



KEEPING WATCH

*Melanoma monitoring
becomes a team effort*



BY **JAN BOWERS**, CONTRIBUTING WRITER

Detecting and treating the first signs of melanoma is the best way to minimize morbidity and mortality. In their effort to find early lesions, dermatologists are taking a multifaceted approach that embraces emerging and established imaging technologies such as three-dimensional total-body photography and dermoscopy. In addition, engaging patients and their partners in the hunt for suspicious lesions, and supplying them with education and tools for self-examination at home, is also proving highly successful in finding early disease. Another strategy for finding early melanoma — screening individuals who are not thought to be at increased risk of developing the disease — continues to be a source of controversy and discussion.

Introducing the avatar

Two-dimensional total body photography marked the first step in providing a “road map” to lesions that bear watching. Building on that concept, Allan Halpern, MD, chief of the dermatology service at Memorial Sloan Kettering Cancer Center, teamed with Canfield Scientific to develop and test an imaging method that creates a three-dimensional avatar of the patient. To get a baseline image, the patient stands in the middle of an array of 46 pairs of digital cameras, which fire simultaneously. The initial processing takes about 6 minutes and develops a dimensionally accurate avatar with the entire exposed skin surface. During the same visit, the dermatologist performs a skin examination and takes dermoscopic images of any suspicious lesions. The images are tagged to a location on the avatar so that the patient or physician can look at an image and easily find the corresponding lesion on the body. >>



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“What the 3-D photography really does is help us monitor changes,” said Dr. Halpern. He explained that not only can the dermatologist, on subsequent visits, quickly locate and compare images of concerning lesions, but patients also can use the technology to self-monitor at home. “We give patients a flash drive with their 3-D avatar and any close-up dermoscopy images we’ve taken of individual moles. During self-examinations, we want them to look for anything that looks concerning to them, and then look at the picture and see if it has changed.”

A filtering capability has been integrated into the latest version of the system, known as VECTRA WB360, which was launched commercially at the AAD’s annual scientific meeting in March. According to a Canfield spokesperson, the dermatologist can now customize the software for each patient to flag lesions that meet specific criteria, choosing from about a dozen characteristics including size, symmetry, color, and degree of variegation. This feature functions as a “second look” for the dermatologist and is intended to follow the physical examination. Current installations will have these latest features provided in the next software release, the spokesperson said.

At MSK, the technology is available at three locations to patients in the Melanoma Screening and Surveillance Program. Dr. Halpern predicted that due to its expense, the first generation of 3-D photography would probably be restricted to medical centers and sites specializing in surveillance, and be used on higher-risk patients. “But I’d like to think that some form of total body imaging will become a commonplace resource in dermatologic care,” he remarked. “My own hope is that total body skin imaging will become the basis of the dermatologic record.” Newer technologies like 3-D photography and reflectance confocal microscopy, as well as new apps for consumers, make it a “very exciting time,” said Dr. Halpern. “There’s a lot going on that has the potential to engage the broader population to do a better job of catching their own melanomas before they’re a problem, and to make doctors better at distinguishing the concerning lesions that need biopsies from those that don’t.”

Learning the ABCDEs

It’s a nifty mnemonic device that’s easy to grasp, and it’s been widely adopted by organizations ranging from small community health centers to the American Cancer Society. The ABCDE guide to skin self-examination (**A**symmetry, **B**order, **C**olor, **D**iameter, **E**volution) is a mainstay in educating patients to identify suspicious lesions. It’s been around for decades. But where did it come from?

“In 1984, [Robert J.] Friedman and I were in the dermatology library at NYU trying to think of how we could describe what melanoma looked like to inexperienced dermatologists, non-dermatologists, and even non-physicians,” said Darrell S. Rigel, MD, clinical professor of dermatology at New York University Medical Center and past president of the AAD. “We found that experienced faculty could recognize melanoma on Kodachrome slides we showed them, but they couldn’t tell us why, except to say that ‘it looks like one.’” Drs. Rigel and Friedman then systematically examined the features of early melanoma, one by one, to determine how they differed from benign nevi. They found that it was difficult to draw a line through a melanoma lesion and get two symmetrical sides. While benign nevi had very clear-cut borders, melanomas had “either very jagged borders like the coast of Maine, or they had very indistinct borders where the pigment sort of tailed off at the end.” While benign moles were generally uniform in color, melanoma lesions had multiple shades of brown, sometimes variegated. Finally, an NYU database of 1,200 melanomas at their time of diagnosis revealed that 95 percent had a diameter of 6mm or greater.

“Now we had A, B, C, and D,” noted Dr. Rigel. “So we ran down the hall to talk to our mentor at that time, [Alfred W.] Kopf, and he loved it. He felt it was the right approach.” The idea gained traction quickly, and the following year the NYU group published an article explaining the paradigm and advocating skin self-examination in *CA: A Cancer Journal for Clinicians*. In the meantime, both the ACS and the AAD developed educational materials on skin self-examination for physicians and the lay public. It wasn’t until 2004 that the “E” for



Dermoscopy gaining power, versatility, and fans

“evolution” was added, Dr. Rigel explained, as dermatologists came to recognize the significance of “the fact that a lesion is growing in disproportion to its neighbors.” Numerous published studies have provided scientific validation of the paradigm, Dr. Rigel maintained, but for him the most memorable proof of its value came when his mother, retired and living in Arizona, read his original article and spotted an early invasive melanoma on her arm.

Spot your partner

The ABCDEs served as a cornerstone for the educational materials developed by a Northwestern University dermatologist for partner-assisted skin self-examinations. June K. Robinson, MD, research professor of dermatology at Northwestern’s Feinberg School of Medicine, has devoted 15 years to exploring the early detection of melanoma by skin self-examination. In studying patients with melanoma, for whom self-examination is extremely important, Dr. Robinson said, “we clearly demonstrated that having a partner educated in skin self-examination at the same time improved skill at detection, as well as performance of the behavior. For one thing, it’s very difficult to examine your own back.” The AAD drove this point home through its “Who’s Got Your Back?” public education campaign in May 2016.

Funded by a National Cancer Institute grant, Dr. Robinson next studied three different methods of educating patient-partner pairs and included a control group that received no education. The three groups receiving intervention were given a kit containing a magnifying glass with a light, a laminated card explaining the ABCDEs, and a ruler to measure lesions. One group received instruction in the office from a research assistant, and could ask questions; one received a workbook to read in the office and take home; and one reviewed the information on a tablet, also in the office. The laminated card also showed a scoring system that allowed patients to assign a number corresponding to border irregularity, color variation, and diameter. All patients were examined by a dermatologist at 4-month intervals.

Although dermoscopy “should play a major role” in melanoma monitoring, the U.S. is behind the curve in its adoption, said Allan Halpern, MD. “There’s no question that a dermoscopically-trained clinician will do a better job at accurate diagnosis. Now the majority of dermatologists use the technique, but there is still a ways to go for the average dermatologist to become expert in using it.”

A number of factors may drive the adoption of dermoscopy and motivate dermatologists to sharpen their skills. For one, “patients are becoming more aware of it and asking for it,” said Orit Markowitz, MD, assistant professor of dermatology at the Icahn School of Medicine at Mount Sinai. “It’s becoming more the standard of care. Early melanoma detection comes from being able to utilize additional tools other than just the naked eye, and the dermoscope is that first tool. If you make that tool very light, user friendly, easy, attachable to an iPhone that you’re carrying in your pocket, by definition you’ve improved melanoma detection and mole monitoring.”

A proliferation of apps and attachments, some designed specifically for melanoma detection, are also boosting dermoscopy’s acceptance, Dr. Markowitz said. “There are certainly more HIPAA-compliant applications for teledermatology coming on the market,” she noted. “Companies that make dermoscopes are beginning to offer attachments for devices like iPhones and iPads, so that certainly makes taking and storing patient images more feasible. A lot of the new technology is still in the works, but we’re hoping to see it in the near future.” One smartphone attachment, MoleScope by MetaOptima, is marketed directly to consumers to help them track and monitor their own moles over time, and securely send mole images to a dermatologist for evaluation.

Aside from the new bells and whistles, “image quality is always improving,” said Dr. Markowitz. The ability of the dermoscope to reveal very early lesions brings demonstrable benefits to patients having regular skin examinations and to society as well, she maintained. “We really have the onus on us to show a massive amount of benefit in order for [the US Preventive Services Task Force and health policymakers] to say OK, there’s a benefit to the cost. But I could show many examples of certain types of lesions — and do, in my lectures — that had the patient not been coming in frequently, there would have been not only a cost to his life but a cost to society for him to go through much more aggressive treatment. Because I take dermoscopic images, I can say look, this is a one-month-old lesion that already has a blue-white veil, there’s already depth to it. So we do have those examples, but maybe not enough, and if more people were imaging dermoscopically we might have more examples to show.”

Dermatologists weigh in on the screening controversy

How often should a patient who is not at increased risk for developing skin cancer have his or her skin checked by a physician? “On your birthday have your birthday suit examined,” said Darrell S. Rigel, MD. “This is what I tell my patients, and it comes from [veteran New York dermatologist] Norman Goldstein.”

Contrary to Dr. Rigel’s view, the US Preventive Services Task Force published a recommendation statement last year concluding that “the current evidence is insufficient to assess the balance of benefits and harms of visual skin examination by a clinician to screen for skin cancer in adults.” (*JAMA*. 2016;316(4):429-35) The recommendation applies only to “asymptomatic adults who do not have a history of premalignant or malignant skin lesions.” The USPSTF document cites a lack of clear evidence on the efficacy of the clinical visual skin examination in screening for skin cancer, while admitting that a randomized controlled trial or high-quality case control study would be difficult to conduct for this purpose. Similarly, it found little evidence for the potential harms of screening, but stated that “the potential for harm clearly exists, including a high rate of unnecessary biopsies, possibly resulting in cosmetic or — more rarely — functional adverse effects, and the risk of overdiagnosis and overtreatment.”

In a public statement responding to the USPSTF recommendation, then-AAD President Abel Torres, MD, JD, MBA, expressed disappointment with the task force’s conclusions while acknowledging the need for additional research on both the benefits and harms of skin cancer screening in the primary care setting. Dr. Torres pointed out that in the 30-year history of the AAD’s SPOTme® screening program, dermatologists have performed more than 2.5 million screenings and found more than 255,000 suspected nonmelanoma skin lesions and 28,500 melanomas.

Like Dr. Rigel, dermoscopy expert Orit Markowitz, MD, recommends that “on average, everyone should get an exam once a year.” She said she is frequently asked at what age annual exams should start. “There’s increased awareness of the risk that young people can develop melanoma. In my area, that’s partly because Molly’s Fund, which was started in memory of a 20-year-old woman who died of melanoma, does a lot of advertising in New York in May. If it’s a parent asking out of concern, I say that as the child is approaching the age that they’ll see adult doctors on their own, they should be treated as adults and start getting skin exams.”

The primary outcome of the study, published in *JAMA Dermatology* (2016;152(9):979-85), was the frequency of skin self-examination as recorded on self-report surveys. The secondary outcome was detection of a new or recurrent melanoma by the patient-partner pair or the physician. The third was the number of unscheduled physician appointments for concerning lesions. “We learned that patients can perform skin self-examination in pairs, they can continue to do it for two years, and they can perform their scoring with the same accuracy as that performed by the dermatologist,” said Dr. Robinson. In addition, “they felt confident. The number of dermatologist visits did not increase. And, they’re not embarrassed. Doctors become overly concerned with the embarrassment factor, but when the physician directs the pair to do this, because it could possibly save a life, they feel empowered.” Among the three intervention groups, 33 Stage 0 melanomas were found by the patient-partner pair and six were found by a physician. No melanomas were found by patients in the control group.

The fact that the intervention group that received instruction via tablet performed as well as the other two “tells me that I can disseminate this education with e-health, over the internet. I don’t have to be in the room,” said Dr. Robinson. She received a Small Business Innovation Research grant earlier this year and will serve as Northwestern’s institutional principal investigator as she works with Vibrent Health to develop a version of the skills training and support program that can be integrated into the EMR workflow. “This is important, because patient education is not usually reimbursed for dermatologists, yet it is a quality measure,” Dr. Robinson pointed out. “So if we can make this available within the EMR with the click of a button, it enhances the ability of melanoma patients to come in and have a biopsy performed on truly concerning lesions.” *dw*