

Race in Clinical Diagnosis and Decision-Making in Health Care: Overview and Implications



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Background: History of Race in Clinical Medicine

Hierarchical racial categories based on perceived biological superiority and inferiority were used historically to justify European colonization, slavery and oppression reified through scientific racism. Despite race being a socio-political system of categorization without basis in biology, scientific studies continue to emphasize that genetic differences may explain racial health disparities. There have been growing calls for the medical and scientific community to examine the role of racism versus race as a driver of health inequities and to acknowledge the role **structural racism** plays in explaining health disparities, as well as increasing scrutiny of the ways race is integrated in medical teaching and clinical decision making.

Approach

We performed a review of the literature around **how race is incorporated into medical teaching and clinical practice**, including through diagnosis and race-based algorithms that guide treatment decisions. We subsequently reviewed the status of the incorporation of race in algorithms or clinical guidelines across multiple specialties and hospital institutions.

Overall, we found that race permeates clinical decision making and treatment in multiple ways that may perpetuate racial health disparities:

- (1) Provider attitudes and implicit bias
- (2) Disease stereotyping and clinical nomenclature
- (3) Use of race in clinical algorithms and treatment guidelines

Bias and Stereotyping in Medical Teaching

Research finds that provider/health system bias (racial bias in electronic health record documentation) and discrimination drive health disparities and can be reinforced through clinical teaching.

Examples of Racial Stereotyping of Pain Response (textbook excerpt)

- ❖ “Black patients often report higher intensity than other cultures. They believe suffering and pain are inevitable.”
- ❖ “Hispanic patients may believe that pain is a form of punishment and that suffering must be endured if they are to enter heaven.”
- ❖ “Clients from Asian cultures often value stoicism as a response to pain.”
- ❖ Native American patients tend to be less expressive both verbally and nonverbally. They usually tolerate a high level of pain without requesting pain medication.”

Race is often conflated with genetic ancestry, the former being a poor proxy for the latter (which can have implications for disease). In medical teaching:

- **Vague use of race** may pathologize race as a risk factor for disease and use race imprecisely as a proxy for specific modifiable social factors
- **Disease stereotyping** may lead to associations between race and disease and perpetuate bias and risk of misdiagnosis in other groups.

Lectures and board exam materials may use imprecise labels conflating race and ancestry or rely on racial heuristics for diagnosis

Sickle cell disease is taught as more common among Black patients (instead of among people with Sub-Saharan ancestry or from areas where malaria is endemic).

Sickle cell disease may be mis- or underdiagnosed among other communities with high prevalence.

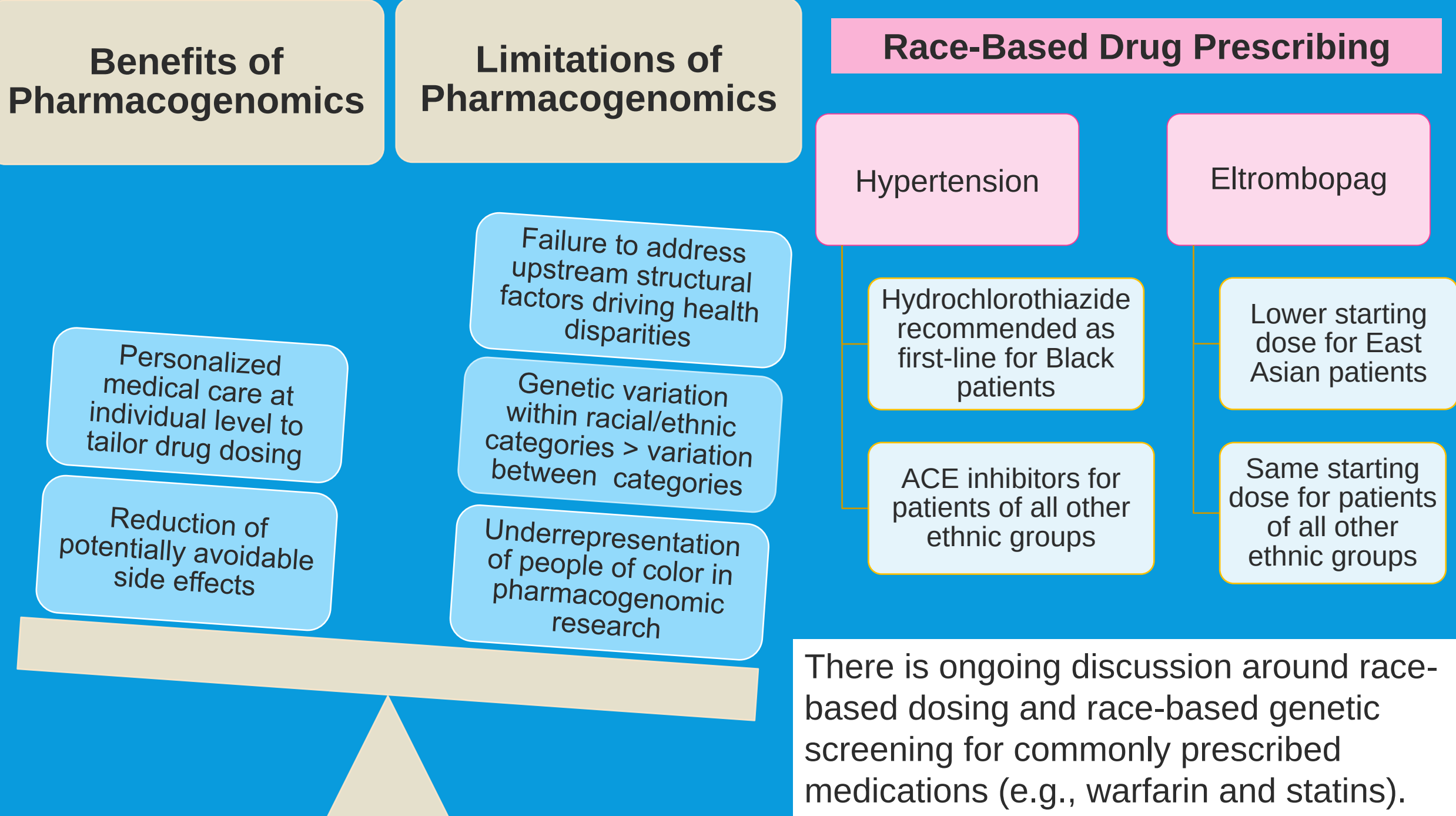
Use of Race in Clinical Algorithms, Tools, and Guidelines*

Clinical Calculator/Guideline	Race Correction Factor	Clinical and Equity Implications
Atherosclerotic Cardiovascular Disease (ASCVD) Risk calculator	Initial 10-year risk for ASCVD events is calculated to be higher for Black patients compared to patients with otherwise equivalent risk burden	May lead to disproportionate prescription of statin therapy to Black patients
Pulmonary Function Tests/ Spirometry calculator	Increases estimates if lung fraction for Black and Asian patients (based on early epidemiological data with origins in a spirometer created in 1800s by a pro-slavery doctor	May underestimate/ misclassify disease in Black and Asian patients, which may limit ability to obtain disability benefits and receive treatment. Removing race correction has found prevalent and severe lung disease among Black patients
Estimated Glomerular Filtration Rate (eGFR) Calculators (CKD-EPI and MDRD equations)	Both clinical calculators employ renal adjustment factors based on race and report higher eGFR function (with the same Cr value) for Black patients	Overestimates of renal function subsequently result in delayed access to specialist care or kidney transplant referral and listing

Some clinical tools are less effective on darker skin (e.g. pulse oximeters used to assess oxygenation status, which has been linked to COVID-19 disparities). Racial bias may present in newer areas of clinical algorithms (artificial intelligence/machine learning) due to lack of diversity in data from which models are derived, as well as financial bias against higher-cost patient populations that may disproportionately include communities of color.
**Multiple other commonly used clinical calculators similarly use race-specific corrections.*

Race-based Drug Prescribing and Precision Medicine

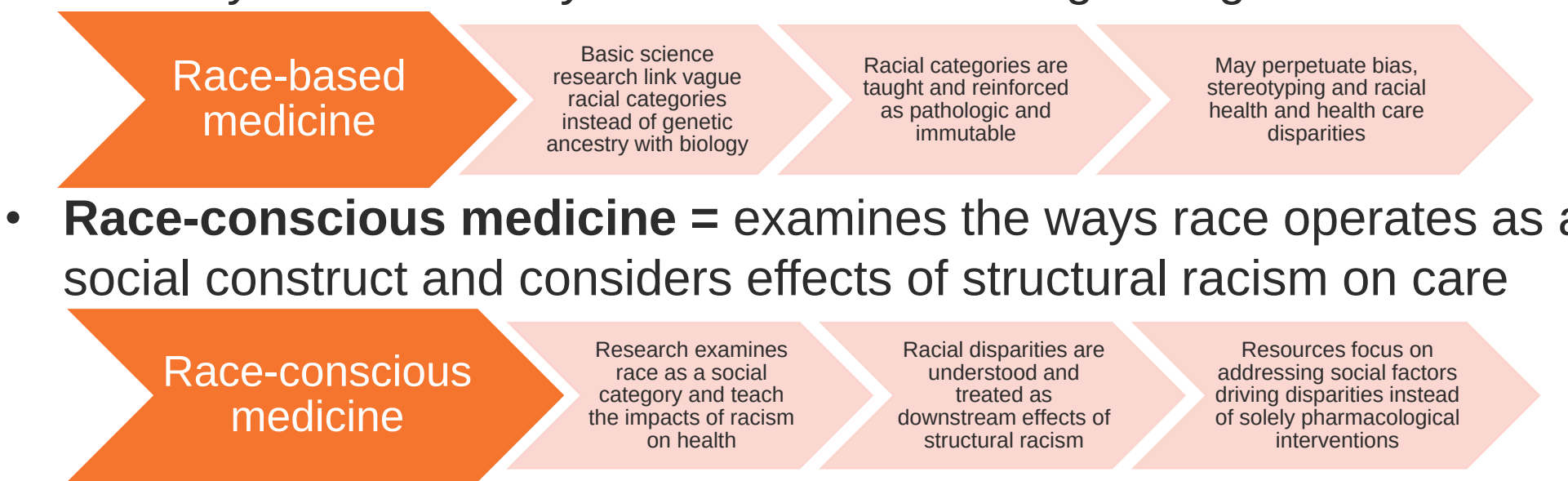
Pharmacogenomics: the study of how genes affect drug response for treatment and side effects. Inclusion of race in pharmacological prescribing is often based on limited evidence from small studies and may result in inappropriate dosing or premature recommendations.



Race-Based vs. Race-Conscious Medicine

It remains important to understand differences in health and healthcare by race and ethnicity to identify and address disparities that stem from racism and social and economic inequities.

- **Race-based medicine** = premised on biological essentialism, whereby race is directly inferred to have biological significance



Current State and Ongoing Changes

In 2020, the American Medical Association (AMA) adopted policies to recognize race as a social construct and encourages medical education programs to recognize the harmful effects of using race as a proxy for biology in medical education through curriculum changes that explain how racism results in health disparities.

Multiple institutions have removed race from clinical calculators, and some commonly used clinical calculators have made use of correction factors optional.

In October 2021, the House Ways and Means Committee found that professional societies suggest more research (with evaluation of unintended consequences of removing race correctors) is needed before decisions can be made, noting downstream implications for other aspects of clinical care.

Directions for Future Work / Policy & Research

- Further evaluation is needed around evidence for inclusion of race correction factors in clinical algorithms and impacts on disparities.
- There is a need for increased diversity in pharmacogenomics research and trials (particularly for underrepresented groups) to ensure treatment guidelines are appropriate and not premature based on limited data.
- Clinical research, practice, and teaching should look to identify structural racism as factors for characterizing racial health disparities and use precise distinctions between race and genetic ancestry in diagnosis and examining disease.

Next Steps: Future work may consider closer examination of sources of and interventions for provider and institutional racial bias, in addition to assessment of content on structural racism and health disparities in medical curricula and training.

Selected References and Acknowledgments

Source: Vyas DA, Eisenstein LG, Jones DS. Hidden in Plain Sight – Reconsidering the Use of Race Correction in Clinical Algorithms. N Engl J Med. 2020 Aug 27;383(9):874-882
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