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Sunscreen wars: What to tell your patient

Although seemingly innocuous, sunscreen has been the target of several controversies in the media in recent years. Among the most visible was a campaign by Lululemon which included yoga bags with the following message: “Sunscreen absorbed into the skin may be worse for you than sunshine.”¹ These concerns are based primarily around (1) the potential hormonal effects of oxybenzone, one of the active ingredients in many sunscreens, (2) the safety of nanoparticles, used to deliver physical sunscreen in a more appealing (less greasy) formulation and (3) the fear that use may lower vitamin D levels. Last year, Consumer Reports released their sunscreen review stating that half of sunscreens did not meet their SPF claims.² As the warm weather approaches, what will you tell your patients when they ask if it is safe and efficacious to apply sunscreen?

Here’s what we know

1. Skin cancer is the most common cancer in the United States. One in every five Americans will develop skin cancer in their lifetime. An estimated 87,110 new cases of invasive melanoma will be diagnosed in the United States in 2017, and an estimated 9,730 people will die.³ Melanoma is the most common cancer among young adult

women. When detected early, five-year survival is 98 percent, but when lymph nodes are involved, five-year survival drops to 62 percent. Unprotected sun exposure is the main risk factor for skin cancer. Up to 86 percent of melanomas can be attributed to ultraviolet (UV) radiation.⁴ On average, a person’s risk for melanoma doubles if he or she has had more than five sunburns.

2. Sunscreen reduces the risk of skin cancer, including melanoma.^{5,6} In a large randomized controlled trial with 14 years follow up, half as many melanomas developed in the group that used daily sunscreen vs. discretionary sunscreen.⁵ Sunscreen also reduces the risk of sunburn and photoaging. Chemical sunscreens contain active ingredients that absorb the sun’s UV rays (e.g., oxybenzone, avobenzon), while physical sunscreens (also known as mineral sunscreens) contain active ingredients that block the sun’s rays (e.g., zinc oxide, titanium dioxide). The FDA has several safety and effectiveness regulations in place that govern sunscreen, including safety data on its ingredients. In fact, some argue that the FDA standards for approving new sunscreen ingredients are too rigid, preventing use of potentially superior products already available in Europe. When compared to shade (i.e., beach umbrella) alone, sunscreen was sig-

nificantly more effective at preventing against sunburn.⁷

3. Oxybenzone is an organic UV filter that has been used in the United States since the 1970s. In an in vivo study of rats that ingested oxybenzone, estrogenic and antiandrogenic effects were observed. Researchers estimated that it would take 277 years of daily application of sunscreen with 6 percent oxybenzone to attain the same level in humans.⁸

4. In recent years, micro- and nano-sized zinc oxide and titanium dioxide particles have been generated to provide the benefit of a physical barrier without the unappealing thickness of the original product. Several studies to date have shown that these nanoparticles are confined to the stratum corneum after topical application, even in skin where barrier function is altered. The normal turnover of the stratum corneum also naturally prevents accumulation of these particles.⁸ While more studies need to be done, experts agree that the risk of skin cancer outweighs concern for potential absorption of nanoparticles.

5. Vitamin D is essential for bone health. Dietary and supplemental intake is the preferred method of maintaining normal serum levels. The Institute of Medicine Recommended Dietary Allowance of the vitamin is based

on no or minimal sunlight.⁹ Additionally, studies have shown that normal usage of daily sunscreen did not result in vitamin D deficiency.¹⁰ This is because sunscreen does not block all UVB rays and most people do not apply sufficient sunscreen.

6. Patients must be educated on how to use sunscreen. Studies have shown that most consumers do not understand the sunscreen labels and fail to use sunscreen appropriately (i.e., do not apply enough). As a result, the real world SPF may not be the same as the laboratory SPF. When choosing a sunscreen, I tell my patients to look

for (1) broad spectrum coverage which protects against both UVA and UVB rays; (2) a Sun Protection Factor (SPF) of 30 or greater; (3) water resistance for up to 40 or 80 minutes. No sunscreen is waterproof, and most labels now reflect this. Sunscreen should be applied 30 minutes prior to exposure and should be reapplied every two hours. Beyond that, I tell my patients that the best sunscreen is the one that they will wear everyday, so they should choose a consistency and price point they feel comfortable with. As Consumer Reports has shown, price does not correlate with quality or efficacy.

One final plug – daily use of sunscreen for just one year was associated with improved skin clarity and texture and reversal of existing photoaging.¹¹

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The opinion expressed in this column is that of the writer and does not necessarily reflect the opinion of the Editorial Board, the *Bulletin*, or the Allegheny County Medical Society.

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