1. Fluranes – Halogenated Hydrocarbons
MOA: Decrease neurotransmission → ↓ Presynaptic Ca^{+2} ↑GABA/GLY mediated Cl^- entry, NMDA antagonist
USE: Anesthetic Maintenance, Induction in children
Halothane – decreases cardiac output →↓**BP**, SE:Hepatotoxic
Enflurane – decreases cardiac output, SE: Nephrotox/Seizure
Isoflurane – increases SNS outflow
Desflurane – increases SNS outflow – **irritant, Bad Odor**
Sevoflurane – **Pleasant smell,** hepatic metabolism, bronchodlation
SE: Antegrade amnesia, ↑ICP (↑ cerebral blood flow), ↑ Respiratory rate (↓Tidal volume), ↓Cardiac output, ↓BP, ↓ Renal blood flow → ↓GFR, ↓Uterine blood flow/contractility, Malignant Hyperthermia (TX: dantrolene)

2. Nitrous Oxide
MOA: Glutamate (NMDA) receptor antagonist,
USE: Anesthetic induction and Maintenance, **Analgesic – HIGH MAC**
SE: Antegrade amnesia, Expands closed air spaces, ↓B12, ↓myocardial activity → ↑SNS
CI: 1st trimester pregnancy, Open air spaces (pneumothorax)

MAC	Effect
0.3	Awake
0.5	Amnesia
1	ED50
1.3	ED99
1.5	Blunted ANS

3. Barbiturates
MOA: Activation of $GABA_A$ channel → ↓ Neurotransmission
Thiopental
Methoxhexital – hepatic metabolism, **Seizures** (↓Threshold)
USE: Anesthetic induction
SE:↓BP→↑HR, **Histamine release**, ↓ventilatory drive, N/V
CI: Hypovolemia, **Porphyria**

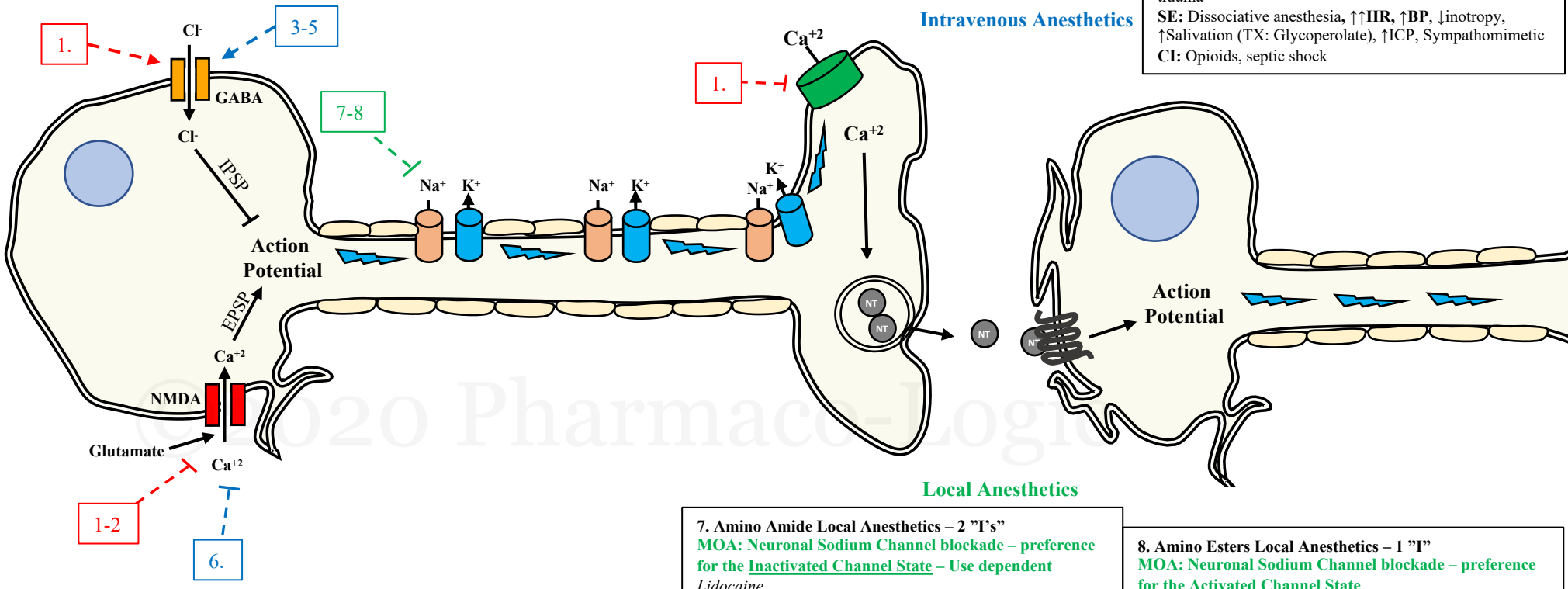
4. Etomidate
MOA: Activation of $GABA_A$ channel → ↓ Neurotransmission
USE: Anesthetic induction – Preserves CV stability
SE: Adrenal suppression, **N/V** ↓Ventilatory drive, ↓ICP,
CI: Opioids, **septic shock, porphyria**

5. Propofol
MOA: Activation of $GABA_A$ channel → ↓ Neurotransmission
USE: Anesthetic induction and Maintenance, antiemetic, antipruritic – Pts with porphyria
PK: Formulated with Eggs and soybean oil→ grows bacteria, CYP3A4 inhibitor
SE: ↓↓**BP** (vasodilation), ↓Ventilatory drive, Propofol infusion syndrome (metabolic acidosis, rhabdomyolysis, renal failure), Injection pain, green urine, ↓ICP,
CI: Hypovolemia, Opioids (Caution)

6. Ketamine
MOA: Glutamate (NMDA) receptor antagonist, interaction with opioid receptors – active metabolites
USE: Anesthetic induction and Maintenance, analgesia, trauma
SE: Dissociative anesthesia**, ↑↑HR, ↑BP**, ↓inotropy, ↑Salivation (TX: Glycoperolate), ↑ICP, Sympathomimetic
CI: Opioids, septic shock

Inhaled Anesthetics

Intravenous Anesthetics



Drug	Blood Pressure	Heart rate	ICP	Ventilation
Halothane	↓	↓↓	↑	↑ RR, ↓TV
Enflurane	↓↓	↑		
Isoflurane	↓↓	↑		
Desflurane	↓	↑		
Sevoflurane	↓	-		
Nitrous oxide	-	↑		
Thiopental	↓	↑	↓	↓
Methoxhexital	↓	↑	↓	↓
Etomidate	-	-	↓	-
Propofol	↓↓	-	↓	↓
Ketamine	↑	↑↑	↑	-

Local Anesthetics

7. Amino Amide Local Anesthetics – 2 "I's"
MOA: Neuronal Sodium Channel blockade – preference for the Inactivated Channel State – Use dependent
Lidocaine
Mepivacaine
Prilocaine - Methemoglobinemia
Etidocaine
Ropivacaine
Bupivacaine – Cardiotoxic
PK:
- Weak bases – Ion trapping on the cytosolic compartment
- Metabolized by CYP enzymes
- Used with Vasoconstrictors to limit distribution
- Inflammation limits penetration

SE: Tachyphylaxis, cardiac blockade, CV collapse, allergic reactions (PABA), Cardiotoxicity in pregnancy

8. Amino Esters Local Anesthetics – 1 "I"
MOA: Neuronal Sodium Channel blockade – preference for the Activated Channel State
Procaine
Chlorprocaine
Tetracaine
Cocaine
Benzocaine – receptor-independent mechanism
PK:
- Weak bases – Ion trapping on the cytosolic compartment
- Metabolized by plasma esterase enzymes (pseudocholinesterases)
- Used with Vasoconstrictors to limit distribution

SE: Tachyphylaxis, cardiac blockade, CV collapse, allergic reactions (PABA), Cardiotoxicity in pregnancy