



novel courses at several U.S. medical schools, including the Perelman School of Medicine at the University of Pennsylvania and Oregon Health & Science University School of Medicine.<sup>5,6</sup> None of the published student-driven interventions have offered a specific methodology for revising *existing* course content; instead, they have focused on creating new courses that are elective or separate from and supplementary to preclinical curricula. However, a systematic approach for revising existing curricula is needed to address the critiques of the cultural competency model and advance teaching about race and culture.

Recently, Bourgois et al<sup>7</sup> published a structured assessment tool to guide health providers in addressing the social determinants of health in their clinical practices. A pragmatic guide for medical educators that follows this model could assist in efforts to improve teaching about race and culture in medical school curricula and the representation of race and culture in national exams, board preparatory courses, question banks, and virtual-case-based learning modules.

The nonprofit organization Aquifer (formerly MedU), established in 2006, produces virtual-case-based courses used by over 95% of U.S. MD-granting medical schools. Over the past decade, Aquifer has received feedback from medical students regarding inadequate presentation of race and culture in its national, peer-reviewed curriculum. Although Aquifer has incorporated this feedback on a case-by-case basis during scheduled editorial reviews, a more systematic and proactive approach was needed. In the absence of established guidelines for case content revision around issues related to race and culture, Aquifer leadership in 2017 recruited a team of multi-institutional faculty and medical student leaders to design and pilot such guidelines.

This pilot initiative had two goals: identify specific areas for improvement in the way Aquifer cases address race and culture; and develop a practical, structured, and evidence-based guide for revision of existing teaching cases. In this Innovation Report, we describe our process and share the guide we developed. To our knowledge, this is the first published tool for medical educators

to use to systematically improve the delivery of critical content about race, culture, structural inequalities, and health disparities through case-based learning.

## Approach

### Setting and participants

In spring 2017, two Aquifer editorial board members (K.C., S.S.) launched a nationwide call for medical student volunteers with curriculum development experience and interest in race and culture in medical education. The call was disseminated by Aquifer editorial board members to approximately 25 participating U.S. medical schools. From the 26 applicants, 4 third-year medical students (3 of whom identified as underrepresented minorities) were selected to join the race and culture workgroup along with the 2 faculty leads. During the six-month project, 2 of the students left the workgroup because of competing demands.

### Guide development

Our workgroup performed a literature review in April 2017 to understand challenges and best practices for increasing medical students' understanding of race and culture. From this review, we distilled a working summary of essential competencies for medical students surrounding race and culture, effective teaching and learning strategies, characteristics of ineffective race and culture curricula, and best practices for online learning. In summary, we found that the recent literature (published 2007–2017) emphasizes that medical education should highlight the influence of social, political, and economic factors on health outcomes to prepare future physicians to combat health disparities. Metz and Hansen<sup>3</sup> call this approach *structural competency*, which they define as

the trained ability to discern how a host of issues defined clinically as symptoms, attitudes, or diseases (e.g., depression, hypertension, obesity, smoking, medication “non-compliance,” trauma, psychosis) also represent the downstream implications of a number of upstream decisions about such matters as health care and food delivery systems, zoning laws, urban and rural infrastructures, medicalization, or even about the very definitions of illness and health.

In contrast to cultural competency, structural competency explicitly

acknowledges the structural factors implicated in health disparities faced by minority groups. Its framework empowers providers to think beyond brief patient-provider encounters and to improve health outcomes through structural interventions. For instance, medical students in Nashville, Tennessee, organized a mobile grocery van to deliver goods to impoverished neighborhoods after observing that patients were unable to take their medications at prescribed times because of long commutes to grocery stores.<sup>3</sup>

Informed by our literature review, we developed an analytical framework to assess the degree to which Aquifer's teaching cases demonstrated effective or ineffective race- and culture-related teaching strategies and/or reinforced Metz and Hansen's<sup>3</sup> five tenets of structural competency:

- 1) recognizing the structures that shape clinical interactions; 2) developing an extra-clinical language of structure; 3) rearticulating “cultural” formulations in structural terms; 4) observing and imagining structural interventions; and 5) developing structural humility.\*

Using this analytical framework, we developed a 20-item case review spreadsheet to standardize and focus our review of Aquifer cases. In August 2017, our workgroup medical students (A.K., M.R.) reviewed 63 (62%) of the 101 Aquifer virtual patient cases in the family medicine, internal medicine, and pediatrics courses using this spreadsheet. They also reviewed the demographics of patients, medical students, and attending physicians in all 101 of these cases. The entire workgroup met regularly over several months to iteratively discuss emerging themes, and we halted our case review when thematic saturation was reached.

We synthesized our findings into six major themes that describe the common mistakes or pitfalls in the ways that race and culture were presented in Aquifer teaching cases, as outlined with examples in Chart 1. We sought to increase the content validity of our themes by presenting our work at the annual Aquifer

\**Structural humility* is defined by Metz and Hansen<sup>3</sup> as the “trained ability to recognize the limitations of structural competency”; that is, skills in structural competency serve as “beginning points of clinical conversations rather than endpoints.”

### Chart 1

#### Six Themes Describing Common Mistakes or Pitfalls in the Presentation of Race and Culture in 63 Aquifer Teaching Cases Reviewed in 2017<sup>a</sup>

Theme	Examples (Aquifer course, case)
Cases do not distinguish between <i>race as a genetic risk factor and the social or structural causes of racial health disparities.</i>	Screening for diabetes should be done if children have two or more “risk factors,” including “race/ethnicity (Native American, African American, Latino, or Asian American, Pacific Islander)” (Pediatrics, case 16). Risk factors listed for major depressive disorder include “cultural background” (Internal Medicine, case 5).
Etiologies of disease center around individual behaviors and characteristics without any context of upstream factors. Language used to describe patients’ characteristics and behavior prevents understanding of root causes of health disparities and perpetuates racial and cultural biases.	Racial disparities in adolescent obesity are attributed to “increased consumption of processed foods” (Family Medicine, case 21). Patient is described as a “substance abuser” (Internal Medicine, case 9). Patients may have “bad nutrition” and “sometimes have their own agendas” (Family Medicine, case 8).
Patient descriptions frequently include reductionist and essentialist portrayals of non-Western cultures and people of color.	“The patient grew up with parents who experienced the deprivations of World War II and ... lived under communism in Central Europe. They generally seek medical attention when their problems are really bothering them and do not necessarily trust the advice and remedies that are offered” (Internal Medicine, case 5). “You recall that the Latino cultural model of health emphasizes the role of balance in health” (Family Medicine, case 6). Spanish-speaking family is described as living in a small apartment with 12 people, and the children are noted to “attend public school” (Pediatrics, case 16).
Providers ignore or portray a sense of futility in addressing social and structural causes of disease and illness.	“You feel uncomfortable with him going back to the streets after this life-threatening illness, but ... there is no alternative ... [you] give him the address and phone number of a free clinic” (Internal Medicine, case 26).
Cases lack critical reflection on health disparities and implicit bias in medicine.	Physician briefly notes that sometimes “immigration status influences [the] patient’s decision to not seek care.” This is not mentioned again (Family Medicine, case 3). While patient is a person of color, all dermatologic findings and images are shown on white skin, without comment (Pediatrics, case 32). “Hypertension is more common, more severe, and results in more complications in African Americans. This may be due to a variety of genetic or socioeconomic factors” (Internal Medicine, case 6).

Cases do not consistently portray minority identities among patients, medical students, and physicians, and therefore do not reflect the current U.S. population in each of these categories.<sup>b</sup>

Racial/ethnic identity	Aquifer cases (N = 101) <sup>c</sup>		% of U.S. population in 2017 <sup>d</sup>
	No.	%	
White	71	70.3	60.7
Asian	7	6.9	5.8
Black	14	13.9	13.4
Latino/a	<b>9</b>	<b>8.9</b>	<b>18.1</b>
Other <sup>e</sup>	<b>0</b>	<b>0</b>	<b>1.5</b>

  

Racial/ethnic identity	Medical students		% of U.S. medical students in 2017 <sup>f</sup>
	No.	%	
White	78	77.2	52
Asian	<b>15</b>	<b>14.9</b>	<b>21.3</b>
Black	7	6.9	6.8
Latino/a	<b>1</b>	<b>1.0</b>	<b>6.3</b>
Other <sup>e</sup>	0	0	0.3

  

Racial/ethnic identity	Attending physicians		% of U.S. medical school faculty in 2017 <sup>g</sup>
	No.	%	
White	71	70.3	61.2
Asian	20	19.8	16.2
Black	7	6.9	3.1
Latino/a	<b>3</b>	<b>3.0</b>	<b>5.0</b>
Other <sup>e</sup>	0	0	0.2

<sup>a</sup>Examples and analyses are drawn from published Aquifer virtual patient teaching cases as of August 2017. Of 101 total cases in the internal medicine, family medicine, and pediatrics courses, 63 were analyzed for the first five themes, whereas all 101 were analyzed for the sixth theme.

<sup>b</sup>Note that current demographics of U.S. medical students and faculty reflect underrepresentation of certain racial/ethnic groups relative to the U.S. population.

<sup>c</sup>Bold type indicates clear discrepancies in minority representation between Aquifer cases and the U.S. comparison populations.

<sup>d</sup>Source: United States Census Bureau. QuickFacts: United States. Population estimates, July 1, 2017 (V2017). <https://www.census.gov/quickfacts/fact/table/US/PST045217#PST045217>. Published July 2017. Accessed December 11, 2018.

<sup>e</sup>“Other” includes the following racial/ethnic groups: American Indian, Alaska Native, Native Hawaiian, and Pacific Islander.

<sup>f</sup>Source: Association of American Medical Colleges. Table B-5: Total enrollment by U.S. medical school and race/ethnicity, 2017–2018. <https://www.aamc.org/download/321540/data/factstableb5.pdf>. Published November 21, 2017. Accessed November 16, 2018. [Updated version available.]

<sup>g</sup>Source: Association of American Medical Colleges. Table 5: U.S. medical school faculty by degree and race/ethnicity, 2017. AAMC Faculty Roster. <https://www.aamc.org/download/486122/data/17table5.pdf>. Published December 31, 2017. Accessed December 11, 2018.

conference in fall 2017, attended by more than 100 medical education faculty, for feedback, discussion, and refinement. We then applied our literature review findings to develop specific strategies for case content revision to address each

common mistake or pitfall within each major theme. Next, we structured these revision strategies to create our race and culture guide for systematic case revision. Finally, we disseminated our guide to several faculty, including those from

underrepresented minority backgrounds, who had experience incorporating structural competency concepts into medical education curricula for feedback, content validation (member checking<sup>8</sup>), and final revisions.

## Box 1

### Race and Culture Guide for Editors of Teaching Cases: Excerpt<sup>a</sup>

**Section 3.** Description of patients' histories, health beliefs, and practices should direct attention to unique patient circumstances and social and structural determinants of health (SSDOH), as opposed to racial/cultural stereotypes.

#### Does your case include:

- A patient of color and/or minority culture?
- Attribution of a patient's health belief or practice to cultural values, beliefs or practices?
- Guidance on how to approach minority patients (based on their "unique belief systems" as a group)?

#### Suggested case edits:

- Cases should be written such that minority patients are not automatically assumed to be "the other" (racially/culturally different from the case author, physician or medical student):
  - Consider how a physician from the same racial/cultural background as the patient might interact with this patient.
  - Explore whether the case might be written differently from that point of view. (Consider language like "we," "they," etc.)
- Avoid use of patient's racial/cultural identity as a harbinger of pathology covered later in the case:
  - Mentioning relevant SSDOH and health disparities for certain pathologies is important, but strive to include a variety of different portrayals of minority patients (not always giving them pathologies classically associated with their race/culture).
  - Good example: A black child is found to have leukemia, instead of sickle cell disease.
  - Good example: A trans woman is found to have meningitis, instead of HIV/AIDS.
- Exercise caution and restraint when offering instructions on how to approach patients based solely on their racial/cultural identity:
  - Ask patients about their beliefs, instead of assuming that because they are Latino, they believe in *fatalismo* (fatalism), for instance. A Latino patient may still report a belief in *fatalismo*, but the physician must model how to inquire about each patient's belief system, regardless of patient's race/culture.
  - If instructions are offered, provide evidence that this assumption-based approach improves patient care/outcomes.
    - Good example: A patient self-identifies as a queer female teenager, so the physician asks for the patient's preferred gender pronouns. Then, evidence is provided that asking this question improves care for LGBTQ teens.
  - All patients, rather than exclusively minority patients, should be asked about their belief systems when relevant.
- Patients of color and/or minority culture should exhibit a broad variety of healthy and unhealthy behaviors, avoiding exclusively unhealthy, stereotypical behaviors for minority patients:
  - While racial/ethnic health disparities are important to understand, patients of color should not exclusively be depicted with obesity, under-insured status, diabetes, poverty, etc., as this reinforces implicit biases and worsens health outcomes.<sup>1</sup>
  - Good example: A Latino couple brings their 7yo daughter in for DKA. By history, parents are middle-class, born and raised in the U.S., speak only English, exercise, and eat healthy. Health disparities related to DKA are discussed later in the case, but this patient's HPI does not fall back on cultural stereotypes/implicit biases, instead adding diversity to our portrayal of Latino families. Furthermore, the didactic content on DKA is not impacted by this revision (revised from Pediatrics, case 16).
- Foster critical consciousness whenever assumptions are made about patients based on racial/cultural identity:
  - Good example: Medical student interviews RR, a black female with obesity. In his oral presentation, he suggests helping RR get food stamps so that she can afford healthier food. The physician challenges the student to talk more with RR about her barriers to weight loss, and he learns that instead of access to healthy food (as he had assumed), RR's biggest barrier to weight loss is her long work hours as a bank executive sitting at a desk.
- Case images/photos:
  - Consider any implicit messages that images convey; does the depiction of a patient of color serve as a hint at what is to come later in the case (e.g., that a certain pathology will be discussed, or that a stereotypical set of SSDOH will be encountered)?
  - Consider re-shooting photographs with a more diverse group of providers/patients/students, or finding more diverse open-source Google images.
- Provide the evidence:
  - Literature is cited for health disparities that do exist for pathologies discussed in the case, regardless of this particular patient's race/culture, with brief discussion of structural/upstream factors.
  - Links/references are offered to evidence the potential for medical harm that arises when assumptions are made about patients based on their perceived race/culture.

(Box continues)

## Box 1

(Continued)

**Rationale and evidence for case edits:**

- Students must be exposed to alternative portrayals of minority patients that move beyond reductionist views and exemplify the diversity within minority groups.
- Medical education must minimize essentialism.<sup>2</sup>
- Structural competency skills are best learned when demonstrated in practice. The structural context in which patients live should be incorporated into the disease narrative as this may expose a modifiable risk factor, different from those associated with the patient's stereotype.
- Race in and of itself is not necessarily a biological risk factor. However, the social context of *racism* can be a risk factor, which has led to certain health behaviors, disease prevalence, and health outcomes being commonly associated with certain races and cultures.<sup>3</sup>
- While it is critical to learn how to understand, model empathy, and effectively communicate with people of different races and cultures, these provider–patient communication tactics should be taught and practiced because they are medically relevant and lead to improved health outcomes, not because a patient is a member of a racial/cultural group for which stereotypes exist (i.e., the same questions regarding patients' health beliefs can and should theoretically be used for minority and non-minority races and cultures).<sup>4</sup>

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Abbreviations: LGBTQ indicates lesbian, gay, bisexual, transgender, queer or questioning; yo, year-old; DKA, diabetic ketoacidosis; HPI, history of present illness.

<sup>4</sup>The race and culture guide is based on virtual patient teaching cases from Aquifer's internal medicine, family medicine, and pediatrics courses as of August 2017. The full race and culture guide is available as Supplemental Digital Appendix 1 (<http://links.lww.com/ACADMED/A628>).

**Outcomes**

The six major themes (Chart 1) provided the starting point for our grounded, evidence-based guide for revision of existing virtual patient cases to better represent race and culture and to exemplify concepts of structural competency. Our Race and Culture Guide for Editors of Teaching Cases begins with definitions of fundamental concepts in teaching race and culture: structural competency; social and structural determinants of health; structural vulnerability; race ethnicity, culture, and minority identity (race and culture); reductionism and essentialism; implicit bias; and critical consciousness.

The remainder of the guide is divided into six sections, each pertaining to one of our major themes. (Section 3 is provided in Box 1.) Each section contains a list of items for the case reviewer to check and address; these are derived from the common problems and pitfalls identified in our literature review and our analysis of Aquifer cases, and they correspond to components of the physician–patient encounter. Each section is designed to stimulate case reviewers to pay close attention to subconscious messaging

regarding race and culture conveyed through case images, inclusion of underrepresented minority trainees and physicians, physician–student dialogues, discussions of disease etiology, and choice of literature cited. For each item, specific recommendations for editing are provided, along with examples of problematic language from existing cases, sample revisions of case language, and/or examples of good language written for the guide. Each section concludes by outlining the rationale and evidence for revisions, with references.

The full race and culture guide is available as Supplemental Digital Appendix 1 at <http://links.lww.com/ACADMED/A628>.

**Next Steps**

Aquifer has started to integrate our race and culture guide into its editorial workflow. In spring 2018, it engaged a new team of medical students from six U.S. medical schools to perform a structured review of 128 core Aquifer pediatrics, internal medicine, family medicine, and geriatrics cases, using our guide to make specific recommendations for case improvement. We plan to assess student users' impressions of these revisions

using established Aquifer-administered course evaluation surveys, and to assess Aquifer editors' impressions of the case review process and the final revised teaching cases. These student- and editor-level data will help evaluate feasibility and guide iterative revisions, further increasing our guide's utility and applicability. Revising all 235 Aquifer cases would have an impact on the training of thousands of medical students through more than one million case completions per year. We also hope that our race and culture guide will be adapted for use across a wide variety of medical education settings and teaching modalities, including lectures, problem-based learning, question banks, and clinical didactics. Our race and culture workgroup has partnered with one medical school to implement this guide to review and revise its preclinical case-based curriculum.

Our pilot project demonstrates the benefit of engaging medical students in responding to the challenges of teaching about race and culture in medical school curricula. Students have a stake in curriculum reform, and this project created an opportunity for students to help improve understanding of existing gaps and develop innovative approaches to address these challenges.

Continuing to engage students from underrepresented minority backgrounds and across diverse medical schools in such efforts will be critical as medical educators continue to consider issues of power, privilege, difference, and identity in medical education.

We acknowledge the limitations of our work. First, individual biases are inherently present in qualitative projects, though use of our analytic framework may have mitigated this. Second, generalizability may be limited as our guide was designed specifically for Aquifer cases. However, because most case-based learning follows a standard format, we believe our guide is likely applicable more broadly. Third, as this was a pilot, we do not yet have outcomes data regarding the feasibility of use or effectiveness of our guide. Finally, whereas our original team included students and faculty from multiple underrepresented minority groups, our final workgroup was not as fully representative.

It is time for medical education to adequately reflect the lived experiences of our current and future patients. Marginalized patients and populations often live with overwhelming health problems that are in part due to social and structural determinants of health. Using our race and culture guide to review teaching cases may help medical educators revise their curricula to better equip future physicians to address racial and cultural

health disparities in structurally competent, concrete ways. It may also provide medical educators with the opportunity to practice structural humility, as they reflect on and improve their own practices toward promoting a diversity-inclusive and equitable learning environment.

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