

Sympathomimetic Inotropes



sympathomimetic inotropes

- used for acute heart failure





horse with colic

150 mmHg

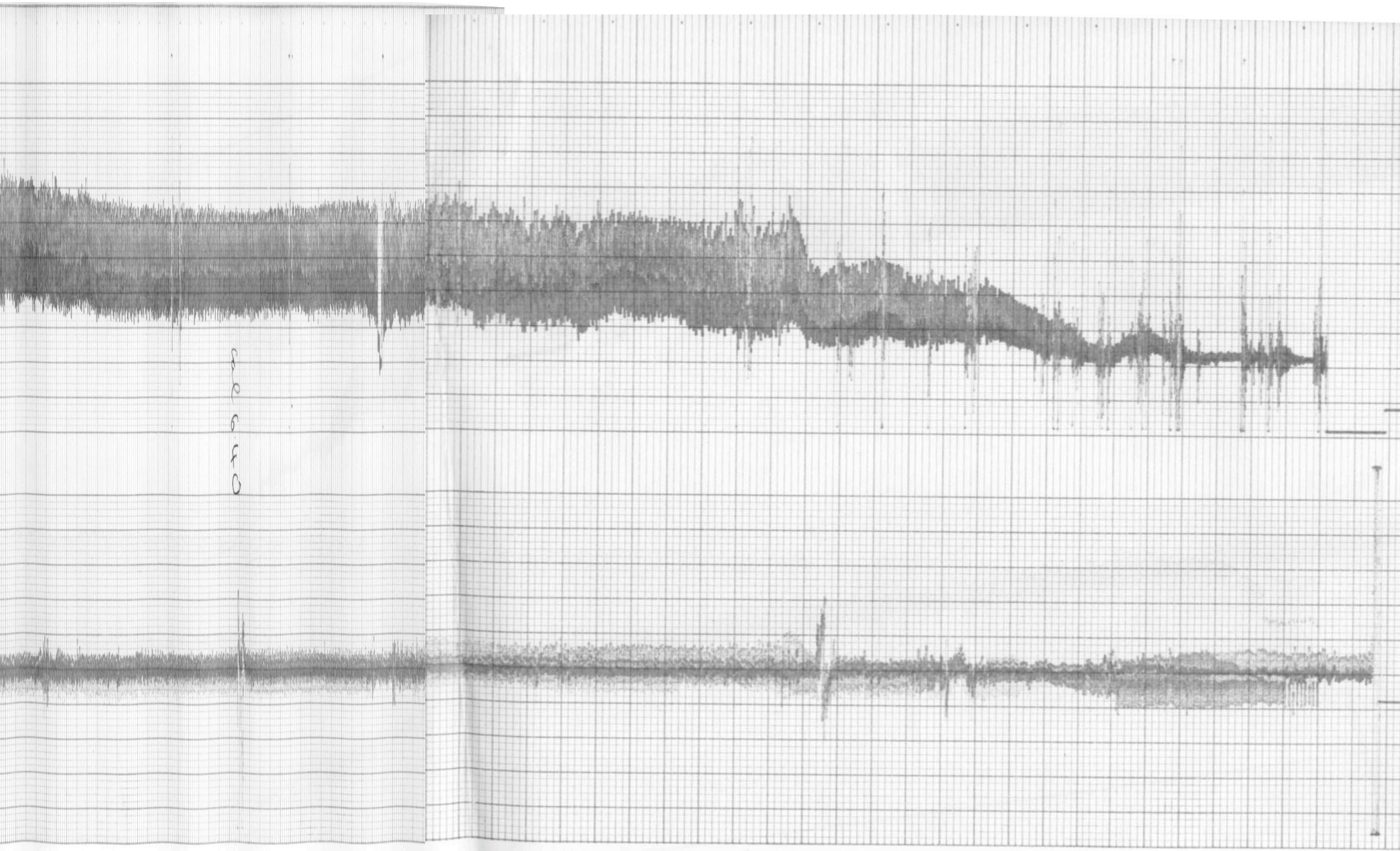


0 mmHg



ECG





problems

- **endotoxaemia**
 - reduced cardiac output
 - vasodilatation
- **shock**
- **hypoxia**
- **halothane side effects**



acute heart failure

- **objective**

- get oxygenated blood to myocardium and brain



drugs?



drugs

- oxygen
- positive inotropes
- fluids
- antiarrhythmics
- vasodilators



positive inotropes

- sympathomimetics
- cardiac glycosides
- phosphodiesterase inhibitors



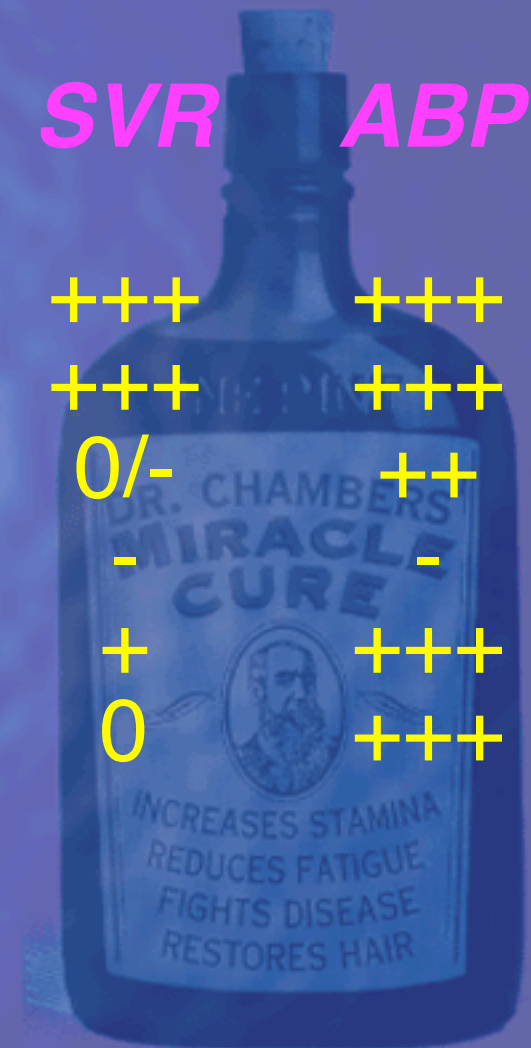
sympathomimetics

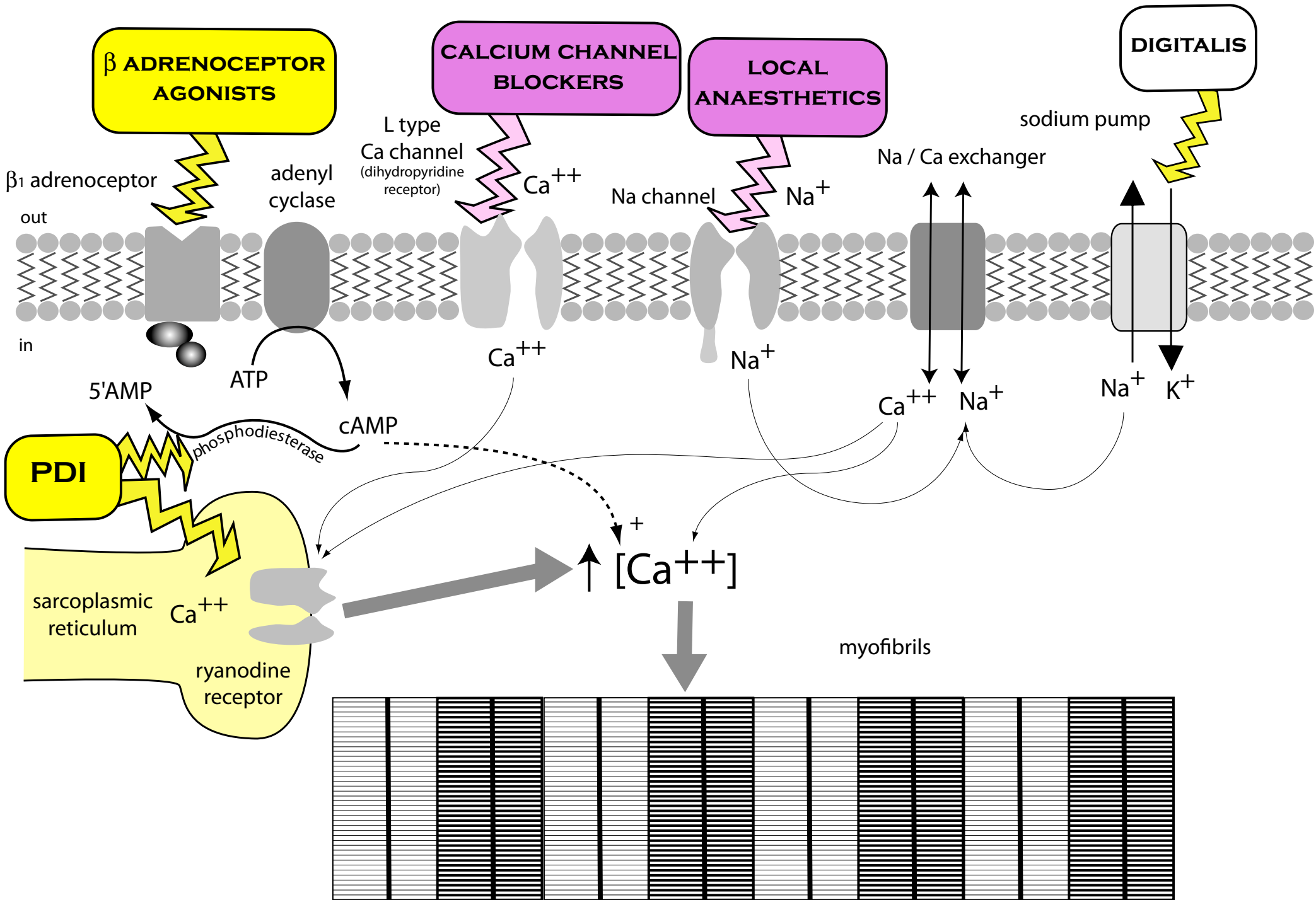
receptor	α_1	α_2	β_1	β_2
adrenaline	+++	+++	++	++
noradrenaline	+++	+++	+	0
dopamine	0	0	++	0
isoprenaline	0	0	+++	+++
dobutamine	0	0	+++	0
dopexamine	0	0	+++	0



sympathomimetics

<i>effect on</i>	<i>rate</i>	<i>force</i>	<i>SVR</i>	<i>ABP</i>
adrenaline	++	+++	+++	+++
noradrenaline	-	0/+	+++	+++
dopamine	0	+++	0/-	++
isoprenaline	+++	+++	-	-
dobutamine	+	+++	+	+++
dopexamine	0/+	+++	0	+++





indications

- acute heart failure
- congestive heart failure
- haemostasis
- anaphylaxis



side effects

- tachycardia
- hypertension
- arrhythmias
 - ventricular tachyarrhythmias
- tolerance



pharmacokinetics

- half life of minutes
- must be given iv
- usually given as an infusion



monitoring effects

- is it necessary?
- ECG
- direct blood pressure

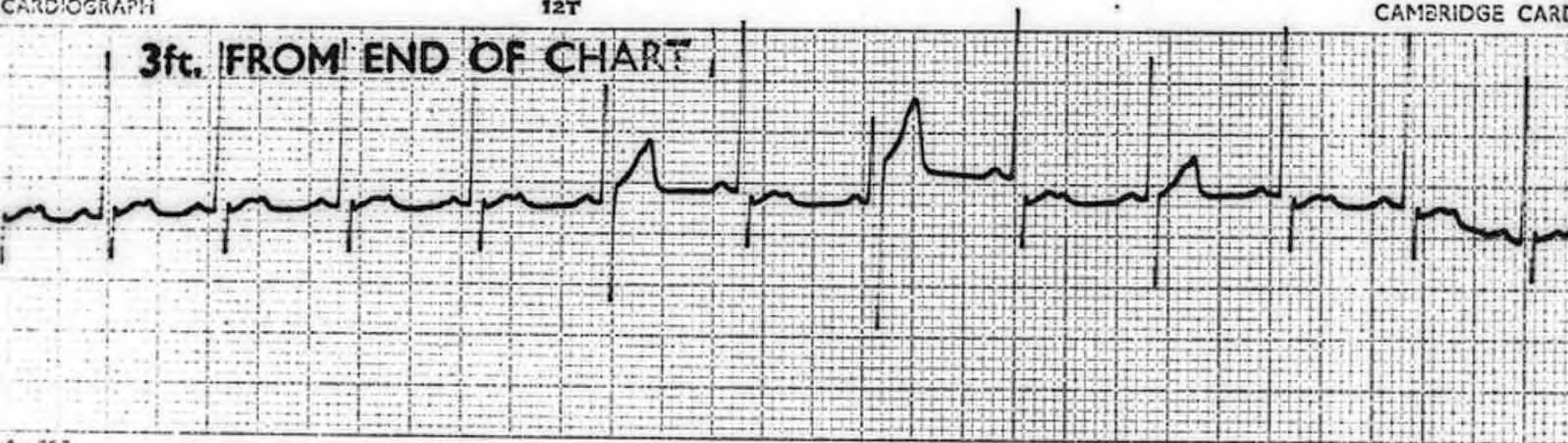


CARDIOGRAPH

12T

CAMBRIDGE CARD

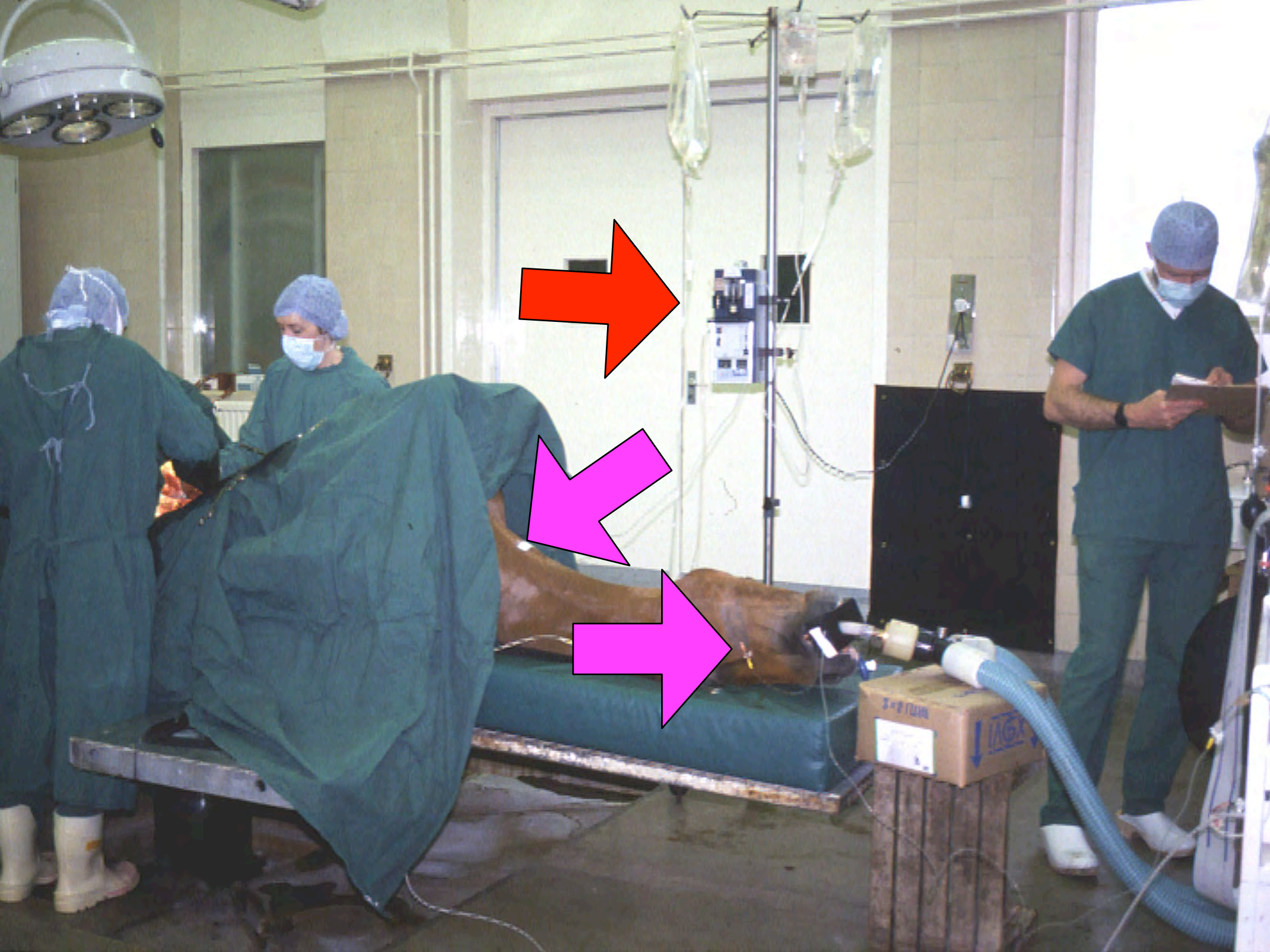
3ft. FROM END OF CHART



choice of drug

- adrenaline
- dopamine
- dobutamine
- dopexamine
- isoprenaline





anaphylaxis

- massive histamine release
- vasodilatation
- tremors / oedema / collapse
- often caused by drugs



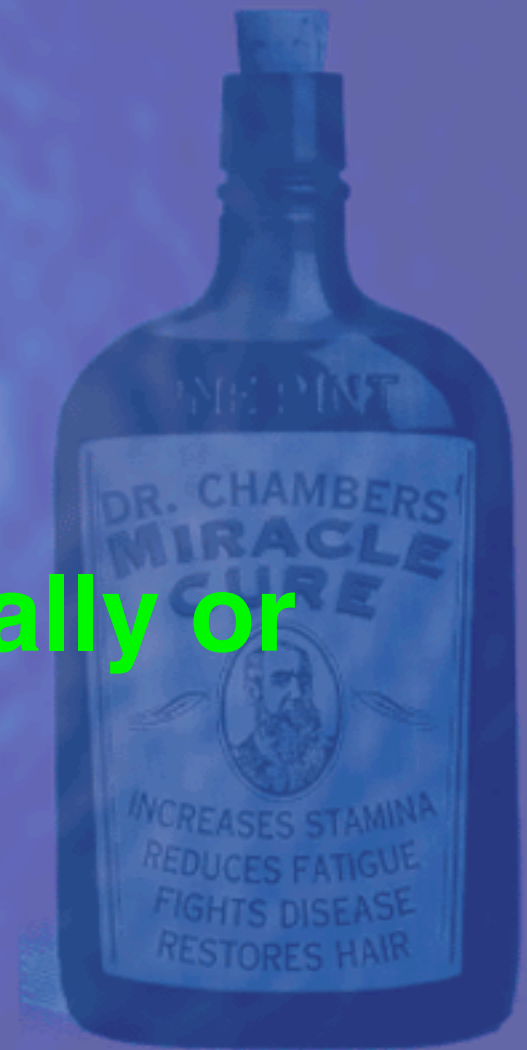
anaphylaxis

- adrenaline sc (im)
- monitor effects
- only give iv as a last resort



adrenaline dose

- dilute to 1:10,000
- 20 μ g/kg sc or
- 5 - 20 μ g/kg iv or
- 20 - 40 μ g/kg intratracheally or
- as a last resort only
- 2 μ g/kg intracardiac



adrenaline

- light sensitive
- heat sensitive
- check expiry date!



haemostasis

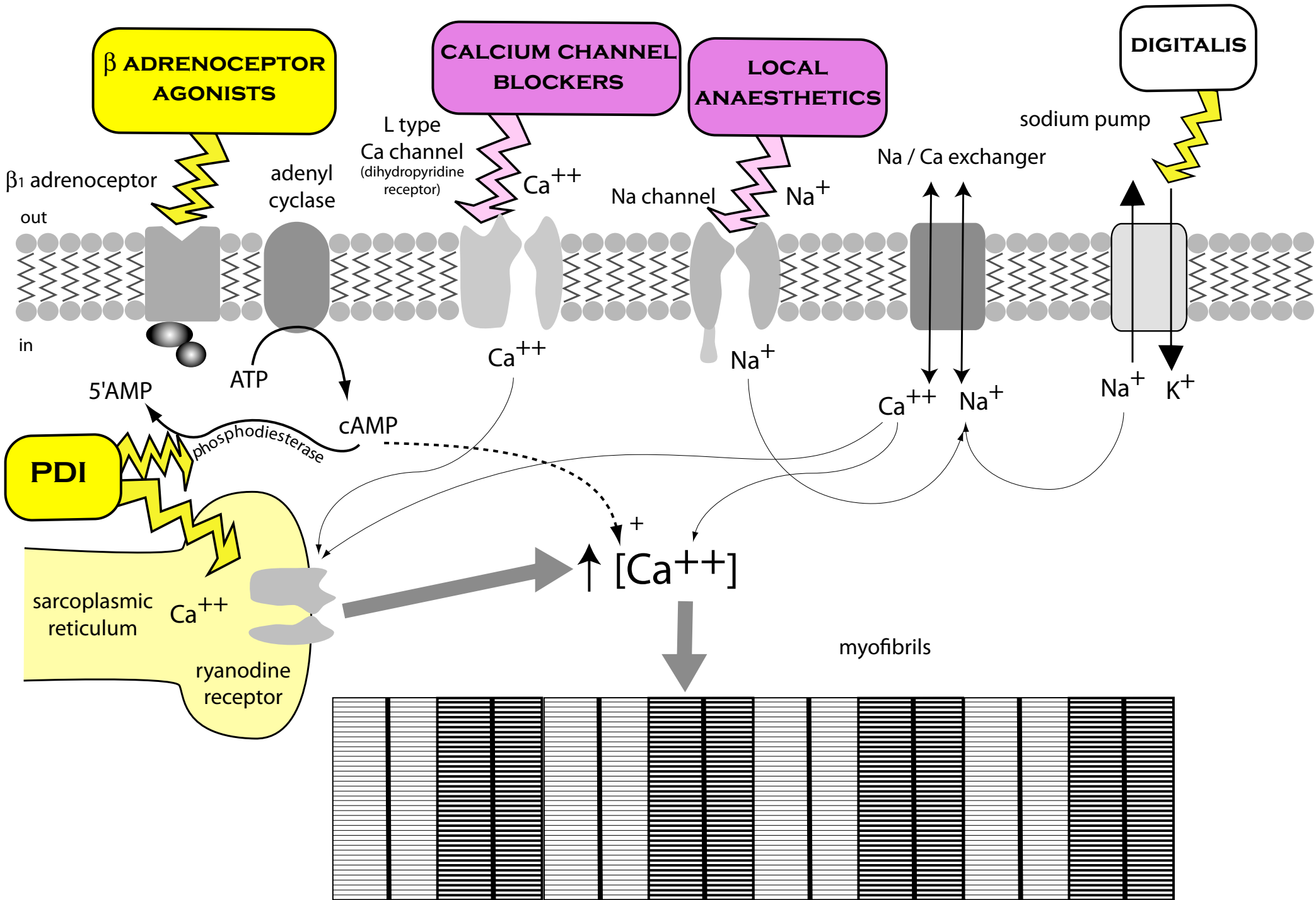
- mucous membranes
- large oozing surfaces
- adrenaline on a swab
 - interactions with halothane!



positive inotropes

- sympathomimetics
- cardiac glycosides
- phosphodiesterase inhibitors





calcium

- calcium chloride
- calcium (boro) gluconate



calcium

- some inotropic effect
- potent vasoconstrictor
- reduces blood flow to myocardium and brain
- do not use as an inotrope!



sympathomimetic inotropes

- used for acute heart failure in anaesthesia / intensive care
- give as iv infusion to effect
- monitor ECG for tachyarrhythmias
- in anaphylaxis use adrenaline sc

