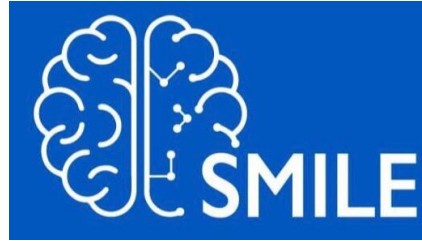
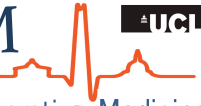


# An Introduction to Anaesthesia 2020

**CPOM**  
Centre for Perioperative Medicine



the centre for  
Anaesthesia **UCL**

## DRUGS

**DR ANITA  
MCCARRON**

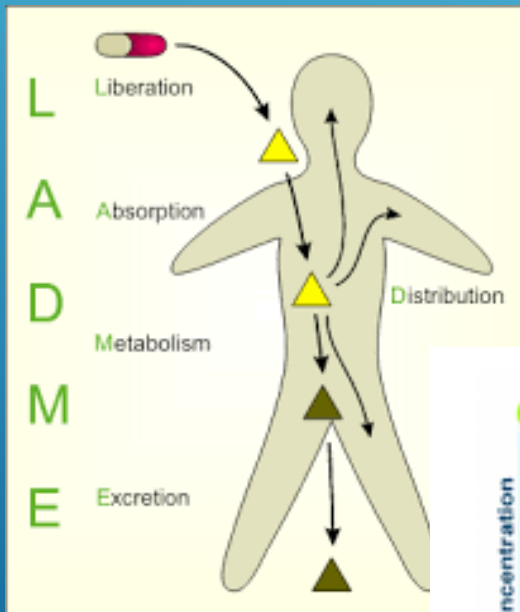
**Consultant in  
Anaesthesia**

**UCL  
Hospitals**

# DESCRIBING DRUGS

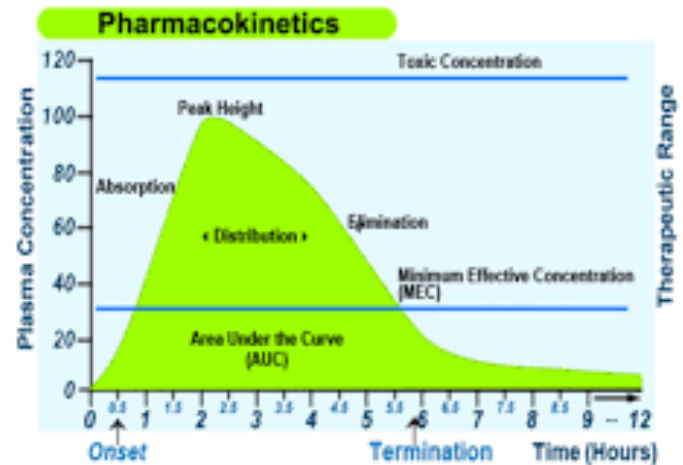
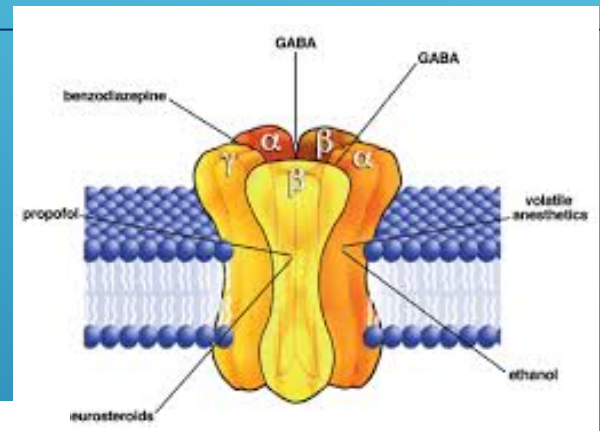
## PHARMACOKINETICS

What the body does to the drug

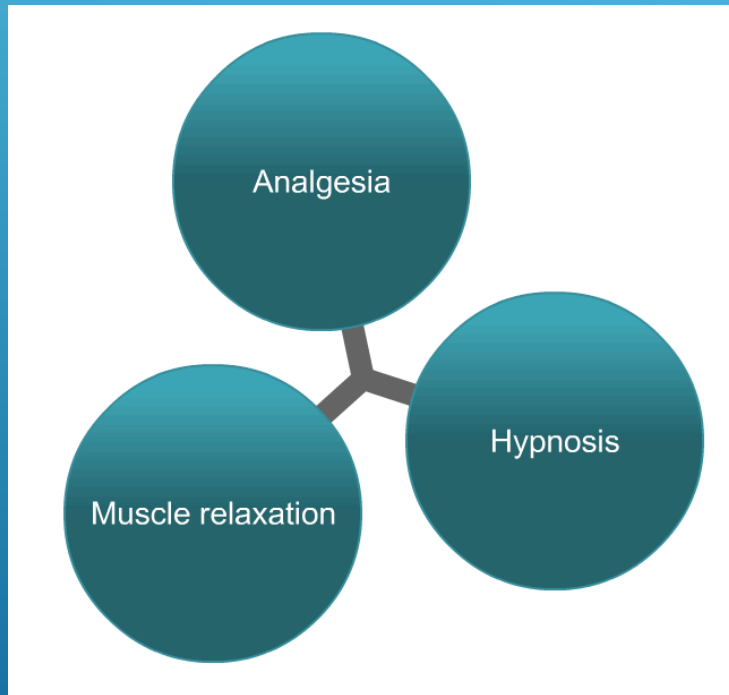


## PHARMACODYNAMICS

What the drug does to the body



# TRIAD OF ANAESTHESIA



- No single drug achieves all of the desired goals of anaesthesia.
- “**Balanced Anaesthesia**”
- A **combination** of agents, to limit the dose and toxicity of each drug

# SEQUENCE OF A GENERAL ANAESTHETIC

Short acting opiate - e.g. fentanyl



Get the patient to sleep- Induction agent - e.g. propofol, thiopentone



Muscle paralysis may be needed



Airway device



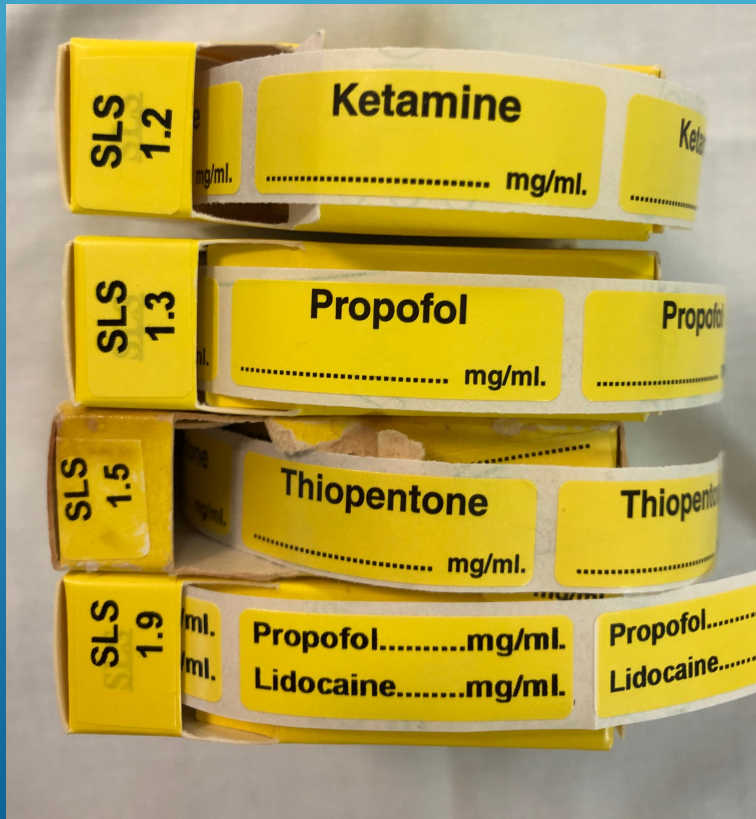
Keep the patient asleep- inhalational or iv anaesthetic agent



# SIMPLE AND SAFE CREATURES

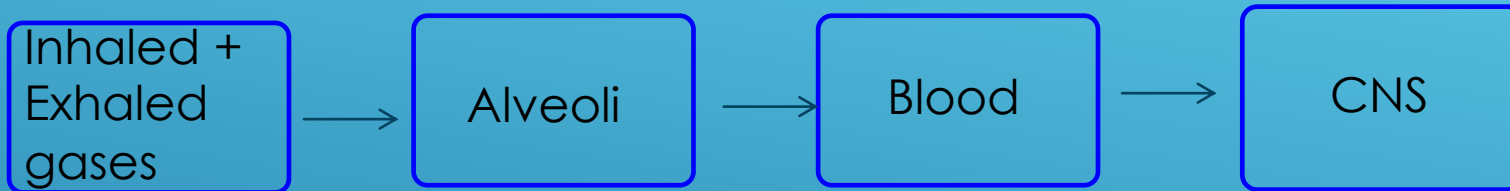


# INDUCTION- GETTING TO SLEEP



- Can be intravenous or inhalational
- Used to
  - Achieve general anesthesia
  - Sedate patients
- Dosed by WEIGHT (mg/kg)

# MAINTENANCE- STAYING ASLEEP



Usually using an inhalational agent

- These included:
- SEVOflurane
  - ISOflurane
  - DESflurane



# HOW MUCH TO GIVE?

Minimum Alveolar Concentration (**MAC**) = Measure of POTENCY- ie how strong an anaesthetic gas is

**1 MAC** = the concentration to prevent movement in 50% of patients when exposed to standardized skin incision

## SOME MAC VALUES

Anesthetic	MAC (%)
Nitrous oxide	104
Desflurane	6
Sevoflurane	2.0
Enflurane	1.7
Isoflurane	1.4
Halothane	0.75
Methoxyflurane	0.16

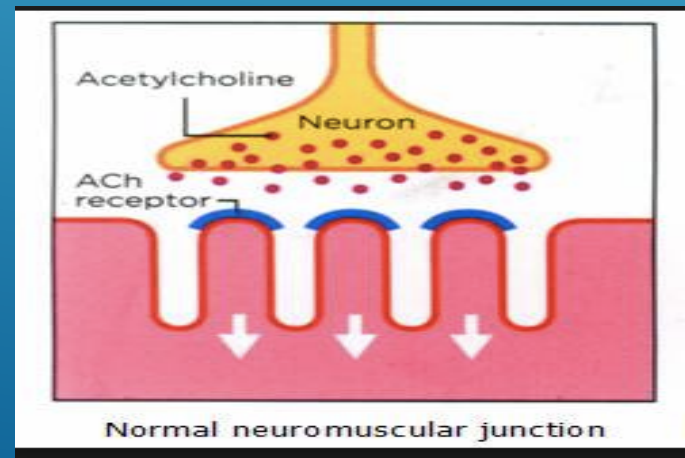
# MUSCLE RELAXANTS



Does NOT provide  
**ANALGESIA** or  
**SEDATION** or  
**UNCONSCIOUSNESS**

3 main indications

1. Tracheal intubation
2. Surgical relaxation
3. Control of ventilation



# ANALGESIA- DO I HAVE TO?



- The anaesthetised patient will still respond to pain and surgical stimulus
- Think about:
  - **pre-emptive** analgesia
  - **multi-modal** analgesia

# ANALGESIA



## FENTANYL

- synthetic opioid
- used during induction
- suppresses cardiorespiratory response to airway manipulation (eg intubation)
- faster acting and shorter half-life than morphine

## MORPHINE

- slower onset / longer half life than fentanyl
- for more stimulating / painful procedures for patients who are likely to be inpatients

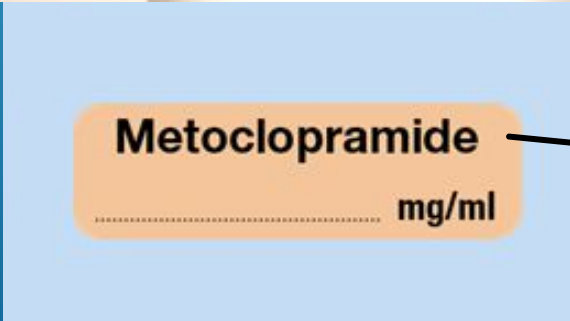


# ANTI-EMETIC



• Anti- histamine / anti-cholinergic

• Serotonin (5HT3) receptor antagonist



• Dopamine receptor antagonist

**SO WHICH DRUGS DO I  
USE?**



# CASE 1

4 year old fit and healthy child having a lip laceration repaired



# CASE 1: WHICH DRUGS SHOULD I USE?

- ▶ Premedication



- ▶ Inhalational induction
  - ▶ Which gas? → **SEVOFLURANE**
- ▶ Anything else I need to remember?
  - ▶ → **ATROPINE**

## CASE 2

20 year old fit and healthy woman having a diagnostic laparoscopy

Non- smoker

Post-operative nausea and vomiting



Predicts risk of postoperative nausea and vomiting (PONV).

When to Use ▾

Gender

Male 0

Female +1

Smoking status

Smoker 0

Nonsmoker +1

History of motion sickness or PONV

No 0

Yes +1

Use of postoperative opioids

No 0

Yes +1

**3** points

Apfel Score

**61** %

24-hour risk of PONV



# CASE 2: WHICH DRUGS SHOULD I USE?

- ▶ Short acting drugs

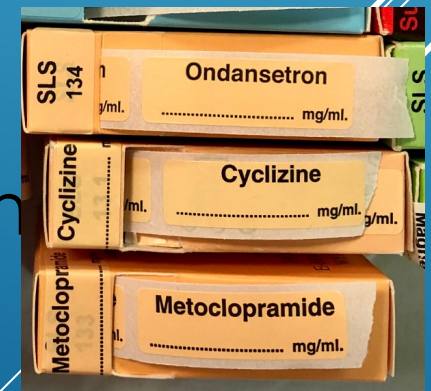


- ▶ **AVOID VOLATILE AGENTS**

Total Intravenous Anaesthesia- TIVA



- ▶ 2 anti-emetics with different actions





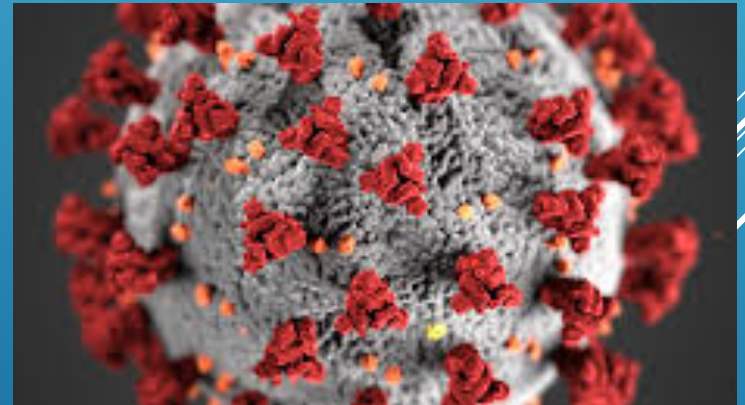
# CASE 3

67 year old gentleman

Severe Respiratory Failure

Covid-19 Positive

Needs to go on a ventilator-  
so requires intubating

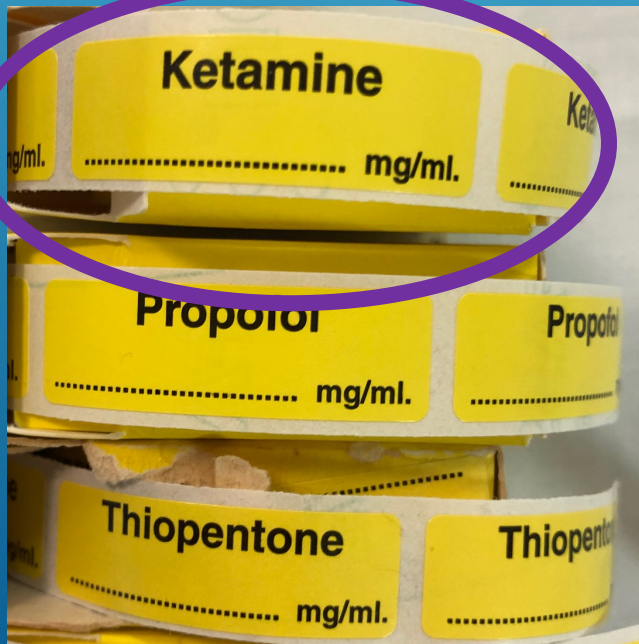
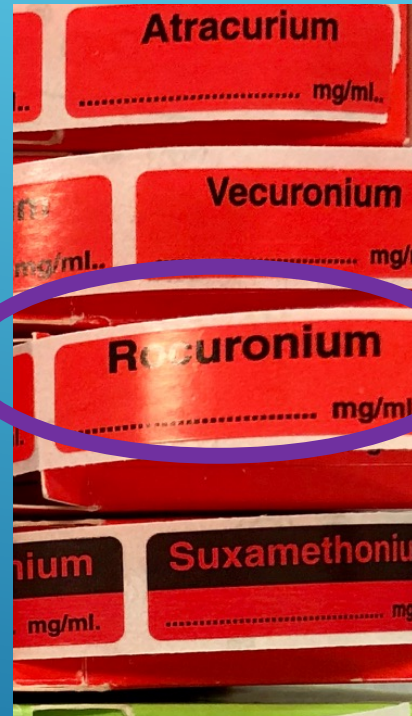
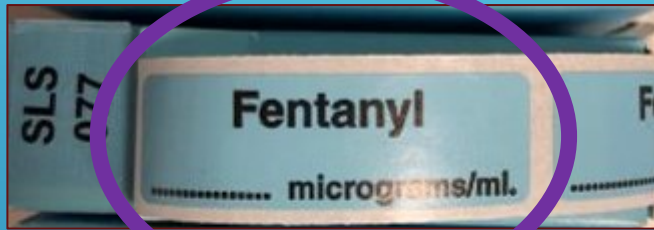


# CASE 3: CONSIDERATIONS

- ▶ He is going to desaturate as soon as his mask comes off
- ▶ His lungs are severely damaged already
- ▶ He is septic and will become hypotensive with our usual anaesthetic drugs



# CASE 3: WHICH DRUGS SHOULD I USE?



# CASE 4

Fit and well pregnant lady



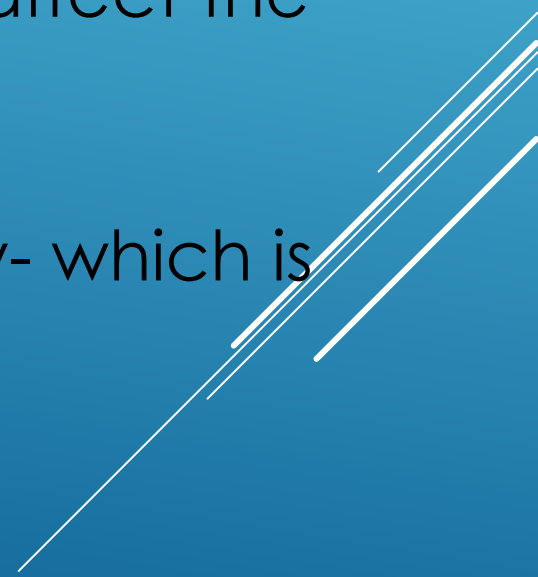
Emergency Caesarean section under GA

For foetal distress






# CASE 4: CONSIDERATIONS

- ▶ After 2<sup>nd</sup> trimester- high incidence of gastroesophageal reflux and risk of aspiration during induction of anaesthesia
  - ▶ Anything you give the mother may affect the baby
  - ▶ Pregnant women desaturate rapidly- which is bad for her and the baby.
- 
- A decorative graphic consisting of several parallel white lines of varying lengths, slanted diagonally from the bottom right towards the top right, set against the blue background.

# CASE 4: WHICH DRUGS SHOULD I USE?

- ▶ Premedication- something to neutralise her stomach acid
    - ▶ Sodium citrate
    - ▶ Ranitidine
  - ▶ Avoid fentanyl- as this could cause foetal respiratory depression.
  - ▶ Rapid onset muscle relaxant
    - ▶ Suxamethonium
    - ▶ Large dose rocuronium
- 
- A decorative graphic consisting of several parallel white lines of varying lengths, slanted upwards from left to right, located in the bottom right corner of the slide.

# SUMMARY

- ▶ No one size fits all
- ▶ You need to consider the patient and the surgery
- ▶ Knowledge of pharmacokinetics and pharmacodynamics is crucial







THANK YOU

