BROWN
Alpert Medical School

October 15, 2020

Congressman Richard E. Neal
Chairman, Ways and Means Committee
US Congress

Dear Congressman Richard E. Neal:

Thank you for soliciting letters from stakeholders on race-based clinical algorithms and their consequences for patients in medicine. This is an issue we have been deeply concerned about for some time and appreciate the opportunity to share our perspectives.

We are writing as five academic researchers and clinicians at Brown University to express our concern with the continued use of race-based algorithms in medicine. One of the undersigned has worked specifically on the history of race-based algorithms for two decades and four of us work in clinics or the emergency department where we interpret algorithms and apply them directly to patient care. Lundy Braun, PhD, has been doing research on the history of algorithms that determine lung function measurements since 1999 when she first became aware of the mainstream practice in pulmonary and occupational medicine. In 2005, she published the first article to systematically question race-based algorithms; she followed this work up with a book (Breathing Race into the Machine) and several more articles, where she describes how race correction of lung function measurements holds Black patients in compensation cases to different standards than their white counterpart. More recently, she has worked on the history of algorithms that shape kidney function estimates.

Catherine Trimbur and Rahul Vanjani, are primary care physicians who work at the Center for Primary Care, a community health clinic with Brown University's residency program in internal medicine. Taneisha Wilson and Elizabeth Samuels are emergency department physicians at Brown University. In both the primary care and emergency department settings, we practice direct clinical care and supervise resident physicians in training.

Increasingly used in medical decision-making, algorithms work by enacting a set of procedures based on either simple or exceedingly complex mathematics. While appropriate for specific clinical scenarios, their use in medicine has expanded without critical appraisal of the assumptions embedded, and thus unintended consequences of wide application. With race-based algorithms, race is added as one of a number of variables. Unlike some linear or binary valuables, the definitions of race are not stable nor objective categories and thus are not

uniform. The definitions used in research, clinical practice, and race-based algorithms vary widely and often do not correspond with self-identity.

Despite these problems, race-based algorithms are prevalent in medicine. In pulmonology, a patient's race must be put into the spirometer when performing lung function testing that is used to diagnose and determine treatment for various lung diseases. The technician performing the test inputs this data. In nephrology, two separate results are provided for estimated glomerular filtration rate (eGFR)-one for black and one for white-based on the scientifically inaccurate assumption that there are inherent differences in muscle mass between the races. The clinician is responsible for choosing which estimate of kidney function applies to their patient. In neuropsychiatric cognitive testing, expected IQs are different for black and white patients, thus requiring black patients to demonstrate a greater decline in cognitive function to be diagnosed with TBI, affecting access to medical care, support services and legal compensation. In cardiology, different blood pressure recommendations are given for first line therapy for black versus white patients, a reflection of research studies designed to look for racial difference. Additionally, the frequently used cardiovascular risk calculator determines whether to start someone on an aspirin or cholesterol lowering medication. The clinician is given two options (African-American or other) to input which dramatically changes the risk score and thus treatment course. These are a few examples from medicine in which race is either implicitly embedded or explicitly captured. All of the examples demonstrate the inconsistent categories (ie black vs white, African-American vs other), as well as definitions of race itself (self-identified, provider perception, grandparents' origins, etc).

Race-based algorithms are seamlessly integrated into many sites of clinical practice—calculation of kidney function through GFR, diagnosis and evaluation of lung diseases through pulmonary function testing, treatment guidelines for hypertension management, cardiovascular risk calculations, and IQ adjustments in testing for traumatic brain injury, as we described above. The effects of algorithms are vast, including implications in legal compensation, problematic suggestions that race differences are "inherent" or genetic, potential withholding or administering medications based on perceptions of race, and qualification for dialysis or renal transplant. But the insidiousness of these algorithms can be seen even more intensely within the space of a residency training. The high volume of patients seen also means there are a high number of providers-residents and supervising attending doctors—interacting with patients. As the history, integration and implications of using race-based algorithms is not routinely taught in medical training, the supervising providers do not have the contextual knowledge, nor the clinical time to appropriately teach residents this context, nor discuss the implications for the patient in front of them. Instead, a patient presents to clinic, and some trigger—a note in the demographic area of the chart, provider perception or patient identification—determines the patient's race. This arbitrary and often inaccurate demarcation is then used to determine their kidney function, lung function, risk for cardiovascular event, or potential benefit from anti-hypertensive treatment. At no point in this process does the history of how race was integrated, nor how race is even defined in these algorithms get discussed or pondered in the clinical setting.

As we hope to have outlined above, the use of race-based algorithms is clinically inaccurate, medically dangerous and negatively affects clinical care. But it is negligent to ignore that these processes also perpetuate the structural racism that pervades our society and health care system. The hard truth we all must recognize, regardless of how we self-identify, is that the mathematics underlying race-based algorithms have erased the structural conditions that produce poor health --- whether damage to lung capacity, kidney function or cognitive function. When we treat patients of color in the clinic we have no choice but to apply these algorithms to our patients. This is the standard of care as supported by professional societies. With little understanding of what race means or the complex history of racism, these algorithms play an important role in erasing the myriad societal structures by which racism damages health. The same patients who are being input into these algorithms without context or thought for negative outcomes are the people who are carrying the physical, mental and emotional burden of individual and structural racism. There are clear and present negative health consequences to carrying this burden. The focus of algorithms on the socially constructed concept of race has distracted the medical community from the very real health emergency of racism. We must challenge medicine and scientific research to move the conversation away from inaccurate calculators and algorithms that perpetuate the myth that racial difference is genetic, and towards the well documented effects of racism on our patients.

We applaud you for taking this issue seriously.

Respectfully submitted,

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