

---

# It's time for “keratinocyte carcinoma” to replace the term “nonmelanoma skin cancer”

Chante Karimkhani, BA,<sup>a</sup> Lindsay N. Boyers, BA,<sup>b</sup> Robert P. Dellavalle, MD, MSPH, PhD,<sup>c,d,e</sup> and Martin A. Weinstock, MD, PhD<sup>f,g,h</sup>

*New York, New York; Washington, District of Columbia; Aurora and Denver, Colorado; and Providence, Rhode Island*

**Key words:** basal cell carcinoma; keratinocyte cancer; nonmelanoma skin cancer; public health; squamous cell carcinoma; terminology.

**B**asal cell carcinoma (BCC) and squamous cell carcinoma (SCC) of the skin are the most common cancers in the United States and in predominantly light-skinned populations worldwide, and incidence is increasing.<sup>1-3</sup> In the United States, they are more common than all other cancers combined, affecting millions of Americans each year.<sup>1,2</sup> Although they have a high cure rate, they are still responsible for well over 1000 deaths annually.<sup>2,4</sup> In 2010 they were responsible for more disability-adjusted life years than melanoma in the United States.<sup>4</sup> They are also responsible for billions of dollars of health care expenditures, accounting for an estimated 4% of expenditures for cancer among adults.<sup>5</sup> They are a leading contributor to the overall cost of skin disease.<sup>5</sup>

Despite the importance of these skin cancers, they are commonly called “nonmelanoma skin cancer,” which reflects a historical underappreciation of their importance.<sup>6</sup> We would not refer to women as “non-male persons,” nor should we refer to BCC and SCC of the skin as nonmelanoma skin cancer. They must be labeled by what they are, not by what they are not.

## Abbreviations used:

BCC: basal cell carcinoma  
KC: keratinocyte carcinoma  
SCC: squamous cell carcinoma

These cancers have been termed “keratinocyte carcinoma” (KC) because they are carcinomas that share lineage with keratinocytes and histologically resemble epidermal keratinocytes.<sup>2</sup> Thus, “keratinocyte carcinoma” is a more accurate and appropriate term than “nonmelanoma skin cancer” for BCC and SCC when they are considered jointly. For example, “KC is more common than all other cancers combined”; “KCs generally occur on the head and are generally ultraviolet induced”; “KCs are common epithelial tumors that can cause substantial facial scarring”; “KCs have been associated with indoor tanning exposure”; “KCs account for the vast majority of all lesions treated by Mohs micrographic surgery”; “KCs can also be treated by topical medications such as 5-fluorouracil or imiquimod”; “5 million KCs are diagnosed each year in the United States, at a cost of over \$8 billion” (US Surgeon General’s Call to Action

---

From the Columbia University College of Physicians and Surgeons, New York<sup>a</sup>; Georgetown University School of Medicine, Washington<sup>b</sup>; Department of Dermatology<sup>c</sup> and Department of Epidemiology, Colorado School of Public Health,<sup>d</sup> University of Colorado Anschutz Medical Campus, Aurora; Department of Dermatology, Denver Department of Veterans Affairs Hospital<sup>e</sup>; Dermatoepidemiology Unit, Department of Veterans Affairs Medical Center Providence<sup>f</sup>; Department of Dermatology, Rhode Island Hospital<sup>g</sup>; and Departments of Dermatology and Epidemiology, Brown University, Providence.<sup>h</sup>

Ms Karimkhani and Ms Boyers are co-first authors.

Drs Dellavalle and Weinstock both receive a salary from the US Department of Veterans Affairs. Dr Weinstock is supported by grants from the National Institutes of Health (CA151306), Department of Veterans Affairs (CSP562), and Melanoma Research Alliance.

Disclosure: Ms Boyers, Dr Dellavalle, and Dr Weinstock are employees for the Department of Veterans Affairs. Dr Dellavalle

---

is also chair of the Colorado Skin Cancer Task Force. The Department of Veterans Affairs, Centers for Disease Control and Prevention, and National Institutes of Health had no role in the design and execution of this manuscript and any opinions expressed herein do not necessarily reflect the opinions of these organizations. Ms Karimkhani has no conflicts of interest to declare.

Reprint requests: Martin A. Weinstock, MD, PhD, Department of Veterans Affairs Medical Center Providence, 830 Chalkstone Ave, Providence, RI 02908. E-mail: [martin\\_weinstock\\_md@brown.edu](mailto:martin_weinstock_md@brown.edu).

J Am Acad Dermatol 2015;72:186-7.

0190-9622

Published by Elsevier on behalf of the American Academy of Dermatology, Inc.

<http://dx.doi.org/10.1016/j.jaad.2014.09.036>

on Skin Cancer Prevention<sup>7</sup>); and “KCs are increasing in incidence.” Of course, there are also clinical, biological, and epidemiologic differences between BCC and SCC so it will often be useful to distinguish between them; when this occurs, the term “keratinocyte carcinoma” is too general and should not be used. This will occur, for example, in multiple research contexts.

The terminology “keratinocyte carcinoma” has been used in multiple settings in the medical literature for more than a decade, but it is still much less commonly used than “nonmelanoma skin cancer.” A search was performed of PubMed on September 1, 2014, for the terms “keratinocyte carcinoma,” “keratinocyte cancer,” “nonmelanoma skin cancer,” and “non-melanoma skin cancer” in the title of indexed publications. The search found that 92% (11/12) of publications with “keratinocyte carcinoma” in the title and 65% (519/795) of publications with “non-melanoma skin cancer” in the title were published in 2005 or later. Nevertheless, for the period 2005 and later, only 2.1% (11/530) of the 530 publications with either term in the title used the term “keratinocyte carcinoma.”

The term “nonmelanoma skin cancer” should also be dropped because of its ambiguity. Often it is used as a label for KC, but it can also refer to other skin cancers, such as Merkel cell carcinoma, dermatofibrosarcoma protuberans, cutaneous lymphoma, sebaceous carcinoma, angiosarcoma, malignant fibrous histiocytoma, various malignant appendage tumors, and any other cancer of the skin except melanoma.<sup>1,2</sup>

Terminology changes. This is a time of greater public scrutiny of the activities of the medical community, along with major changes in the modes of health care delivery and the means by which health care is funded. KC should be recognized for its public health importance and relevance; let us not have an outdated and ambiguous label distract from this task. It is time to end the use of the term “nonmelanoma skin cancer” for KC and to focus attention on ameliorating this critically important problem that affects so many.

#### REFERENCES

1. Madan V, Lear JT, Szeimies RM. Non-melanoma skin cancer. *Lancet* 2010;375:673-85.
2. Albert MR, Weinstock MA. Keratinocyte carcinoma. *CA Cancer J Clin* 2003;53:292-302.
3. Rodgers HW, Weinstock MA, Harris AR, Hinckley MR, Feldman SR, Fleischer AB, Coldiron BM. Incidence estimate of nonmelanoma skin cancer in the United States, 2006. *JAMA Dermatol* 2010;146:283-7.
4. Institute for Health Metrics and Evaluation. GBD compare. Available from: URL:<http://vizhub.healthdata.org/gbd-compare/>. Accessed June 25, 2014.
5. Machlin S, Carper K, Kashihara D. Health care expenditures for non-melanoma skin cancer among adults, 2005-2008 (average annual). Statistical brief 345. November 2011. Agency for Healthcare Research and Quality; Rockville (MD). Available from: URL:[http://www.meps.ahrq.gov/mepsweb/data\\_files/publications/st345/stat345.shtml](http://www.meps.ahrq.gov/mepsweb/data_files/publications/st345/stat345.shtml). Accessed June 25, 2014.
6. Jackson R, Finkelstein H. Historical aspects of nonmelanoma skin cancer. *Clin Dermatol* 1995;13:517-25.
7. Surgeon General. The Surgeon General's Call to Action to Prevent Skin Cancer. Available from: <http://www.surgeongeneral.gov/library/calls/prevent-skin-cancer/call-to-action-prevent-skin-cancer.pdf>. Accessed August 1, 2014.