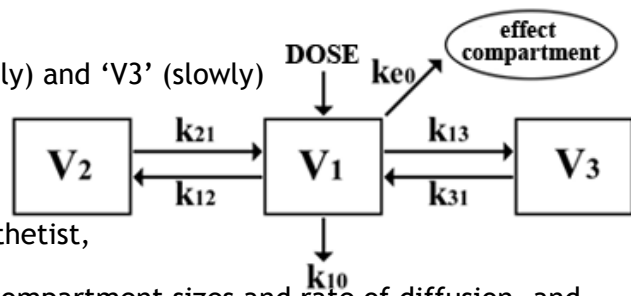


Summary of Joint AAGBI/SIVA guidelines for safe practice of total intravenous anaesthesia (TIVA)<sup>1</sup>

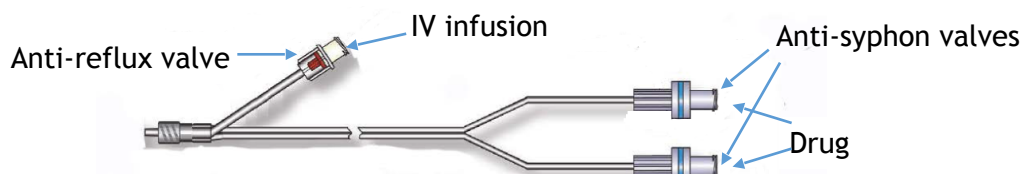
## Pharmacology

- Target controlled infusion (TCI) is recommended when anaesthesia is maintained by propofol infusion
- TCI utilises the 3 compartment pharmacokinetic model
  - Drug is infused into central ('V1') compartment
  - Redistribution occurs to compartments 'V2' (rapidly) and 'V3' (slowly)
  - The 'effect site' (brain) equilibrates with 'V1'
  - Metabolism/elimination is from 'V1'
  - The sizes of compartments vary with patient demographics
- During TCI, the target concentration is set by the anaesthetist, and the infusion rate is calculated by the pump
- Pharmacokinetic TCI models vary in calculations about compartment sizes and rate of diffusion, and can target plasma levels (CpT) or brain levels (CeT)
- At all BSUH sites, **all** adult TCI pumps use the '**Marsh**' 3 compartment model for propofol infusions
  - Marsh model targets plasma concentration (effect site is displayed separately)
  - All compartments are scaled and vary according to body weight only



## Equipment and setup at BSUH

- Propofol concentration must be **compatible with the pump** used, and appropriate to the area
  - **1%** propofol in **general theatres**
  - **2%** propofol in **neurosurgical theatres**, and **ICU**
- Remifentanyl must be diluted to 50mcg/ml if used as a Target Controlled Infusion
- Drug delivery should be via specific equipment with the following features:



- Use syringes with **secure** (eg **Luer-lock**) connectors, and check correct syringe is selected on pump
- Drug & fluid lines should join together as close to patient as possible, avoiding extra connections or 3-way taps on drug lines

## Safe conduct of TIVA

### Safety checklist

- Electricity- pumps plugged in?
- Pumps- right drugs, algorithm, patient details?
- IV fluid- drip running freely?
- Connections- correct lines, secure, no leaks?
- Cannula- secure, no kinks? **Visible whenever possible**, ideally avoiding antecubital fossa

### Avoid drug errors

- Label each syringe **after** preparation, seal with a cap if not used immediately
- Program infusion pump (with 2-person check) **after** initial syringe inserted into the pump
- **Do not mix** opiate with propofol
- **Flush lines** after use with >2x the deadspace

## Clinical tips

- Depth of anaesthesia monitoring (eg Entropy or BIS) **should be used** during neuromuscular block
- Target concentration should be titrated to clinical effect and varies according to clinical situation
- Typical **propofol** plasma targets for **healthy young** or **middle aged** patients are
  - Induction: 4-6mcg/ml
  - Maintenance: 3-6mcg/ml (without opioids), 2.5-4.0 mcg/ml (with opioids)
- Lower targets are appropriate for older, frail or unwell patients
- Higher initial levels may be appropriate in 'robust' patients
- Observe infusion rate frequently (allows appropriate manual infusion rate in event of pump failure)
- Obesity and TIVA:
  - **depth of anaesthesia monitoring highly recommended** due to altered pharmacokinetics
  - SOBAuk<sup>2</sup> suggest **Adjusted Body Weight** for **propofol TCI** instead of Total Body Weight
- Paediatrics and TIVA: only provide if specifically trained to do so

1. Anaesthesia 2019, 74, 211-224

2. SOBAuk.co.uk/downloads/single-sheet-guideline