CAN WE IMPROVE RACIAL EQUITY WHEN TARGETING CARE MANAGEMENT PROGRAMS?

Why This Study Is Important

Big data and predictive algorithms are used in many fields to identify and target populations of interest, but can perpetuate built-in biases in our society. In the health care field, a common application uses past health care spending to predict which patients are likely to have high health care needs and could best benefit from intensive care management programs. But because black patients typically use fewer services and have lower total spending than white patients at any given level of health, spending is a racially-biased proxy for health care needs. This study documents for the first time the degree to which a spending-based algorithm fails to identify black patients with high health needs, resulting in significant racial disparities in access to care management services that could improve patient outcomes. Failure to address such biases can perpetuate and exacerbate existing racial inequities in health care. More generally, the study highlights the importance of carefully assessing and eliminating biases in the artificial intelligence models that have become so widespread in our daily existence.

What This Study Found

- The illness burden of blacks is significantly higher than for whites at any given level of algorithm-predicted risk based on past spending. For example, at the risk level that would result in automatic identification for the care management program, blacks have 4.8 chronic illnesses compared to 3.8 for whites — a 26 percent difference.

- Blacks also have more severe hypertension, diabetes and renal failure and more dangerous measures of anemia and cholesterol compared to white patients with the same future risk predicted by past spending.

- Achieving equity in the number of chronic illnesses represented among patients automatically enrolled in the program would increase the fraction of black patients enrolled from 18 to 47 percent.

- Changing the model to include prediction of the number of chronic illnesses a patient would likely experience in the next year reduced the presence of racial bias by 84 percent.

Obermeyer Z, Powers B, Vogeli C, and Mullainathan S. "Dissecting Racial Bias in an Algorithm Used to Manage the Health of Populations." *Science*, 36(6464):447-53, October 25, 2019.

What These Findings Mean

Because of existing racial disparities in our health care system, blacks have lower spending than whites for a given level of health. As a result, a spending-driven predictive algorithm flags fewer black patients as likely to have high future needs even when their health status is dramatically worse than white peers with the same level of prior spending. This bias makes it much less likely that black patients with high needs will be identified for program enrollment and given the opportunity to benefit from intensive care management. Improvements in the algorithm and significant reductions in the extent of racial bias are possible when the model incorporates consideration of health status as well as spending.

More About This Study

This study used a unique dataset from a large health system that includes the claims data needed to generate patient risk scores based on past spending and clinical data from medical records to characterize health status. Risk scores were derived for 6,079 black patients and 43,539 white patients, and the number of chronic conditions and values for a range of biomarkers were compared by race at each level of predicted risk. The increase in the representation of black patients classified at a specific risk level that could be achieved by eliminating the health gap was computed by progressively removing healthier white patients from above the risk threshold and replacing them with less healthy black patients from below the threshold until the marginal patient was equally healthy. Several alternative predictive algorithms were explored. Model improvement was gauged by the reduction in excess chronic conditions observed for blacks relative to whites, conditional on risk score.

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