## 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** 

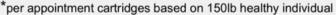
Small percentage of all local anesthetics are excreted unchanged in urine



VASODILATING

All anesthetics are vasodilating (vasocontrictors 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





## 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 ÷ 2.2 = 68.1	68.1 kg x 7 mg/kg	476	13.2 cartridges
175	175 ÷ 2.2 = 79.5	79.5 kg x 7 mg/kg	556	13.8 cartridges
200	200 ÷ 2.2 = 90.9	90.9 kg x 7 mg/kg	636	13.8 cartridges

