Medical Coverage Policy | Reflectance Confocal Microscopy for Evaluating Skin Lesions for Suspected Malignancy

EFFECTIVE DATE: 01|01|2016
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OVERVIEW

Reflectance confocal microscopy (RCM) is a relatively new technique that allows noninvasive imaging of the epidermis and superficial dermis to more accurately evaluate both melanocytic and nonmelanocytic skin lesions. RCM acquires images in the horizontal plane (en face), allowing assessment of tissue pathology underlying dermoscopic structures of interest at a cellular-level resolution.

MEDICAL CRITERIA

Not applicable

PRIOR AUTHORIZATION

Not applicable

POLICY STATEMENT

Medicare Advantage Plans and Commercial Products

Reflectance confocal microscopy is considered not covered as a technique to evaluate or serially monitor pigmented skin lesions as there is insufficient evidence to determine the effects of the technology on health outcomes.

Commercial Products

Reflectance confocal microscopy is considered not medically necessary as a technique to evaluate or serially monitor pigmented skin lesions as there is insufficient evidence to determine the effects of the technology on health outcomes.

COVERAGE

Benefits may vary between groups and contracts. Please refer to the appropriate Benefit Booklet, Evidence of Coverage or Subscriber Agreement for applicable not medically necessary/not covered benefits/coverage.

BACKGROUND

Reflectance Confocal Microscopy

Reflectance confocal microscopy, also known as confocal scanning laser microscopy (CSLM), uses a near infrared laser that emits near-infrared light (830 nm) to obtain images of the top layers of the skin. The images are magnified and information regarding cell structure and the architecture of the surrounding tissues is evaluated. Combinations of features are assessed to give a positive or negative diagnosis of melanoma. RCM is proposed to be comparable to conventional histology and proposed for use as an adjunctive diagnostic tool to examination and dermoscopy in difficult to diagnose lesions and therefore, aid in determining if a lesion is benign or is a melanoma. Studies evaluating the accuracy of confocal scanning laser RCM/CSLM in assessing skin lesions for melanoma have reported sensitivity, specificity, positive and negative predictive values ranging from 90.74% to 97.5%, 83% to 99%, 70.6% to 97.5%, and 98.17% to 99%, respectively.

RCM is considered an evolving technology with several limitations. The depth of imaging is confined to the epidermis and papillary dermis, which may result in false negatives. Penetration of RCM light may be hampered by hyperkeratosis, reflective creams and surface particles. Another limitation is the challenge that

the interpreter has of distinguishing between cells with similar reflection index and shape (e.g., Langerhans cells versus dendritic melanocytes at the spinous layer). RCM is a time consuming exam taking an average of seven minutes per lesion. Clinical-dermatoscopic skills are required, as well as adequate training and experience to read RCM images and make the correct interpretation. It has yet to be determined if the advantages of the clinical utility of RCM as an adjunctive diagnostic tool are greater than the risk of over-excising benign lesion and misdiagnosing melanomas a as benign. In some cases RCM may be used for cosmetically sensitive areas to avoid excision (Que, et al., 2015; Stevenson, et al., 2013; Gerger, 2008; Langley, 2007; Gerger, 2006). There is insufficient evidence to support the clinical utility of RCM.

U.S. Food and Drug Administration (FDA): Confocal microscopes are approved by the FDA 510(k) process. Examples of these devices include the VivaScope System 1500 and the handheld VivaScope 3000 (Lucid, Inc., Rochester, New York). The VivaScope is intended "to acquire, store, retrieve, display and transfer in vivo images of tissue, including blood, collagen and pigment, in exposed unstained epithelium and the supporting stroma for review by physicians to assist in forming a clinical judgment". The SIAscope II (Astron Clinica Limited, Crofton MD) is FDA approved as a "non-invasive skin analysis system, which provides a synthesized 'image' showing the relative location of blood collagen and pigment" (FDA, 2008; 2003).

Pellacani et al. (2014) conducted a prospective case series (n=1005) to assess the impact of reflectance confocal microscopy (RCM) in the routine diagnosis of melanoma. Patients had atypical moles and were initially referred to either no further examination or to RCM. The RCM group was further subdivided into RCM documentation (suspicious lesions already qualified for excision) or RCM consultation (i.e., RCM would determine if the lesion was excised or monitored with digital dermoscopy). RCM did not affect the outcome in patients already scheduled for excision. Patients referred for RCM had a higher number of nevi (>100 nevi; 19%) and atypical nevi (>5; 15%) compared to patients referred for RCM documentation and patients without RCM referral ($p<0.0001$). Personal and/or familial history of melanoma was recorded in approximately 8% of patients. A total of 493 lesions were referred to RCM of which 183 underwent RCM documentation and 308 RCM consultations. Histopathology identified 23 melanomas. RCM proposed the same diagnosis as histopathology in 82.6% of melanomas. A total of 109 of 308 RCM consultation lesions were excised, six cases of melanoma were diagnosed and five cases were confirmed as melanomas. Twenty-eight lesions deferred to follow-up were excised based on dermoscopic changes. Overall RCM proposed diagnosis was concordant with histopathological diagnosis in 76.3% of cases and reduced the number of excision by 46.5%. Limitations of the study include: 12.3% of patients were lost to follow-up; 11 patients either refused RCM or were unable to undergo RCM; and the study population was a low risk group referred for screening.

Stevenson et al. (2013) conducted a systematic review of the literature to determine the diagnostic accuracy of reflectance confocal microscopy (RCM) as an adjunctive tool to dermoscopy for the evaluation of melanoma. No systematic reviews or meta-analysis were found. Studies were primarily in the form of case series, case reports, and descriptive correlation studies that only described RCM features and narrative reviews. Five studies (n=909 lesions) met inclusion criteria and were eligible for meta-analysis. Meta-analysis returned a per lesion sensitivity of 93% (range 91%–97%) and a specificity of 76% (range 68%–86%). The average prevalence of melanoma was 36%. The authors noted that a weakness of the study was that the studies may not have focused on the pertinent patient populations to test the ability of RCM as an add-on test to dermoscopy. Limitations of the studies included use of various types of melanoma scoring systems and outcome measures, heterogeneity of lesion locations, and two studies did not list number of patients evaluated.

Technology Assessments
In a Directory Report (2011; reviewed 2012–2015) Hayes concluded that there is insufficient evidence to support the use of single lesion, partial body or whole body photography for melanoma screening. There is a lack of evidence showing that patient outcomes improved by reducing the frequency of unnecessary biopsies

or improving the early detection of malignant melanoma. Studies were primarily in the form of uncontrolled trials. Outcomes were conflicting, as there was absence of a control group and lack of reporting of lesion thickness. There was insufficient evidence to establish definitive patient selection criteria for single-lesion, selected-region or total body photography.

The Agency for Healthcare Research and Quality (AHRQ) (2011) published a technology brief assessing noninvasive diagnostic techniques for the detection of skin cancers including melanoma. A technology brief provides an overview of interventions "for which there are limited published data and too few completed protocol-driven studies to support definitive conclusions." A total of 629 abstracts were accepted for final review including five systematic reviews, 118 narrative reviews, 108 technical reports, 11 randomized controlled trials,77 diagnostic tests, 64 comparative cohort study, 143 noncomparative cohort studies, 55 case reports and 48 other/not classified studies.

In regards to dermoscopy, 238 abstracts were found that addressed melanoma. A total of 86 primary studies and five systematic reviews evaluated general and digital dermoscopy. Only two randomized controlled trials were found. Per AHRQ, studies on early melanoma were largely confined to the use of algorithms or classifiers of dermoscopic images to differentiate early melanoma from other stages of melanoma. Non-randomized studies focused on features of dermoscopic image that would be of diagnostic interest, digital dermoscopy, the use of computer-based analyses, evaluations of different algorithms and classification schemes. No controlled studies were found that examined the use of dermoscopy to increase the detection rate of early stage melanoma, and no study reported on how the addition of dermoscopy affected survival from melanoma.

Six randomized controlled trials evaluated the diagnostic accuracy, excision rates, patient satisfaction treatment adherence and follow-up of photography. Additional abstracts of comparative and noncomparative cohorts were reviewed. According to AHRQ, the available data are limited on the role of photography in changing clinical outcomes. Evidence that baseline photography improves the detection of melanoma and results in detection of earlier stage lesions or recurrent lesions is lacking. Data are also limited on the role of photography for specific racial/ethnic groups.

Based on the evidence, confocal scanning laser microscopy (CSML) and ultrasound are not generally used and there are no FDA approved devices. AHRQ noted that multiphoton laser scanning microscopy, multispectral imaging and fully automated computer-based analysis, electrical bio-impedance, optical coherence tomography and tape stripping are investigational modalities.

AHRQ concluded that predominant use of noninvasive devices is by dermatologists with limited diffusion of this technology in primary care. Compared to biopsy, future research is needed to evaluate the test accuracies, clinical impact, and the potential adverse events associated with the use of noninvasive imaging technologies.

Professional Societies/Organizations
American Academy of Dermatology (AAD): AAD (2011) stated that biopsy is the first step for a definitive diagnosis of cancer. They do not discuss the use of noninvasive technologies in their guidelines for the management of melanoma.

National Cancer Institute (NCI): According to NCI (2015), the incidence of melanoma rises rapidly in Caucasians after age 20 years. Fair-skinned individuals exposed to the sun are high risk and certain types of pigmented lesions (dysplastic or atypical nevi), with several large nondysplastic nevi, with many small nevi, or with moderate freckling have a twofold to threefold increased risk of developing melanoma. Familial dysplastic nevus syndrome or the presence of several dysplastic or atypical nevi increases the risk of developing melanoma greater than fivefold. NCI stated that the only widely proposed screening procedure for skin cancer is visual examination of the skin, including both self-examination and clinical examination.

National Comprehensive Cancer Network® (NCCN®): In the discussion for follow-up following diagnosis and treatment of melanoma, NCCN's Clinical Practice Guidelines in Oncology™ (2015) states that patients cured of an initial primary melanoma are at increased risk for a second melanoma. Patients with risk factors that increase the chance for recurrence should be enrolled in a more intensive surveillance program and may benefit from adjuncts such as high-resolution total body photography. These risk factors include multiple primary melanomas, positive family history and the presence of multiple dysplastic nevi. Regarding imagining (ultrasound, CT, Pet and Pet/CT) NCCN states that studies have reported low yield with significant false positives and cumulative risk from radiation exposure.

U.S. Preventive Services Task Force (USPSTF): The USPSTF Screening for Skin Cancer recommendation statement (2009) for an adult in the general population stated that the current evidence is insufficient to assess the balance of benefits and harms of using a whole-body skin examination screening for the early detection of skin cancer by primary care clinicians or by patient skin self-examination.

National Institute for Health and Clinical Excellence (NICE): The 2015 NICE guidelines on the assessment and management of melanoma included a review of the literature on dermoscopy and other visualization techniques. NICE stated that dermoscopy is an accepted practice but the accuracy and clinical utility depends on the experience of the practitioner who is using it and recommends its use in the assessment of lesions when performed by a trained professional. Based on the literature review, NICE did not recommend the routine use of confocal microscopy or computer-assisted diagnostic tools. NICE recommended that baseline photography (preferably dermoscopic) be used for a clinically atypical melanocytic lesion that does not need excision and to review the clinical appearance with the images every three months. NICE noted that photography, mole mapping, might help to identify changes in moles but the quality is variable. The Guideline Development Group was uncertain about the most appropriate timing for sequential photography to detect significant changes in pigmented lesions to aide in the diagnosis of early melanoma.

Summary

There is insufficient evidence in the published peer-reviewed literature to support the accuracy and/or clinical utility of noninvasive surveillance technologies (e.g., whole body phototherapy, multispectral image analysis). Studies are primarily in the form of case studies and retrospective reviews with short-term follow-ups and used various dermatologic algorithms and comparators (e.g., naked eye, histology, other noninvasive technologies). Reported outcomes are conflicting and results varied based on the size of the lesions. Some studies evaluated the lesions while others evaluated images of lesions. Overall, published studies have not addressed whether or not these technologies resulted in earlier diagnosis of melanoma, identified recurrent lesions, resulted in fewer missed diagnosis or affected survival. Patient selection criteria for these devices have not been established. Dermoscopy is considered part of a normal evaluation of a pigmented skin lesion and is not reimbursed as a separate examination.

CODING

The following codes are not covered for Medicare Advantage Plans and not medically necessary for Commercial products:

96931 Reflectance confocal microscopy (RCM) for cellular and sub-cellular imaging of skin; image acquisition and interpretation and report, first lesion

96932 Reflectance confocal microscopy (RCM) for cellular and sub-cellular imaging of skin; image acquisition only, first lesion

96933 Reflectance confocal microscopy (RCM) for cellular and sub-cellular imaging of skin; interpretation and report only, first lesion

96934 Reflectance confocal microscopy (RCM) for cellular and sub-cellular imaging of skin; image acquisition and interpretation and report, each additional lesion (List separately in addition to code for primary procedure)

96935 Reflectance confocal microscopy (RCM) for cellular and sub-cellular imaging of skin; image acquisition only, each additional lesion (List separately in addition to code for primary procedure)

96936 Reflectance confocal microscopy (RCM) for cellular and sub-cellular imaging of skin; interpretation and report only, each additional lesion (List separately in addition to code for primary procedure)

RELATED POLICIES

Not applicable

PUBLISHED

Provider Update, October 2021
Provider Update, December 2020
Provider Update, December 2019
Provider Update, February 2019
Provider Update, July 2017

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NICE; Diagnostic Assessment Programme, VivaScope 1500 and 3000 Imaging systems for detecting and monitoring skin cancer lesions; https://www.nice.org.uk/guidance/DG19/documents/consultation-comments-and-responses

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