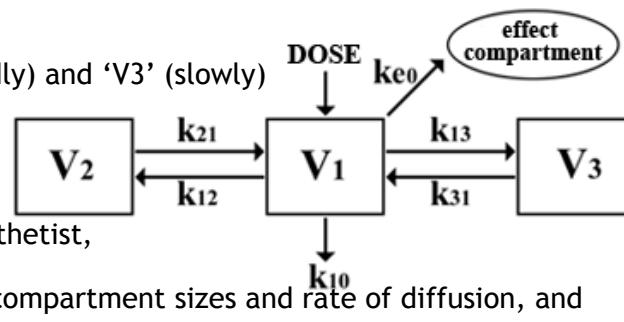


Summary of Joint AAGBI/SIVA guidelines for safe practice of total intravenous anaesthesia (TIVA)¹

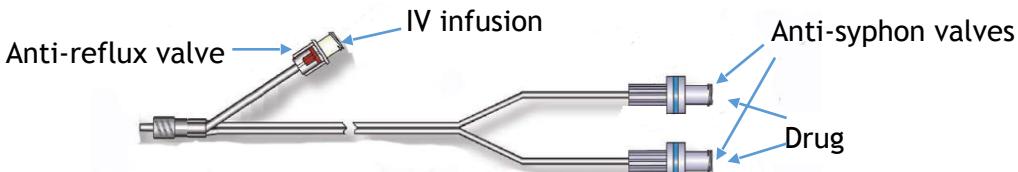
Pharmacology

- 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 (C_pT) or brain levels (C_eT)
- 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
- Remifentanil 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
 - SOBAuk² 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