Elmore and coauthors present a study that evaluates the reproducibility and concordance of microstaging of melanoma using the 7th vs 8th editions of the AJCC Cancer Staging Manual. The authors report modest but significant improvements (up to 10%) in the reproducibility and concordance for both T1a and T1b or greater melanomas when categorized according to the AJCC Cancer Staging Manual, 8th edition (AJCC 8). The authors conclude that AJCC 8 will improve the accuracy of staging of invasive cutaneous melanoma and may have a positive impact on patient care.

At the commencement of 2018, AJCC 8 was implemented in the United States. Among other changes, the definitions of T1a and T1b for primary cutaneous melanomas were refined from the AJCC Cancer Staging Manual, 7th edition (AJCC 7). Whereas AJCC 7 defined T1a melanomas as being of Breslow thickness 1 mm or less and lacking mitoses (defined using the dermal hotspot approach as either <1/mm² or ≥1/mm²) and ulceration, AJCC 8 classifies nonulcerated melanomas less than 0.8 mm thick as T1a; T1b is defined as a melanoma 0.8 to 1.0 mm thick or less than 0.8 mm thick with ulceration. While the staging changes in AJCC 8 were data driven, the impact, if any, on reproducibility and concordance of staging was not formally evaluated by the American Joint Committee on Cancer (AJCC) Melanoma Expert Panel.

Elmore et al evaluated the effects of the differences between the melanoma staging system in AJCC 7 vs AJCC 8 on reproducibility by analyzing a subset of data compiled from their previously published Melanoma Pathology Study. In the Melanoma Pathology Study, 187 pathologists evaluated 240 melanocytic lesions and classified them according to a 5-tiered system called the Melanocytic Pathology Assessment Tool and Hierarchy for Diagnosis, which includes class I, nevus or mild atypia; class II, moderate atypia; class III, severe atypia or melanoma in situ; class IV, pT1a invasive melanoma (AJCC 7); and class V, pT1b or greater invasive melanoma (AJCC 7). By analyzing the subset of 116 invasive melanomas (ie, those classified as classes IV and V by 3 expert pathologists), the authors attempted to assess the impact of AJCC melanoma staging system changes. While the study methods are not entirely clear, a significant limitation of their approach appears to be that study pathologists were tasked with scoring cases according to the Melanocytic Pathology Assessment Tool and Hierarchy for Diagnosis system, rather than focusing on classifying them into specific AJCC tumor (T) categories. Based on their classification schema, 7 T subcategories (ie, AJCC 7 T1b-T4b corresponding to Melanoma Pathology Study class V) were grouped together in the current analysis. This approach limits the reader’s interpretation of variability and reproducibility of T1b melanomas, which is important as this is a threshold at which sentinel node biopsy is often recommended.

Another important revision in AJCC 8 was of the definition of microsatellites, which may also be associated with the reproducibility of components of the melanoma staging system. However, this was not assessed in the study by Elmore and colleagues. Microsatellites are now defined as any microscopic cutaneous and/or subcutaneous metastasis adjacent to or deep to, and completely discontinuous from, a primary melanoma with unaffected stroma occupying the space between, identified on pathological examination of the primary tumor site. A microsatellite can therefore upstage a patient’s melanoma to stage III. With recent clinical trial results reporting improvements in outcomes for patients with stage III melanoma receiving adjuvant systemic therapy, accurate diagnosis of microsatellites has become critical for optimal patient care.
scope of the present study, the assessment of microsatellites is an important factor in the overall reproducibility and concordance of staging by the AJCC 8 criteria.

While the reproducibility of staging is critical for patients with melanoma, of perhaps greater importance is the clinical and pathological distinction of melanoma from its mimics. Despite the increasing incidence of melanoma, the histological diagnosis of borderline melanocytic lesions remains poorly reproducible.4 Elmore et al1 showed that tumor classification was also hampered by poor rates of concordance for T1a (54%) and T1b or greater (78%) lesions, and similarly low rates of intraobserver reproducibility. As the participating pathologists in the study by Elmore et al1 ranged from experts in melanocytic skin lesions (42%) to those who reported examining fewer than 5 melanomas per month (44%), it would be of interest to know how the rates of concordance and intraobserver variability aligned with experience among participating pathologists and which staging parameters showed the largest discrepancies. For example, was most of the variability due to the assessment of Breslow thickness or ulceration, or alternatively, the diagnosis of the lesion as melanoma? Previous studies have shown that the reproducibility of mitotic rate assessment is less than that of the other T-category parameters—tumor thickness and ulceration.8 Therefore, were the improvements in concordance and intraobserver variability identified when using AJCC 8 primarily a result of the removal of mitotic rate as a T-category criterion? The Melanocytic Pathology Assessment Tool and Hierarchy for Diagnosis study design does not permit specifically addressing this question and represents another limitation of the study. Studies assessing the aforementioned issues may have important ramifications for continuing medical education, referral practice, and the design of future editions of the AJCC melanoma staging system.

Staging systems are designed to describe primary tumors and the extent of their spread, if any, in a standardized format to stratify patients into prognostic groups that in turn inform clinical decision making and facilitate the design, conduct, and evaluation of clinical trials as well as central registry reporting. The AJCC 8 melanoma staging system was underpinned by analyses from a melanoma database of more than 46 000 patients from 10 centers worldwide diagnosed since 1998.9 Although intraobserver variability and discordance in the diagnosis of melanomas by pathologists, as described by Elmore et al,1 may affect the correlation between histological parameters and outcome in the AJCC data set to some extent, it did not prevent stratification of primary melanomas into prognostic stage groups with statistically significant differences in survival. Furthermore, we have published higher rates of concordance using AJCC 7 criteria, albeit with access to clinical information and reporting by a small number of pathologists with expertise reporting melanomas at a high-volume referral center.10

Overall, Elmore et al1 report modest improvements in reproducibility and concordance using AJCC 8 compared with AJCC 7. Importantly, they also demonstrated that among a large group of pathologists with varying levels of expertise, there is significant opportunity to improve reproducibility and concordance in the pathological staging of melanoma. To address this challenge, future studies could investigate the reproducibility of each parameter required by AJCC 8 or pathological factors proposed for inclusion in subsequent iterations, and how this may be influenced by the experience of the reporting pathologist (eg, by the nature and number of melanocytic cases evaluated per year) and/or the availability of relevant clinical and molecular information. Such studies could potentially inform future editions of the AJCC melanoma staging system and contribute to improved accuracy in the pathological staging of patients with melanoma.

ARTICLE INFORMATION
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