



MARCH 2014

We hope everyone is doing well.

There is a lot to balance between clinical, classroom work/material & personal life.

Please check out this link to the AANA student wellness page!

<http://www.aana.com/resources2/health-wellness/Pages/Student-Wellness.aspx>

There are some great tips on how to manage the stress of school!

Keep up the good work!



CRNA Cert Exam Review

Question #1

List the local anesthetics and their concentrations that comprise emla cream (eutectic mixture of local anesthetics).



QUESTION #2

A true allergy (Type I or Type iv hypersensitivity reaction) to local anesthetics is rare. What metabolite of amino-ester local anesthetics can precipitate a true allergic reaction?

A Nerve Block that Lasts for Days

By Mark Alderson, MSN, RN, SRNA

Peripheral nerve blocks continue to be an effective component of a multimodal approach to controlling post-operative pain for many types of procedures. Until recently the duration of these blocks has been limited to a maximum duration of about ten hours, provided by the highest protein bound amide, local anesthetic, bupivacaine HCL (Hu, Onel, Singla, Kramer & Hadzic, 2013).

Additional blockade would require an infusion catheter, or repeated single injections... **How much better would our pain control be for our patients if we could provide them with a single injection lasting for several days?**

*A new formulation of Bupivacaine HCL, encapsulated in a multivesicular liposome is currently being trialed for various surgical procedures ranging from hemorrhoidectomy to total knee replacement. This formulation provides 3% immediately available bupivacaine, while the remaining portion is time released (Massaro, 2012). Hu, Onel, Singla, Kramer & Hadzic (2013) found that liposomal encapsulation provided fast absorption, but slowed duration of **activity to as long as 96 hours**.*

The maximum dose should not exceed 266 mg (Hu, Onel, Singla, Kramer & Hadzic, 2013). Liposomal bupivacaine received FDA approval on October 28, 2011, and is supplied in 20 mL syringes of 1.3% preservative free solution, which can be further diluted if desired. This formulation is currently marketed under the name Exparel, and further information about this formula can be found on their website.



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References

Massaro, F. (2012). Liposomal bupivacaine: A long-acting local anesthetic for postsurgical analgesia. *Formulary*, 47(6), 212-226.

Hu, D., Onel, E., Singla, N., Kramer, W., & Hadzic, A. (2013). Pharmacokinetic Profile of Liposome Bupivacaine Injection Following a Single Administration at the Surgical Site. *Clinical Drug Investigation*, 33(2), 109-115.
doi:10.1007/s40261-012-0043-z

ANSWER #1

A combination of 2.5% prilocaine and 2.5% lidocaine cream (5% total concentration) is called a eutectic mixture of local anesthetics (emla), because the melting point of the combined drugs is lower than prilocaine or lidocaine alone. ("Eutectic" means equal proportions of solid crystals of prilocaine and lidocaine, and this mixture remains a liquid at room temperature.)

[Stoelting, *PPAP*. 4e. 2006 pp196; Miller & Stoelting, *Basics*. 5e. 2007 pp133; Cousins, *Neural Blockade*. 4e, 2009 pp107]

ANSWER #2

Para-aminobenzoic acid (PABA), a metabolite of ester local anesthetic hydrolysis can cause a true allergic reaction. PABA is a highly antigenic compound.

[Nagelhout & Plaus, *NA*. 4e, 2009 pp1087; Barash, *Clin. Anes.* 6e, 2009 pp546; Hines, et. al., *Stoelting's ACED*. 6e, 2012 pp526; Miller and Pardo, *Basics*. 6e, 2011 pp138]