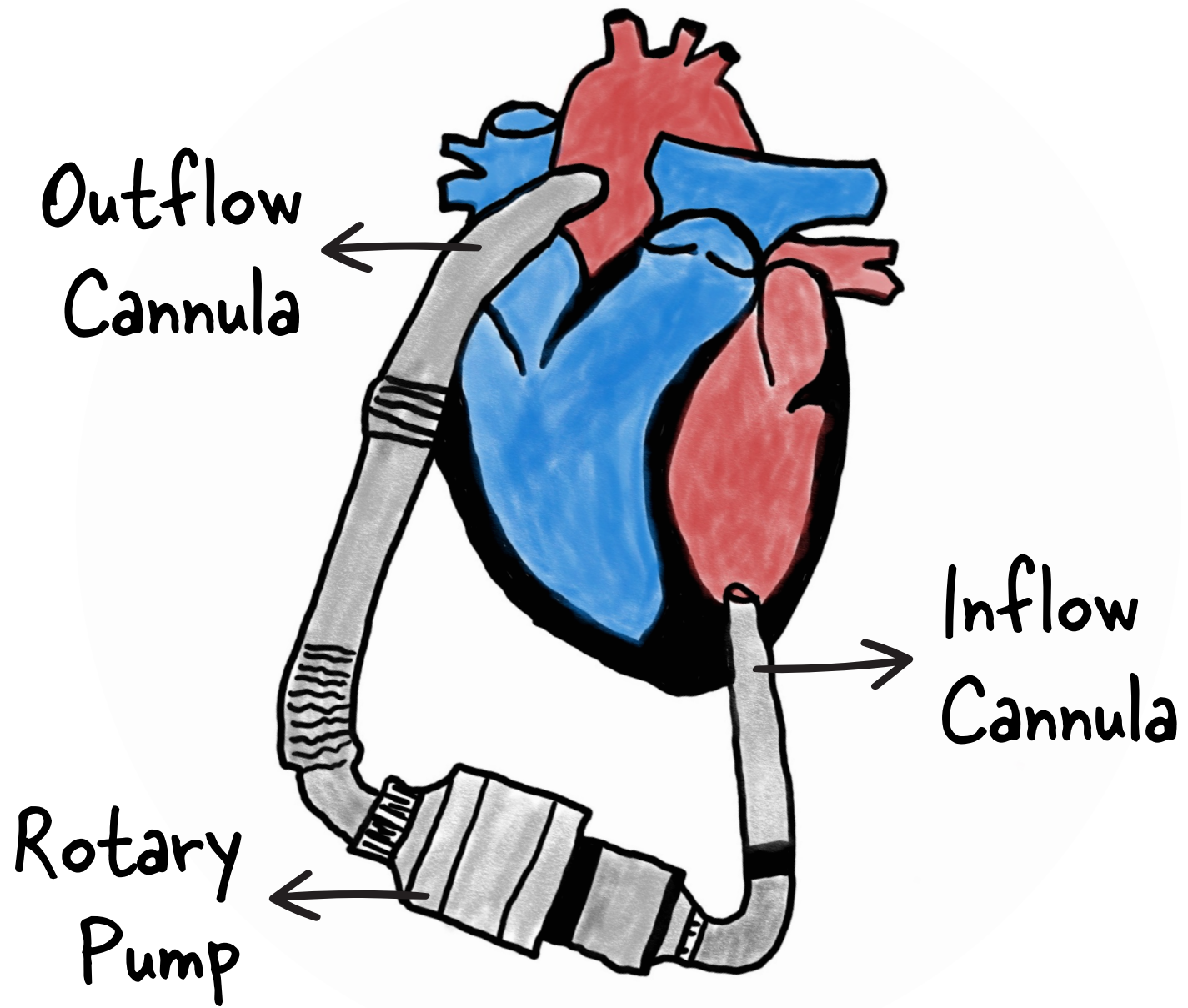
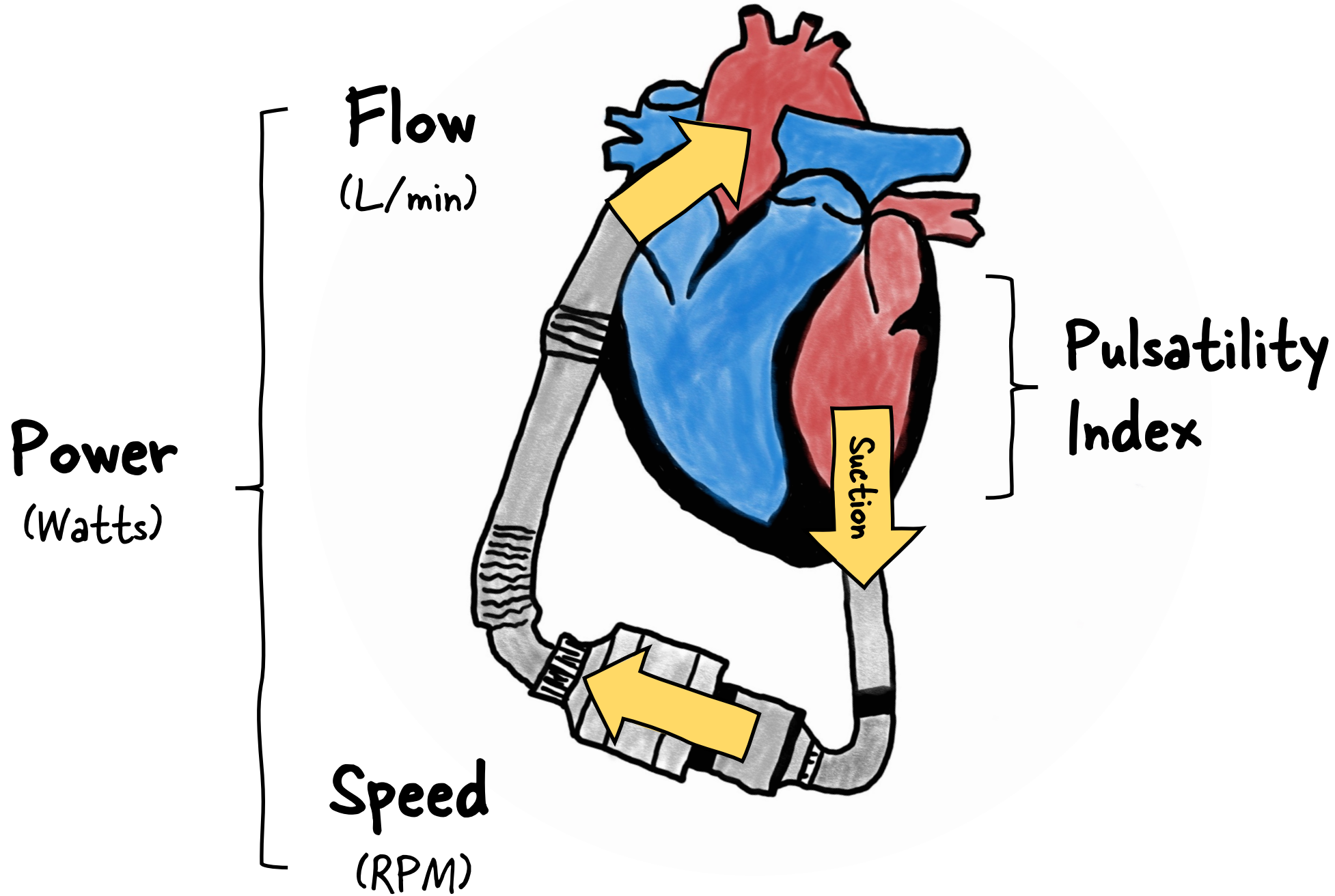


APPROACH TO LVADS IN THE EMERGENCY DEPARTMENT







Monitor

Driveline

Patient

Flow

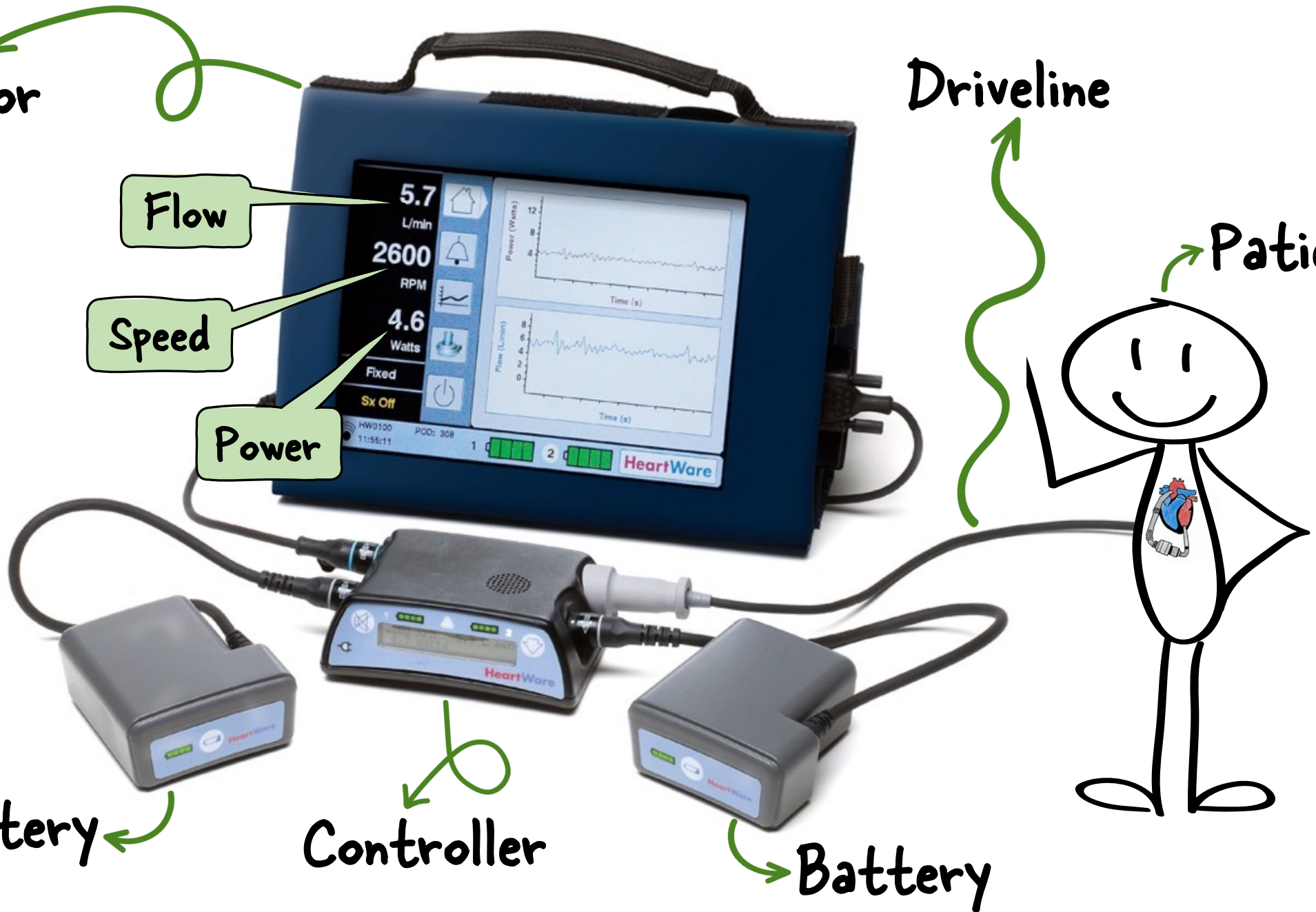
Speed

Power

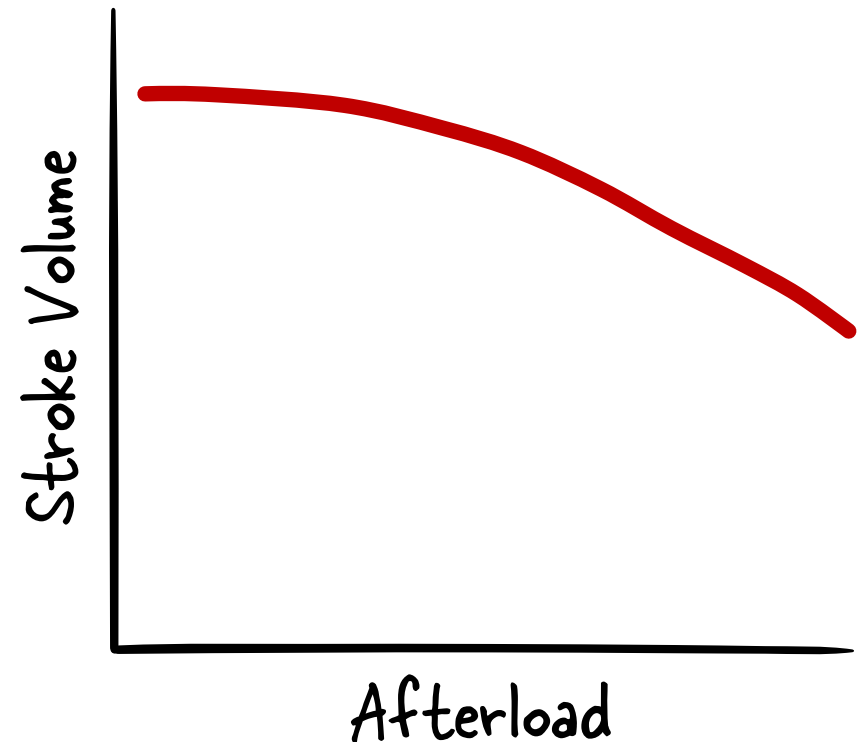
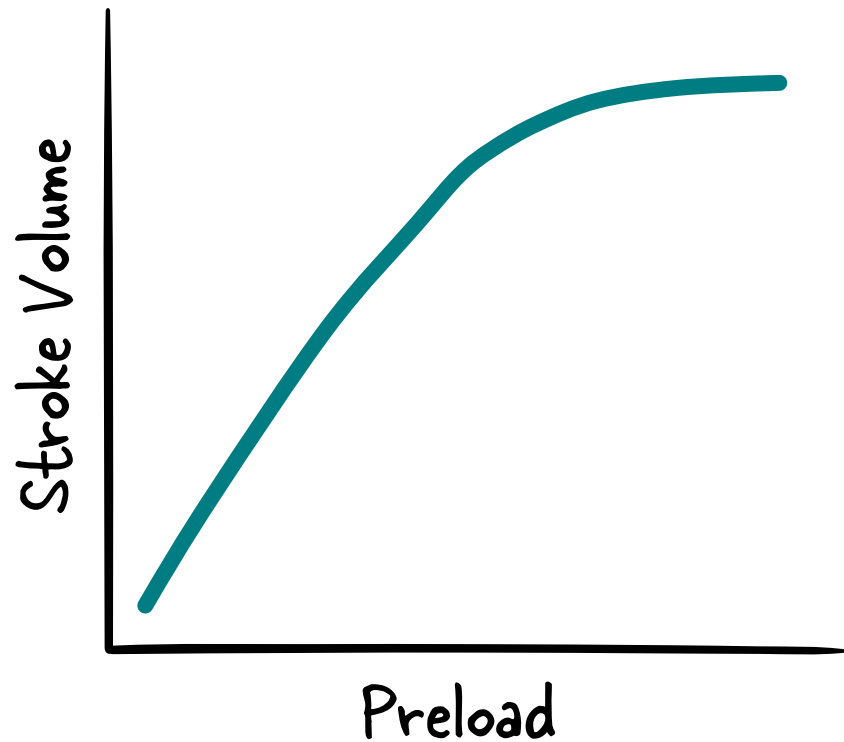
Battery

Controller

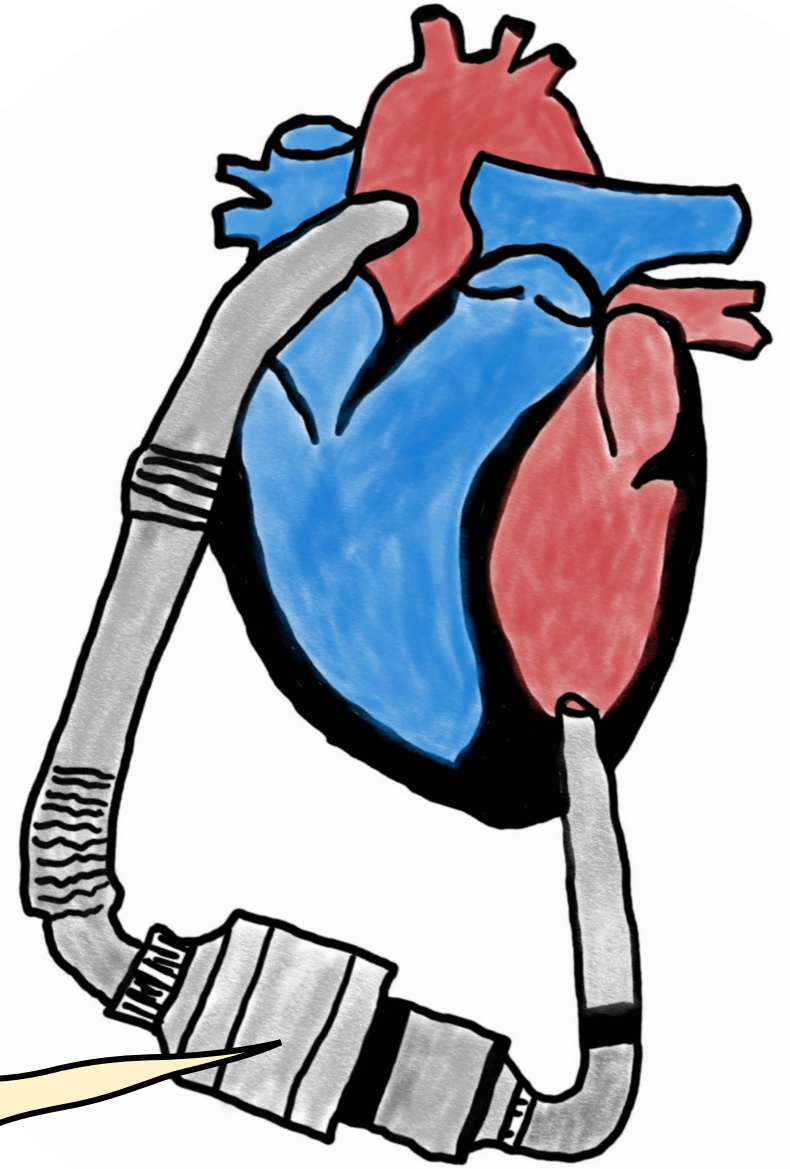
Battery



HEARTS RESPOND DYNAMICALLY TO ALTERATIONS IN PRELOAD AND AFTERLOAD



LVADs ARE PRELOAD
DEPENDENT AND
AFTERLOAD SENSITIVE



Same speed... no matter
what else is happening!

PATH TO LVAD ZEN

- 1) Call for Help!
- 2) Patient Perfusing?
- 3) Device Functional?
- 4) Category of Problem?
- 5) Differential Diagnosis?



PATH TO LVAD ZEN

- 1) Call for Help!
- 2) Patient Perfusing?
- 3) Device Functional?
- 4) Category of Problem?
- 5) Differential Diagnosis?





**KEEP
CALM
AND
CALL THE
LVAD
COORDINATOR**

PATH TO LVAD ZEN

- 1) Call for Help!
- 2) Patient Perfusing?**
- 3) Device Functional?
- 4) Category of Problem?
- 5) Differential Diagnosis?



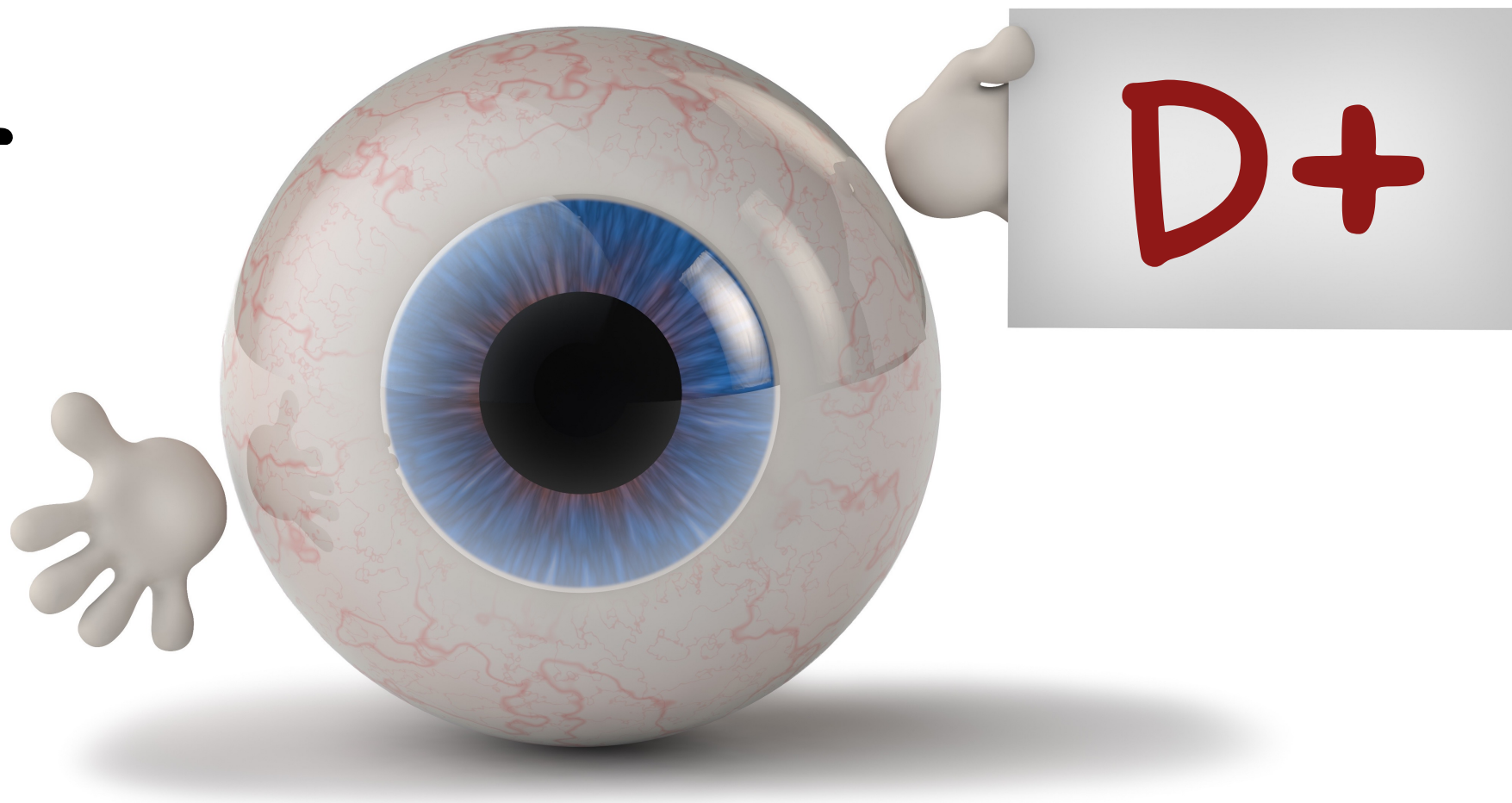
ALL ABOUT
THE MAP:

MANUAL DOPPLER

A-LINE



EYEBALL TEST





**MENTAL
STATUS**

INTUBATED
PATIENT?

ETCO₂ > 20



PATH TO LVAD ZEN

- 1) Call for Help!
- 2) Patient Perfusing?
- 3) Device Functional?**
- 4) Category of Problem?
- 5) Differential Diagnosis?





LISTEN TO
THE CHEST
FOR A HUM



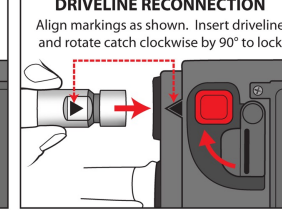
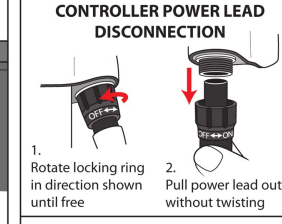
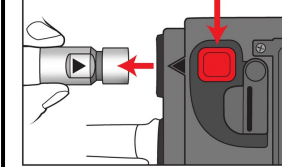
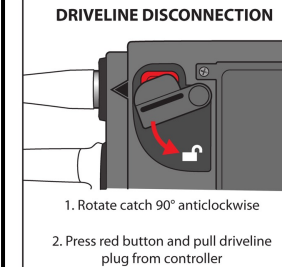
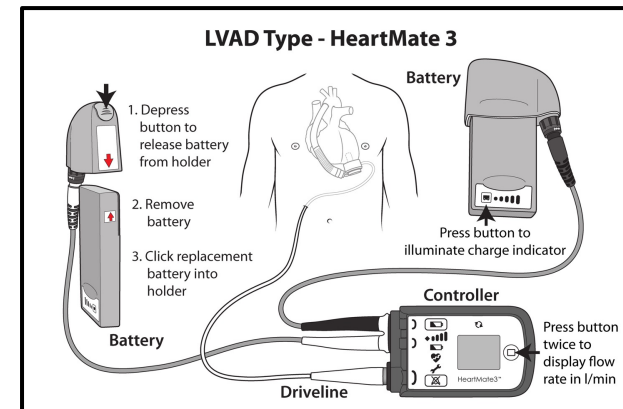
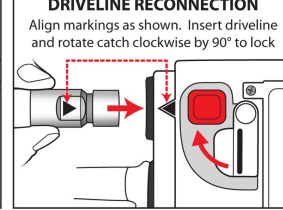
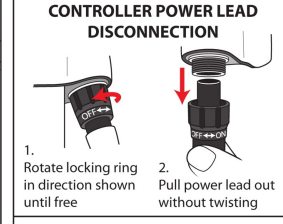
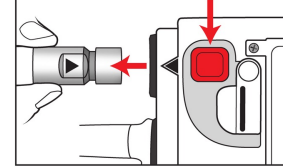
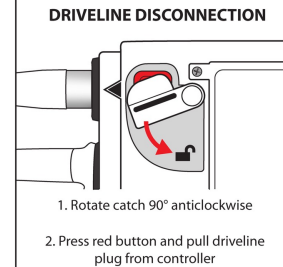
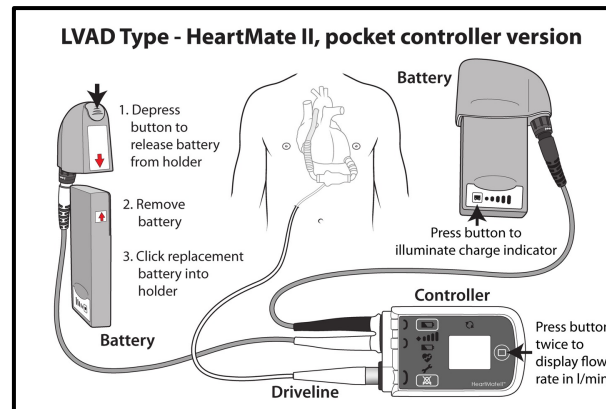
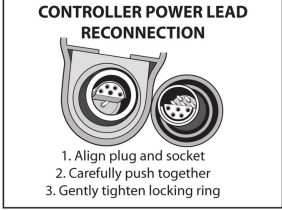
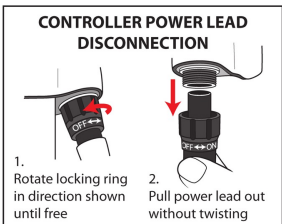
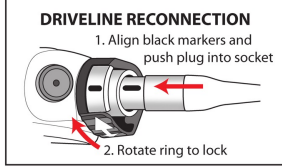
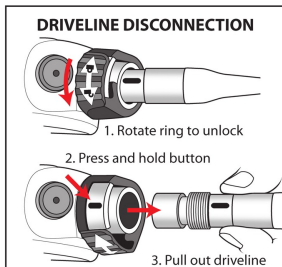
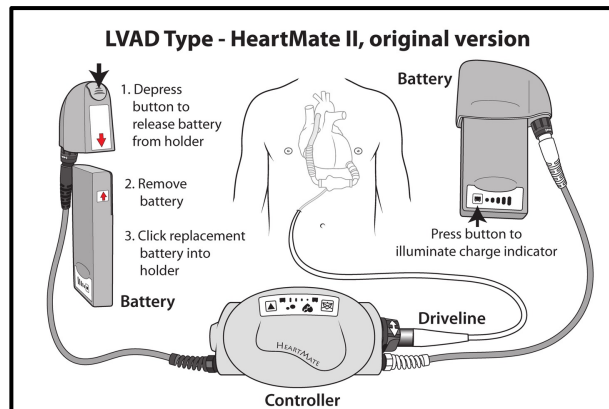
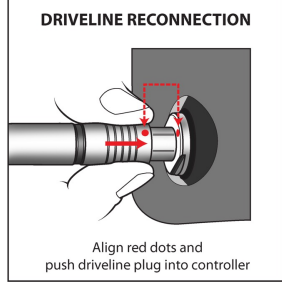
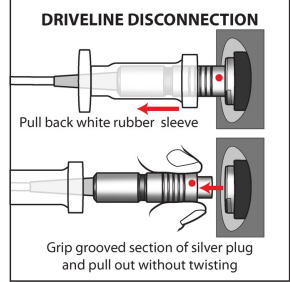
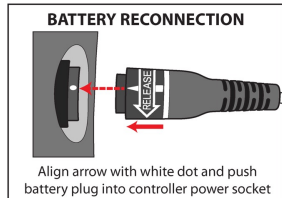
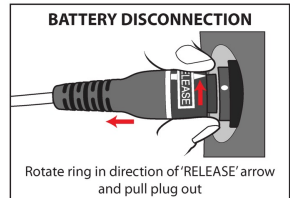
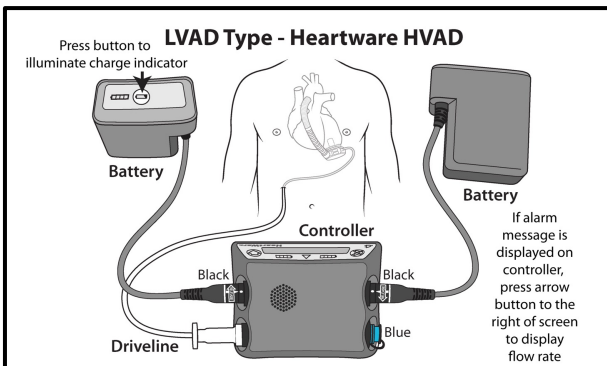
Low Power:
Device low on batteries
or otherwise broken NOS

High Power:
Pump Thrombosis



LOOK AT THE CONTROLLER

CHECKING LVAD CONNECTIONS





DEVICE NOT
FUNCTIONING
AND PATIENT
NOT PERFUSING?



American
Heart
Association®

Peberdy et al. *Circulation* 2017;125(24):e1115-1134

Cardiopulmonary Resuscitation in Adults and Children With Mechanical Circulatory Support: A Scientific Statement From the American Heart Association

“The group’s current consensus was that withholding chest compressions in a patient with a VAD who is truly in circulatory failure that is not attributable to a device failure would cause more harm to the patient than the potential to dislodge the device”

PATH TO LVAD ZEN

- 1) Call for Help!
- 2) Patient Perfusing?
- 3) Device Functional?
- 4) Category of Problem?**
- 5) Differential Diagnosis?



RIGHT
VENTRICLE

LEFT
VENTRICLE

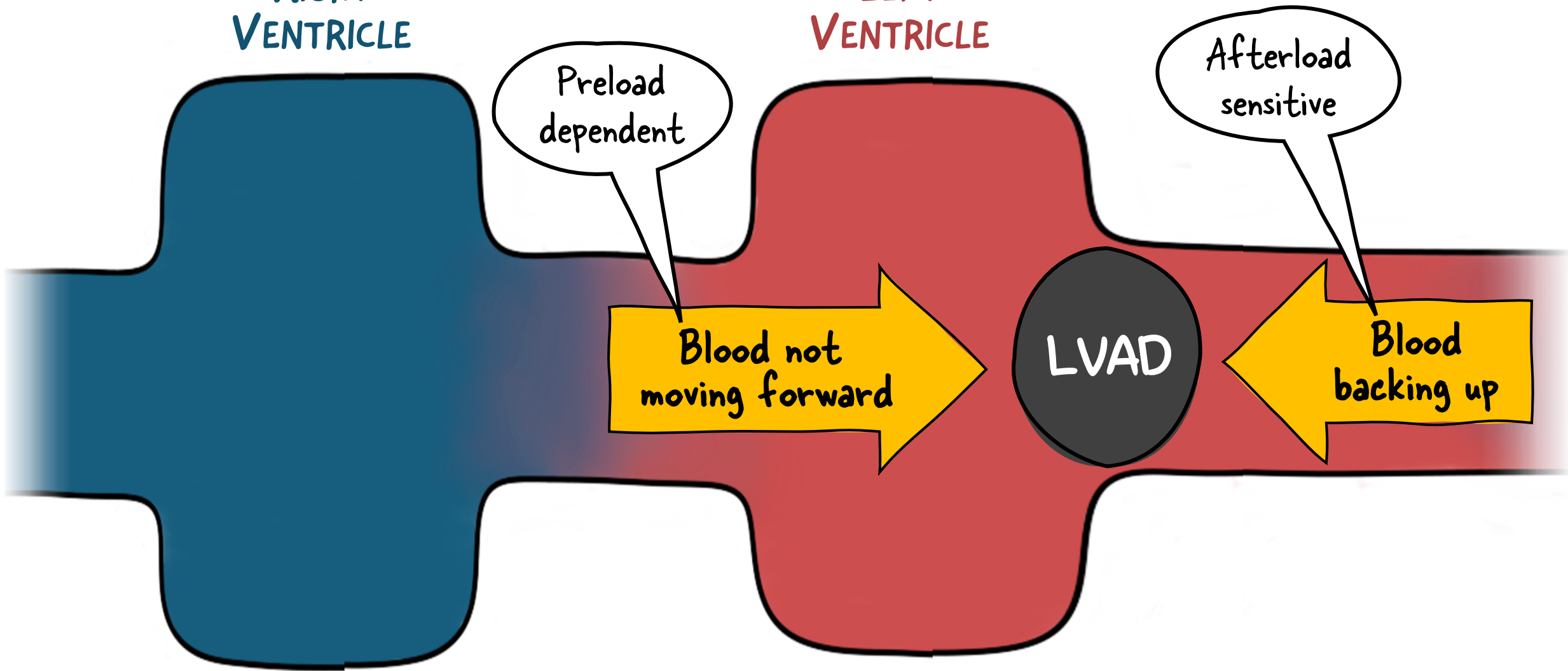
Preload
dependent

Afterload
sensitive

Blood not
moving forward

LVAD

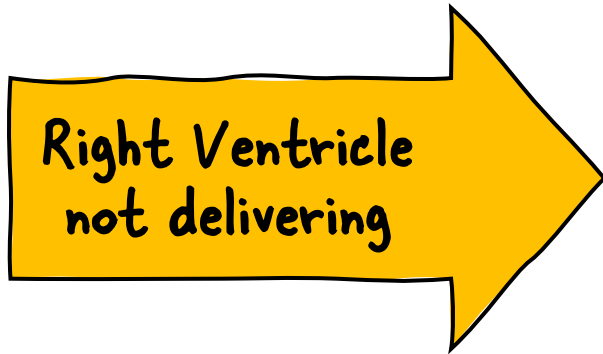
Blood
backing up



SMALL LV

+

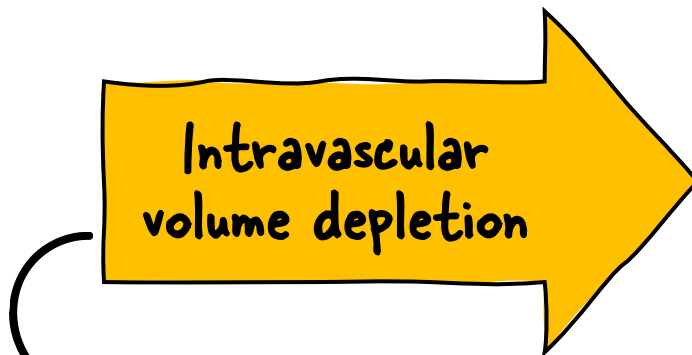
BIG RV



SMALL LV

+

SMALL RV

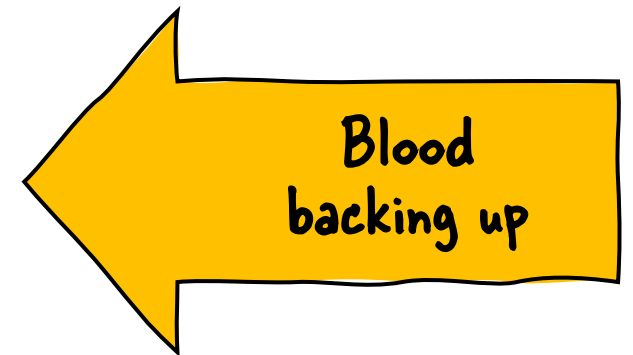


High Flow if vasodilation

BIG LV

+

BIG RV



Low Flow

Suction Event → Can cause VT



Low Flow

PATH TO LVAD ZEN

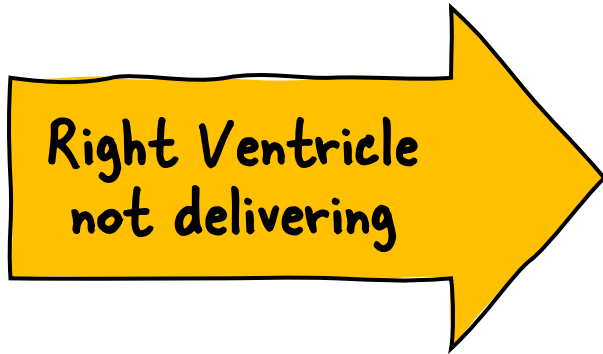
- 1) Call for Help!
- 2) Patient Perfusing?
- 3) Device Functional?
- 4) Category of Problem?
- 5) **Differential Diagnosis?**



SMALL LV

+

BIG RV



Pulmonary HTN

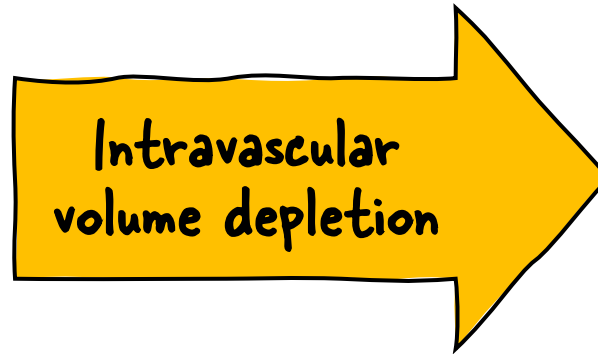
Massive PE

RV Failure

SMALL LV

+

SMALL RV



GI Bleed

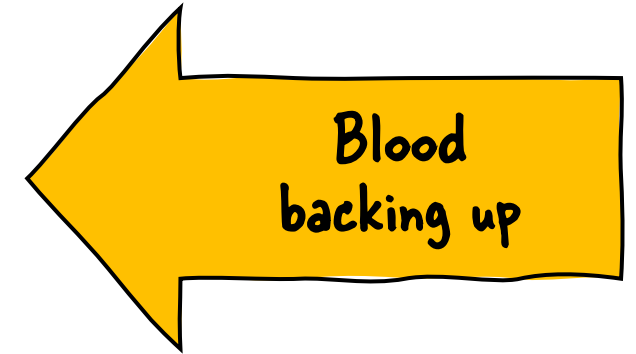
Sepsis

Hypovolemia

BIG LV

+

BIG RV



Hypertension

Volume Overload

Pump Thrombosis