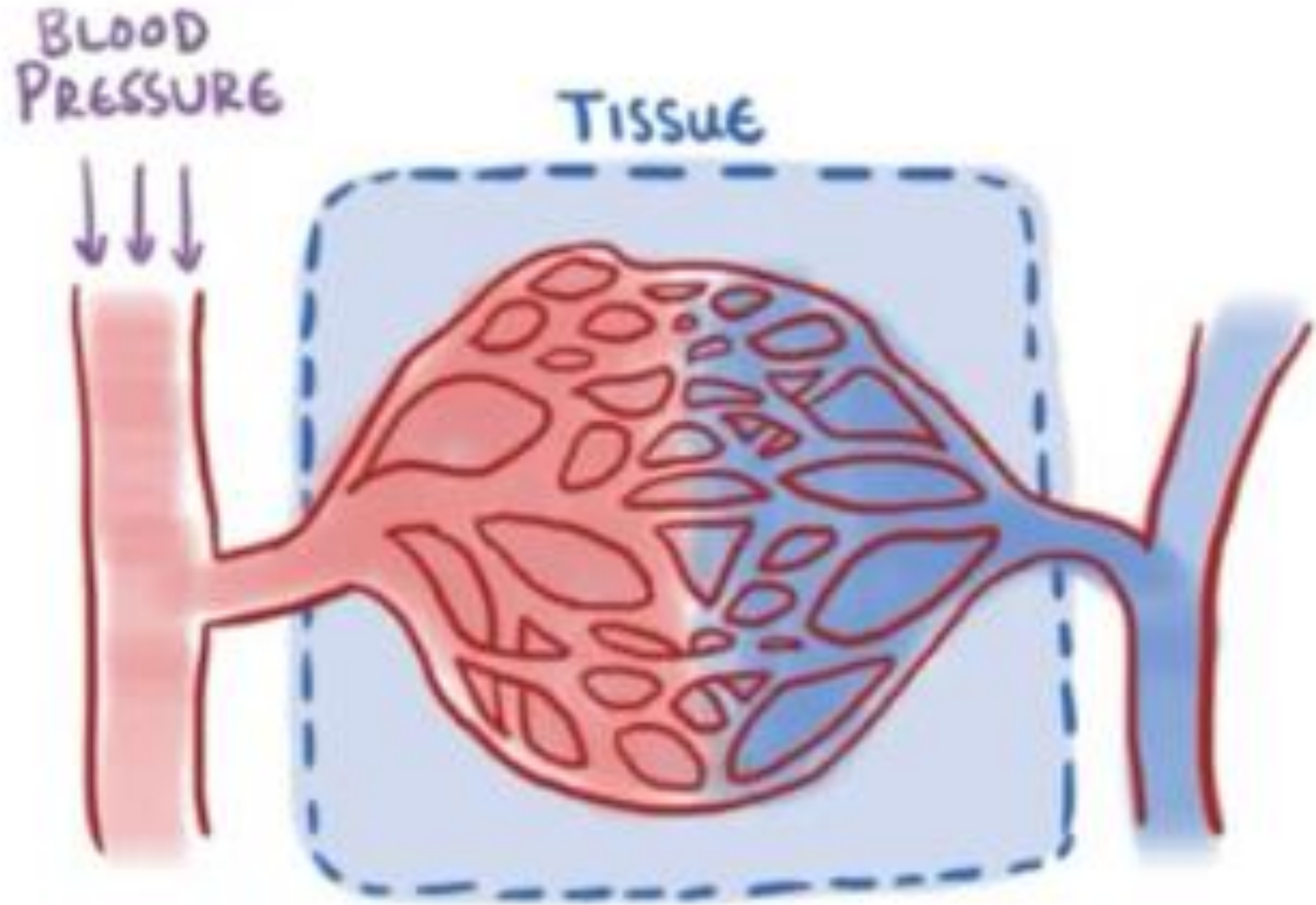
CAPT (GN) KWESI O NSAFUL

Shock

- **Shock is the clinical manifestation of failure of cellular function due to inadequate tissue perfusion and subsequent cellular hypoxia resulting from a reduction in the effective circulating blood volume**

Shock

- Shock is the clinical manifestation of ***Failure of Cellular Function*** due to ***Inadequate Tissue Perfusion*** and ***Subsequent Cellular Hypoxia*** resulting from a ***Reduction in the Effective Circulating Blood Volume***


BLOOD
PRESSURE
TISSUE

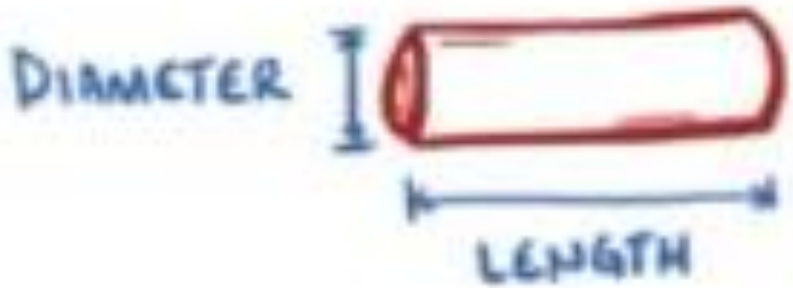
Shock

- **Blood Pressure** Depends on Resistance & Cardiac Out Put

Shock

BLOOD PRESSURE

RESISTANCE to FLOW



×

CARDIAC OUTPUT (BLOOD PUMPED / MINUTE)

HEART RATE (BEATS / MIN)

×

STROKE VOLUME (BLOOD PUMPED / BEAT)

END DIASTOLIC VOLUME (after filling)

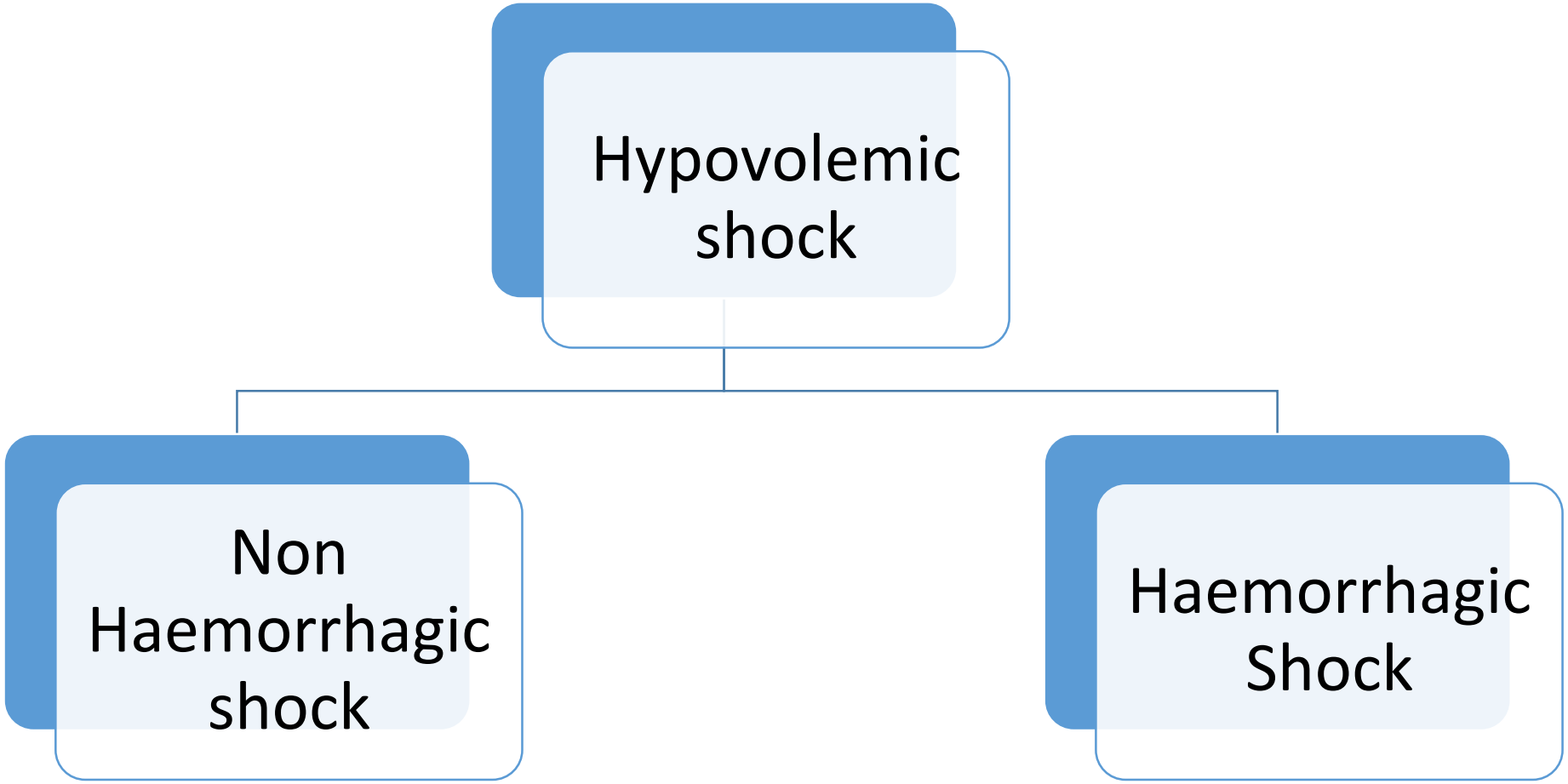
−

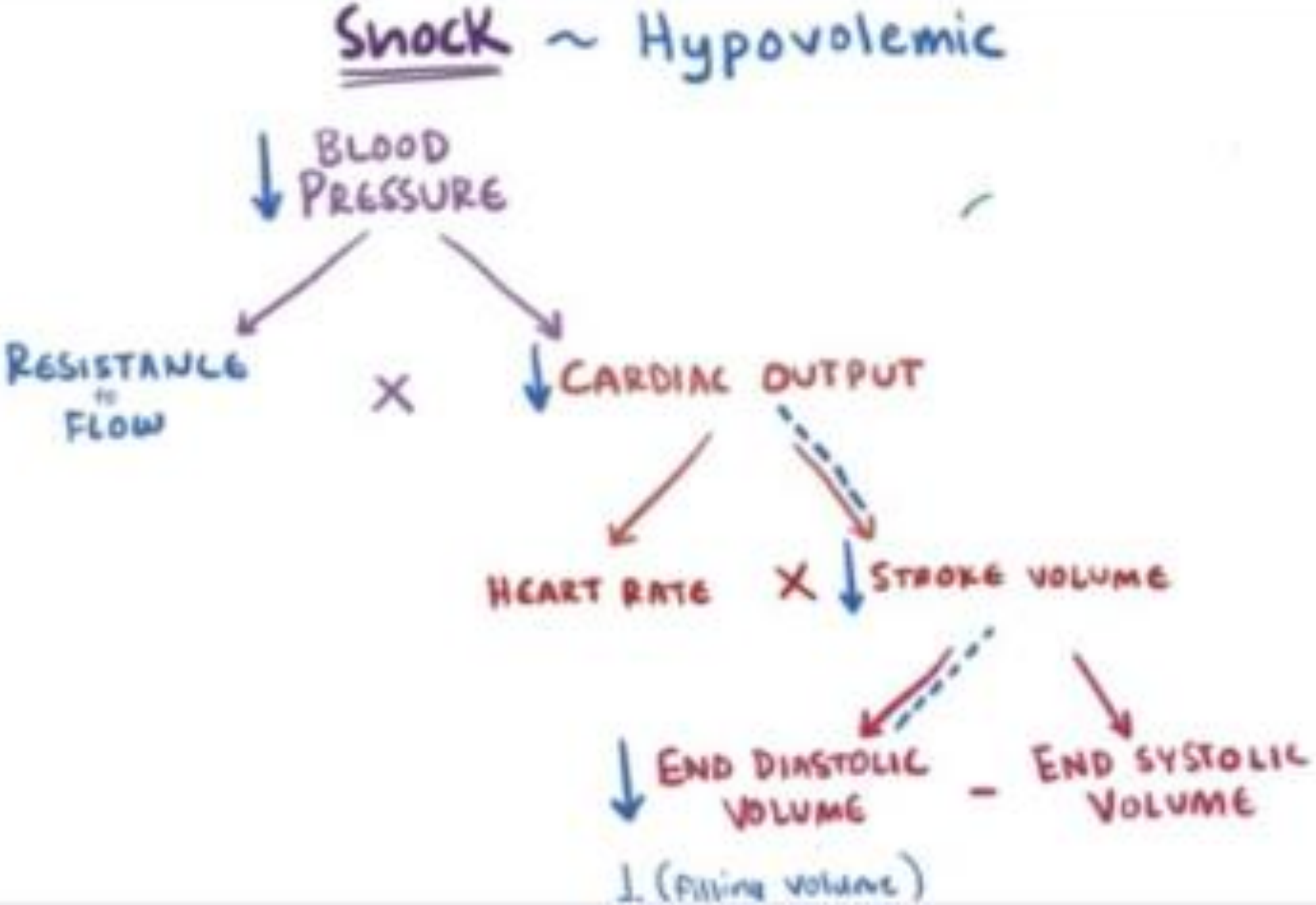
END SYSTOLIC VOLUME (after contraction)

Types of Shock

- Hypovolemic Shock
- Cardiogenic Shock
- Distributive Shock

Hypovolemic Shock



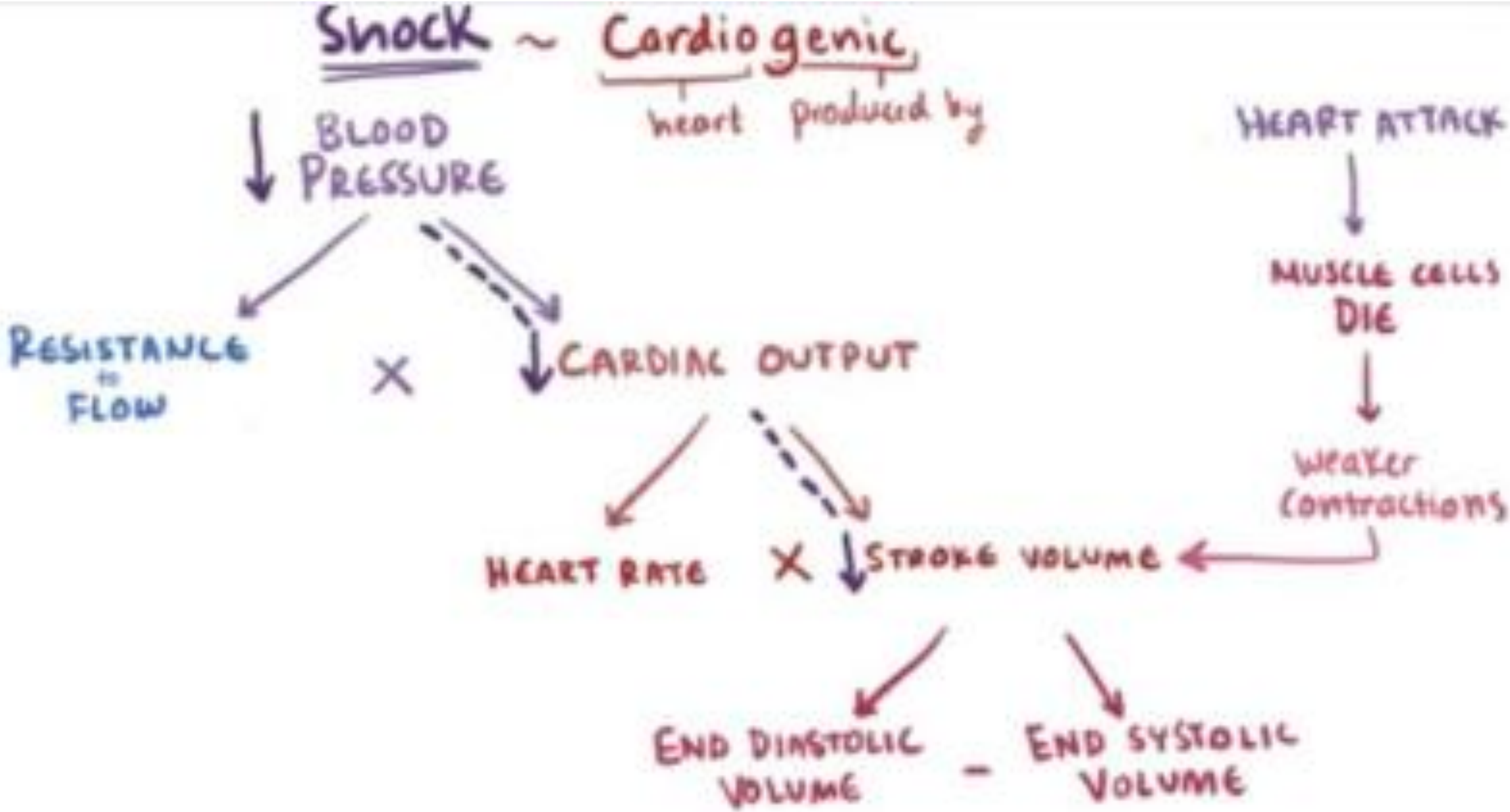

Shock ~ Hypovolemic
BLOOD PRESSURE
RESISTANCE TO FLOW
X
CARDIAC OUTPUT
HEART RATE
X
STROKE VOLUME
END DIASTOLIC VOLUME
-
END SYSTOLIC VOLUME
↓ (FILLING VOLUME)

Hypovolemic Shock

- There is Reduced Blood Flow – the skin is Cold and Clammy
- COLD SHOCK

Cardiogenic Shock

- Occurs as a result of Inability of the Cardiac Muscles to Function optimally


Shock ~ Cardiogenic
heart
produced by
BLOOD PRESSURE
RESISTANCE to FLOW
×
CARDIAC OUTPUT
HEART RATE
×
STROKE VOLUME
HEART ATTACK
MUSCLE CELLS DIE
weaker contractions
END DIASTOLIC VOLUME
-
END SYSTOLIC VOLUME

Cardiogenic Shock

- There is Reduced Blood Flow – the skin is Cold and Clammy
- COLD SHOCK

Distributive Shock

- Excessive Vasodilatation
- Leaky Blood Vessels

Shock ~ Distributive

- # leaky blood vessels
- # excessive vasodilation (widening of vessels)

↓ BLOOD PRESSURE

↓ RESISTANCE to FLOW

VASODILATION

×

CARDIAC OUTPUT

HEART RATE × STROKE VOLUME

END DIASTOLIC VOLUME − END SYSTOLIC VOLUME

Distributive Shock

Causes

- Septic Shock
- Bacteria Release
    - Nitric Oxide
    - Complement Pathway (Mast cells- Histamine)
    - Cytokines (TNF, IL-1)
    - Platelet Activation Factor

Distributive Shock

Causes

- **Anaphylactic Shock** – Allergic Reaction *Leading to* Low Blood Pressure
- **Neurogenic Shock** – Damaged CNS *Leading to* Low Blood Pressure

Distributive Shock

Causes

- **Septic Shock**
- **Anaphylactic Shock**
- **Neurogenic Shock**

Distributive Shock

- There is Increased Blood Flow – the skin is warm and flushed
- WARM SHOCK

Treatment of Shock

Depends on the Cause/ Type of Shock

- The Aim is to Stabilize Blood Pressure so that Vital Organs are Perfused with Blood
- Fluid Replacement
- Medications
    - Increase Heart Contractility
    - Increase Vasoconstriction
    - Retain Fluids
    - Antibiotics

Treatment of Shock

Add-ons

- Supplemental Oxygen
- Airway Protection

Summary

- Shock – Failure in Tissue Perfusion

- Hypovolemic Shock
- Cardiogenic Shock
- Distributive Shock

- Treatment Depends on Cause/Type of Shock