Critical Data Literacy: Addressing Race as a Variable in a Preclinical Medical Education Session

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Course Background
At the Himmelfarb Health Sciences Library, librarians conduct instruction sessions on various aspects of evidence-based medicine for first- and second-year medical students. One of these sessions, the Chest Pain Formative Observed Simulated Clinical Experience (FOSCE), introduces the Framingham Study, later cohort studies, and the Atherosclerotic Cardiovascular Disease (ASCVD) Risk Calculator to first-year medical students. This calculator includes race as an input and over- or underestimates risk for certain groups. This session previously mentioned the need to diversify study populations and described the evolution of the algorithm, but did not highlight these as critical issues for discussion. Beyond noting this discrepancy and moving on, Himmelfarb librarians saw an opportunity to introduce critical data literacy concepts and examine the use of race as a variable in clinical algorithms.

When compared with non-Hispanic whites, estimated 10-year risk of ASCVD is generally lower in Hispanic-American and Asian-American populations and higher in American-Indian populations; hence, the lack of race/ethnicity-specific risk algorithms is an important gap in our efforts to understand and prevent ASCVD in these populations. Although the development of algorithms specific to these racial/ethnic groups is encouraged, in the interim, providers may consider using the equations for non-Hispanic whites for these patients. When doing so, the estimated risks may be overestimated, especially for Hispanic and Asian Americans.[1]

Race as a Variable
Medical students at George Washington University are educated on race as a determinant of health [2, 3]. As clinicians, medical students will need to understand the clinical algorithms they use in their practice. They will need to be thinking critically about the data that created these algorithms and thus underlies any clinical applications. In gathering the data used to create these algorithms, researchers and clinicians tend to use the five races and two ethnicities recommended by the Office of Management and Budget (4). Alternatively, the NIH offers six racial and ethnic categories “to promote uniformity and comparability of data on race and ethnicity”[5]. While these categories are useful for descriptive statistics, when used in prescriptive clinical guidelines race can exacerbate inequalities by “cement[ing] racism into practice and policy”[4]. Students are questioning the use of race in clinical decision making[6], and those questions need to be addressed during the course of their education. Foster discussion while encouraging critical data literacy is a worthy aim for library instruction.

Key messages resonated with students:
• Be aware of the composition of the dataset and possible limitations, areas for improvement
• Use the evidence to treat the individual patient

Materials will be added to 2022 teaching manual and slides:
• Address Where is the evidence that the calculator over- or underestimates risk for some groups?
• Validation studies[7]
• 2019 Guidelines[8]
• Show continuous evaluation of evidence and guidance

Students raised questions:
• Where is the evidence that the calculator over- or underestimates risk for some groups?
• When working through practice scenarios including ethnic identifiers, students asked, Is this patient “white”?

When students ask, Is this patient “white”?
• NOT-SD-15-008: Racial and Ethnic Categories and Definitions for NIH Diversity Programs and for Other Reporting Purposes[5]
• Discuss race as a social construct[6, 9]
• Explore challenges, opportunities, and obligations in data collection, analysis, and application, i.e., AHRQ RFI: Use of Clinical Algorithms That Have the Potential to Introduce Racial/Ethnic Bias into Healthcare Delivery[10]

4. Future Directions
Additional materials and references will be added to the slides for next year’s session.
With the first session delivered, librarians can evaluate the success of the current updates and further develop the curriculum. Additional references and materials will be added to the session to respond to student and librarian feedback. Critical data literacy is a necessity in relation to more than just clinical algorithms. Broader applications and wider integration will be pursued. Librarians will further develop curriculum with an eye towards algorithmic bias, artificial intelligence, data donation, and other emerging areas.

Additional considerations for expanding the discussion in these and other sessions include:
• Emphasizing the evolution of algorithms and representation in clinical trials and biomedical research
• Emphasizing the connection of understanding the originating dataset to applying clinical guidelines and algorithms to individual patients, particularly coupled with use of the PICO framework, i.e., consider the population, the risk factors studied, and the outcomes tracked
• Emphasizing the importance of interrogating training data used in AI/ML

Beyond these specific considerations, more generally, we hope to:
• Examine data for non-physician librarians and courses with a critical lens
• Continue the conversations of critical data literacy, collection, and use among librarians
• Expand critical data literacy instruction to other audiences

The revised FOSCE session offers an opportunity to raise awareness and encourage critical thinking and questioning of use of clinical algorithms

Critical thinking about the development and use of clinical algorithms and race correction factors is a key skill for students to develop and can be applied across medical specialties, as illustrated by the examples in the table:

Table adapted from[4]. For additional clinical tools, see the full table in the Supplemental Materials.

References & Acknowledgements
1. Anderson, Malin, Malhotra, A, Non, AL. 2018. Could Routine Race Examine literacy and the be encouraged critical thinking and questioning of how commonly used tools are developed. https://www.ahajournals.org/doi/10.1161/JAHA.118.011874
5. https://www.instituteforhealingandjustice.org/section
11. https://www.instituteforhealingandjustice.org/section
12. https://www.instituteforhealingandjustice.org/section

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