Inhalational anasthetics:

Drug	Characteristics	Uses	Effect on CVS	Effect on CNS	Effect on RS	advantages	disadvantages
Nitrous oxide	-Inorganic anesthetic gas -Inter nature with minimal metabolism -MAC value 104% (I need more than 100% to make 50% of patients tolerate the pain so we add another anesthetic agent) -hydrophobic	-Weak anesthetic -Good analgesic	-slightly depresses myocardial contractility -Stimulate CA so it mildly increases BP,CO,HR -Constriction of pulmonary vessels(might cause pulmonary HTN)	Increases CBF, ICP and cerebral oxygen consumption **the only one who increases the cerebral oxygen consumption .	-increases RR(rapid & shallow breathing) -Decreases tidal volume and minute ventilation -Minimal increases in CO2 -Decreases ventilator response to hypoxia	-Has analgesic effect -not a triggering agent of malignant hyperthermia	-N/V -Increases renal vascular resistance(decreases renal blood flow, GFR & UO) -Decreases hepatic blood flow -it diffuse into closed spaces that contain air **increase size of gases -inhibit vit. B12 metabolism ** BMS and neurological deficit
Halothane	-Most potent inhalational (MAC of 0.75%) anesthetic -Hydrophilic	Most potent inhalational anasethtic Depresses consciousness	-Significant myocardial depression (hypotension) -Reduce perfusion to coronary arteries(due to hypotension) -blunt reflexes -**arrythmogenic**	-Increases CBF and ICP -blunt autoregulation -decreases metabolic oxygen requirements	Same as NO **plus** -potent bronchodilator -depress clearance of mucous>>post op hypoxia and atelectasis	-	-Triggering agent of malignant hyperthermia -decreases renal blood flow, GFR & UO (due to hypotension) -decreases hepatic blood flow -may cause **hepatitis** (fever, jaundice, hepatic necrosis and death)

Drug	Characteristics	Uses	Effect on CVS	Effect on CNS	Effect on RS	advantages	disadvantages
Enflurane (not frequently used)	MAC 1.68%	-	-Decreases contractility, HR -**arrythmogenic** -decreases systemic vascular resistance(hypotension)	Epileptiform EEG patterns(increases EEG activity)	-Depressed ventilation(hypercarbia) -widens A-a gradient -bronchodilator	metabolism does not release a lot of hepatotoxic metabolites	**Renal toxicity (metabolism release floride ion)**
Isoflurane	Chemical isomer of enflurane MAC of 1.30%	-	- significant depression in systemic vascular resistance (severe hypotension) -coronary steal syndrome -minimal cardiac depression and preserve baroreflex(increase HR)	-increases CBF and ICP -decreases cerebral metabolic oxygen consumption	-Respiratory depression -decreases minutre ventilation -blunt normal response to hypoxia and hypercapnia -irritate upper airway reflex -good bronchodilator	-	-decreases renal blood flow, GFR & UO (due to hypotension) -decreases hepatic blood flow
Desflurane	-MAC 6% -require special vaporizer -moderare potency -low solubility(short DOA)	-	-decreases systemic vascular resistance (hypotension) -unchanged or slightly depressed CO -rapid increase in concentration lead to transient increase in HR,BP,CA levels	-increases CBF and ICP -decreases cerebral metabolic oxygen consumption -associated with delirium with some pediatrics	-increases RR -Decreases tidal volume - Decreases ventilatory response to PaCO2	-	-Dose dependant decrease in response to train of four and titanic peripheral nerve stimulation. -**degaraded into Carbon monoxide** -potentiate nondepolarizing NMBA's

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Sevoflurane	Rapid increase in alveolar anesthetic concentration	-Smooth and rapid inhalation induction in peds and adult patients -adequate muscle relaxation for intubation in children	-decreases systemic vascular resistance (hypotension) -PROLONG QT INTERVAL -midly depress contractility	-slighly increase CBF and ICP -decreases cerebral metabolic requirements	-depress respiration -bronchodilator	-	-slightly decreases renal blood flow -decreases portal vein flow and increase hepatic artery flow -**when metabolized by the liver it gives nephrotoxic end product(compound A)** -potentiate NMBA's

Quick recap:			*All causes cardiac depression	*All increases ICP and CBF *All decreases oxygen requirements except NO	*All causes respiratory depression, increases RR, decreases TV and Minute ventilation		

** obstetric effects:

-produce dose dependant decrease in uterine contractility and blood flow.

-they cause uterine atony

-they rapidly cross the placenta and reach the fetus