

Cardiovascular System

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cardiovascular system

- heart
- blood vessels
- blood

2

2

factors which can be changed

- heart
 - rate
 - force
- blood vessels
 - tone
- blood
 - volume
 - composition

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common problems

- heart disease
- injury
- anaesthesia
- shock

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heart

- **conducting system**
- **myocardium**
- **blood supply**
- **valves**
- **nerve supply**

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heart

- **conducting system**
 - antiarrhythmics
 - chronotropes
- **myocardium**
- **blood supply**
- **valves**
- **nerve supply**

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heart

- **conducting system**
- **myocardium**
 - inotropes
- **blood supply**
- **valves**
- **nerve supply**

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heart

- **conducting system**
- **myocardium**
- **blood supply**
 - vasodilators
- **valves**
- **nerve supply**

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heart

- **conducting system**
- **myocardium**
- **blood supply**
- **valves**
 - vasodilators
 - (surgery)
- **nerve supply**

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heart

- **conducting system**
- **myocardium**
- **blood supply**
- **valves**
- **nerve supply**
 - chronotropes

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consequences of HF

- **upstream pressure increases**
 - increased preload
- **downstream pressure goes down**
 - vasoconstriction
 - increased afterload

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consequences of HF

- **blood dams back in lungs**
 - pulmonary oedema
- **blood dams back in body**
 - ascites & peripheral oedema
- **lack of forward flow to muscles and lungs**
 - tissue hypoxia

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heart failure

- cardiac arrest
- acute heart failure
- chronic (congestive) heart failure

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cardiac arrest

- prevention is better than cure!
- treat the causes before it happens!

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What would you do?

- 7 year old fluffy dog
- not breathing
- no palpable pulse

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cardiac arrest

- Airway
- Breathing
- Circulation
- Drugs
- ECG etc

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drugs

- **asystole**
 - atropine
 - adrenaline
 - bicarbonate

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drugs

- **ventricular fibrillation**

18

drugs

- **ventricular fibrillation**
 - DC defibrillation

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drugs

- **ventricular fibrillation**
 - DC defibrillation
 - (lignocaine)
 - adrenaline
 - bicarbonate

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problems after CPR

- hypoxic myocardium & brain
- acidosis
- bruising of myocardium
- lung contusions / pneumothorax
- broken ribs

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acute heart failure

- after CPR
- anaesthetic overdose
- pericarditis
- metabolic illness
- progressive CHF

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severe acute heart failure treatment priorities

- 1 avoid excitement
 - sedate if necessary
 - benzodiazepine ± opioid
- 2 give oxygen
 - oxygen cage
 - mask
 - nasal tube
- 3 place large bore iv catheter
 - sedate if necessary
 - benzodiazepine ± opioid
 - cut down if necessary
 - local anaesthetic
- 4 give furosemide iv
 - 1-2 (up to 8 in dogs)mg/kg/hr
- 5 attach ECG machine
- 6 make diagnosis
 - x rays, ultrasound, etc
- 7 drugs
 - vasodilators
 - inotropes
 - antiarrhythmics
 - fluids

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cardiac arrest

- **Airway**
- **Breathing**
- **Circulation**
- **persist for 15 mins**
- **if resuscitation successful, treat for acute heart failure**