

TABLE 2

ADVERSE DRUG INTERACTIONS IN DENTISTRY: LOCAL ANESTHETICS.		
EXAMPLE OF ADVERSE DRUG INTERACTION	SIGNIFICANCE RATING*	CLINICAL IMPLICATIONS
Summation Interactions With Local Anesthetics Lidocaine with bupivacaine	1	Local anesthetic toxicity is additive when these drugs are given in combination; although combination therapy with local anesthetics is acceptable, total dose should not exceed combined maximum recommended doses, or MRDs.
Ester Local Anesthetics With Sulfonamide Antibiotics Procaine with sulfamethoxazole	5	Procaine is used infrequently; the procaine metabolite <i>p</i> -amino benzoic acid may transiently reduce sulfonamide antibiotic efficacy.
Amide Local Anesthetics With Inhibitors of Metabolism Lidocaine with cimetidine; lidocaine with propranolol	5	Inhibition of local anesthetic metabolism will have little effect on peak plasma levels of anesthetic when given as a single injection.
Local Anesthetics With Opioid Sedation Mepivacaine with meperidine	1	Sedation with opioids may increase the risk of local anesthetic toxicity, particularly with children; local anesthetic dose should be reduced.
Local Anesthetic-Induced Methemoglobinemia Prilocaine with dapsone	4	Methemoglobinemia usually results from prilocaine dosing in excess of MRD; increased risk may be possible when similar oxidizing drugs are administered.

* Ratings are specific to dental therapy- that is, regional anesthesia administered within maximum recommended doses.

function can be established for combinations that display additive drug interactions. The median toxic doses for the combination of mepivacaine and tetracaine fall on the diagonal line,¹² so this relationship is indicative of a purely additive interaction. If the doses of a drug combination were positioned above and to the right of the diagonal line, the interaction would be considered to be less than additive (infra-additive). Conversely, if the doses for a drug combination were positioned below and to the left of the diagonal line, the interaction would be considered to be greater than additive (supra-additive).

Summation drug interactions with local anesthetics also may be a concern with lidocaine and procainamide when they are used to treat arrhythmias.

Published reports of such interactions are very limited; however, when administered at high doses by intravenous infusion to treat cardiac arrhythmias, the combination of these two local anesthetic agents theoretically could produce an additive interaction and, subsequently, toxicity.¹³ This poorly documented interaction would not be relevant to the doses of local anesthetics and blood concentrations normally associated with dental anesthesia.

Maximum safe dosage recommendations for local anesthesia permit volumes of solutions usually adequate for adult patients undergoing dental procedures. For adults, the maximum number of 1.8-milliliter cartridges of 2 percent lidocaine with epinephrine is 13.9; for 3 percent mepivacaine the maximum number of cartridges is 7.4.⁶ Most

dental procedures, even complex procedures involving multiple quadrants, can be completed comfortably using this volume of local anesthetic. Summation drug interactions and local anesthetic toxicity become a concern when young children are being treated, when additional anesthetic is required for completing prolonged dental procedures, when excessive topical anesthesia using either ointments or the oral transmucosal patch is necessary to supplement regional anesthesia, or when a long-acting local anesthetic is administered for postoperative pain management.

Calculations of maximum recommended doses should factor in the total dose of the combination and whether sufficient time has elapsed to allow elimination of the initial dose before additional anesthetic is admin-