

Insect repellents

The morbidity from insect bites ranges from itchy nuisance to vector for serious disease. Physicians should teach parents and patients to minimize their time spent outdoors in infested, wooded areas at dawn and dusk; avoidance of standing pools of water; protective clothing with hats, long sleeves, and pants; and use of proper insect repellent. Repellents with DEET (N,N-diethyl-m-toluamide or N,N-diethyl-methylbenzamide) are the most effective, widely used, and best studied of all the repellents available.

Despite concerns raised in the medical and lay press, evidence-based reviews do not support increased risk in young children or in pregnant and lactating women. DEET repellents are effective against mosquitoes, ticks, fleas, biting flies, and chiggers. In most cases, products with 10%–30% DEET give adequate protection.⁶ Of note, products that combine sunscreen with a DEET-containing repellent are not recommended. Since the needs for reapplication of sunscreen and insect repellent differ, there can be both potential overexposure to DEET and lower efficacy of the sunscreen.

The American Academy of Pediatrics recommends insect repellent use in children no less than 2 months of age and concentrations of 10%–30%. Chronic toxicity studies show no evidence of carcinogenicity, and the Environmental Protection Agency's Reregistration Decision in 1998 showed that with proper use, there are no health concerns.⁷

Other insect repellents such as Picaridin (KBR 3023) and oil of lemon eucalyptus (*p*-menthane-3,8 diol [PMD]) have shown efficacy similar to DEET-containing repellents. These products have been recommended by the Centers for Disease Control and Prevention as DEET alternatives for West Nile Virus prevention. Citronella-based repellents and lavender oil are not as well studied and show less protection time, despite popularity.⁸ Studies suggest 30% PMD is comparable to 20% DEET, but requires more frequent reapplication. It is not recom-



Insect repellent use recommendations

- Not recommended for children under 2 months of age
- Application should not exceed once per day
- Repellents in combination with sunscreen are not recommended
- Use just enough repellent to cover exposed skin and/or clothing
- Do not apply under clothing
- Do not allow young children to apply this product; apply to your own hands first, then apply to the child
- Do not apply to children's hands, near eyes or mouth; use sparingly around ears
- Do not use over cuts, wounds, or irritated skin
- After returning indoors, wash treated skin with soap and water; wash treated clothing before wearing again
- When using sprays, do not spray in enclosed areas or near food; if applying to face, spray first on hands, then rub on face. Do not spray directly onto face

For more information, visit www.epa.gov.

mended for children under 3. Neither citronella nor lavender oil is recommended for children under 2 due to lack of data. □

References

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