

ADVANCED ANESTHETIC HANDOUT

PHARMACOLOGY OF LOCAL ANESTHETICS



LIVER METABOLISM

Lidocaine, Mepivacaine, and Bupivacaine



BLOOD PLASMA METABOLISM

Articaine and all Esters



LUNG METABOLISM*

Prilocaine

*prior to liver metabolism



BLOOD BRAIN BARRIER

All anesthetics cross the blood brain barrier



EXCRETED IN KIDNEY

Small percentage of all local anesthetics are excreted unchanged in urine



VASODILATING

All anesthetics are vasodilating
(vasoconstrictors are added to counteract this effect)

Local Anesthetic	MRD mg/kg	MRD mg/lb	Absolute MRD by mg	Absolute MAX cartridges per appt*	Limiting Drug
Lidocaine 2% 1:50,000 epi	7.0	3.2	500mg	5.5 cartridges	Vasoconstrictor
Lidocaine 2% 1:100,000 epi	7.0	3.2	500mg	11.1 cartridges	Vasoconstrictor
Articaine 4% 1:100,000 epi	7.0	3.2	N/A	N/A	Local Anesthetic
Articaine 4% 1:200,000 epi	7.0	3.2	N/A	N/A	Local Anesthetic
Prilocaine 4% PLAIN	8.8	4.0	600mg	8 cartridges	Local Anesthetic
Prilocaine 4% 1:200,000 epi	8.8	4.0	600mg	8 cartridges	Local Anesthetic
Mepivacaine 3% PLAIN	6.6	3.0	400mg	7 cartridges	Local Anesthetic
Bupivacaine 0.5% 1:200,000 epi	N/A	N/A	90mg	10 cartridges	Local Anesthetic

*per appointment cartridges based on 150lb healthy individual



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MAXIMUM RECOMMENDED DOSE - VASOCONSTRICTOR

Vasoconstrictor Concentration	Epinephrine MRD Cartridges Healthy = 0.2 mg	Epinephrine MRD Cartridges Compromised = 0.04
1:50,000	5.5 cartridges	1.1 cartridges
1:100,000	11.1 cartridges	2.2 cartridges
1:200,000	22.2 cartridges	4.4 cartridges

*Patient's MRD must not exceed MAX mg/appt regardless of weight

Weight in lbs	Convert to kg	Multiple by MRD mg/kg ie: Lidocaine	MRD Based on Weight	MAX cartridges per appt
100	$100 \div 2.2 = 45.4$	45.4 kg x 7 mg/kg	317	8.8 cartridges
125	$125 \div 2.2 = 56.8$	56.8 kg x 7 mg/kg	397	11 cartridges
150	$150 \div 2.2 = 68.1$	68.1 kg x 7 mg/kg	476	13.2 cartridges
175	$175 \div 2.2 = 79.5$	79.5 kg x 7 mg/kg	556	13.8 cartridges
200	$200 \div 2.2 = 90.9$	90.9 kg x 7 mg/kg	636	13.8 cartridges

