What is the appropriate use of sunscreen for infants and children?

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EVIDENCE-BASED ANSWER

The risk and benefits of sunscreen use for children under the age of 6 months are unknown. To avoid sunburn, infants should be kept out of direct sunlight and be covered with protective clothing (strength of recommendation [SOR]: **C**, expert opinion). For children aged >6 months, a liberal amount of water-resistant, child-safe, broad-spectrum sunscreen (protecting from both UVA and UVB), with SPF ≥15 should be rubbed well into all exposed skin before going outside (SOR: **B**, case-control and extrapolation of studies). Effectiveness may be increased if sunscreen is applied 30 minutes before exposure and reapplied every 2 hours, particularly if swimming (SOR: **C**, expert opinion). Tightly woven protective clothing, a wide-brimmed cap, and eye protection should also be used whenever possible.

Sunscreen effectively prevents burning due to sun exposure (SOR: **A**, randomized controlled trials). Sunburn early in life is a marker for increased risk of skin cancer in adulthood (SOR: **B**, case-control studies); however, evidence is insufficient that sunscreens lower skin cancer risk, as they also allow increased sun exposure. Reactions to sunscreens are generally limited to skin irritation from the active ingredients or vehicles (SOR: **B**, extrapolation from studies in adults).

CLINICAL COMMENTARY

Discuss with parents the pitfalls of sunscreen use: insufficient application and risk of overexposure

In my practice, and while training residents, I try to remember that the application of clinical evidence is as important as the content. Regarding this topic, the evidence falls in line with what one would expect, yet the problem lies in broaching the subject adequately. Most clinicians use prompting electronic medical records or well-child forms appropriate for age. That's a suitable starting point. What follows should be a focused discussion of common pitfalls concerning sunscreen use. Liberal application of sunscreen is as important as reapplication. Don't let the parent be lulled into a sunscreen-induced sense of security and allow increased exposure.

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Evidence summary

Solar ultraviolet (UV) rays are grouped into 2 wavelengths: UVB (290–320 nm) causes acute inflammation, pain and erythema of sunburn; UVA (320–400 nm) is implicated in long-term damage to the skin, including

FAST TRACK

Don't let the parent be lulled into a false sense of security by sunscreens and allow sun overexposure

photoaging and skin cancer, following carcinogenic induction by UVB.[1] Sun protection factor (SPF) refers to the dose of UVB required to produce erythema in protected skin vs unprotected skin.[1] UVA protection is offered in broad-spectrum sunscreens, but is not reflected by the SPF.

SPF-15 is considered by experts to be adequate to prevent sunburn, assuming use of a 2 mg/cm^2 layer of sunscreen (typically, 30 cc for an average adult). However, observations suggest people apply less than half that.[2] Most experts recommend reapplication every 2 to 3 hours, though the quantity of sunscreen applied may be more important. A paired, split-body study of children receiving supervised single vs multiple applications of SPF-25 sunscreen to randomly assigned lateral halves of their bodies found protection to be equal for 6 hours of direct sunlight exposure. When the study was repeated with 8 hours of exposure, half the children developed mild erythema on the side with 1 application.[3]

Because of the causal link between exposure to solar UV radiation and skin cancers, experts believe that sunscreens protect the wearer against the development of skin cancer. Case-control studies demonstrate that sunburn in childhood raises the risk of melanotic and nonmelanotic skin cancers, particularly among those with fair skin.[4] However, studies of sunscreen's ability to prevent skin cancer are limited due to variability in use, sun exposure, and susceptibility factors. A randomized controlled trial in adults supports that daily sunscreen use reduces the risk of squamous cell carcinoma but not basal cell carcinoma (number needed to treat=884 for 4.5 years).[5]

Sunscreen permits longer sun exposure and may increase the development of nevi, known to be associated with malignant melanoma risk.[6,7] A retrospective study of 6- to 7-year-old children found that sunscreen use correlated with an increasing number of nevi, though wearing clothing to cover skin while in the sun was protective.[6] However, a randomized controlled trial (RCT) demonstrated that regular use of broad-spectrum sunscreen in young school-aged children resulted in fewer melanotic nevi compared with controls.[7] A meta-analysis of 18 observational studies did not show an association between sunscreen use and melanoma incidence.[8]

Sunscreens can cause skin irritation or allergic reaction to either the active ingredient or vehicle.[9,10] A RCT of 603 adults found no allergic reactions to active sunscreen ingredients, though 19% of subjects had an irritant reaction or allergy to the base compounds.[9] Because infants' skin may have different absorptive characteristics from that of older children, the US Food and Drug Administration recommends avoiding sunscreen before 6 months of age. As research is lacking for this age group, and the risk of harm due to sunburn is real, it would be reasonably prudent to use sunscreen when physical protection from the sun is impossible, and to avoid ingredients that caused a previous reaction.

Recommendations from others

The Centers for Disease Control and Prevention[10] and the American Academy of Pediatrics[11] recommend protection from sun exposure for all children and adolescents, including regular and adequate use of broad-spectrum sunscreen for children over 6 months, protective clothing, and sunglasses. The US Preventive Services Task Force[12] reports that evidence is insufficient to recommend for or against counseling by primary care clinicians to prevent skin cancer.

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