

**Article:**

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Examining Laboratory Medicine's Role in Eliminating Health Disparities.

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Guest: Dr. Sarah Wheeler is an Assistant Professor of Pathology in the School of Medicine at the University of Pittsburgh and Medical Director of Automated Testing Laboratories at UPMC Mercy and UPMC Children's Hospital of Pittsburgh.

Bob Barrett:

This is a podcast from *Clinical Chemistry*, sponsored by the Department of Laboratory Medicine at Boston Children's Hospital. I am Bob Barrett.

A health disparity is often considered to be a higher burden of illness, injury, disability, or mortality experienced by one group relative to another. Such health disparities account for more than 200 billion dollars in direct medical expenses in the United States. Efforts focused on eliminating health disparities such as the Healthy People 2020 initiative focuses on achieving health equity, eliminating disparities, and improving overall care. Annually in the U.S., more than 7 billion clinical tests are performed by clinical laboratories and directly impact patient care and outcomes. How can the practice of laboratory medicine be used to identify health disparities and develop interventions to eliminate them? A Q&A feature appearing in the October 2020 issue of *Clinical Chemistry* examined that very question. We asked six experts with different roles in this field to discuss recent advances and ongoing challenges surrounding health disparities.

The moderator for this article is Dr. Sarah Wheeler. She is an Assistant Professor of Pathology in the School of Medicine at the University of Pittsburgh and Medical Director of Automated Testing Laboratories at UPMC Mercy and UPMC Children's Hospital of Pittsburgh, and she is also our guest in this podcast. Dr. Wheeler, let's start out with the basics. What is a health disparity and how does it differ from health inequity?

Sarah Wheeler:

A health disparity is defined as a health difference based on one or more health outcomes that adversely affect disadvantaged populations. A health disparity population is characterized by a pattern of poor health outcomes indicated by the overall rate of disease incidence, prevalence, morbidity, mortality, or survival in the population as compared to the health status of the general population. A defined difference in health outcomes between populations isn't necessarily a disparity. We defined a disparity more specifically as a difference between a disadvantaged population and a more advantaged

reference population, or the general population. Currently designated health disparity populations include racial and ethnic minority groups, populations of less privileged socioeconomic status, underserved rural populations, as well as sexual and gender minorities. The CDC defines health disparities as preventable differences in the burden of disease, injury, violence, or an opportunity to achieve optimal health experienced by socially disadvantaged, racial, ethnic, and other population groups and communities.

These studies demonstrate that health disparities persist through the systemic racism, the underlying mediator of poor social determinants such as poverty, poor health, low literacy, or limited access to health care, or getting low quality health care. Studies also show that health disparities persist despite adjusting for confounders, which may suggest biological or other unknown factors are responsible. Health inequity, on the other hand, is a difference in health status or in the distribution of health resources between different population groups arising from the social conditions in which people live. Health inequities can be reduced by the right mix of government policies. Health equity is what is achieved from the overcome preventable health disparities. The CDC further defines health equity as when every person has the opportunity to attain his or her full health potential and no one is disadvantaged from achieving this potential because of social position or other socially determined circumstances. Health inequities are reflected in differences in length of life, quality of life, rates of disease, disability and death, severity of disease, and access to treatment.

Bob Barrett: The public often associates health disparities with differences between, say, black and white populations, but other racial minorities are affected by health disparities. Is there perhaps a specific disparity that you could use as an example to illustrate how laboratory medicine can contribute to reducing this burden?

Sarah Wheeler: That's a really great question. I'd like to respond first with a personal learning experience, before I dive into pertinent example or two. When I first began to learn more carefully about health disparities, I was having a conversation with Dr. Octavia Peck-Palmer, who actually contributed to this Q&A, about the use of race in calculating the estimated glomerular filtration rate, and she shared that a friend has a biracial child who self-identifies as black, but that answer in the medical record may not actually be reflective of the child's true biology. In that conversation, I had this understanding that health disparities really are so much more complex than the mental model that I had created of them, and I think that many of us had created of them.

At the population level, we can perform studies and identify disparities that may arise from society, biology, or the environment. However, people have to also be treated as individuals. Historically, health disparities research in the U.S. has focused on the differences between black and white populations and, for the leading causes of morbidity and mortality, the black population on average has had poor outcomes compared to most white populations, but the growing diversity of non-white racial and ethnic groups in the U.S. has brought a wider spectrum of disparities for us to consider. As an example, Latinx have lower mortality from the leading causes of death and a longer life expectancy compared to white populations despite socio-economic disadvantages.

While the etiology of many health disparities may not be clear, one of our best tools in improving quality and quantity of life for many disease burdens is early detection and intervention, and laboratory medicine is well poised to aid in this. As the SARS-CoV-2 pandemic has clearly illustrated, we see that population spacing disproportionately high infection in mortality rates include blacks, Latinx, and Native American communities, as well as institutionalized groups such as those in skilled nursing facilities. Early identification of the SARS-CoV-2 infection can mitigate spread, and the laboratory can play a key role in making testing more readily available to these populations. That can help reduce spread, and we can also analyze lab data from testing to determine if testing is happening in an unbiased fashion.

Another great example that Dr. Jason Park mentions in his response is diabetes, which disproportionately affects American Indian, Hispanic and black populations compared to white and Asian populations. Early intervention in diabetes can improve morbidity and mortality. Yet these populations often have delayed diagnosis of their disease due to barriers to medical care. Point-of-care hemoglobin A1c in community settings is a critical way that laboratory medicine can help in early diagnosis, and improved interventions.

Bob Barrett: What unique tools and skills do laboratorians possess and how can they leverage them to reduce health disparities in medicine?

Sarah Wheeler: As Dr. Dina Greene mentioned succinctly in the Q&A data, Dr. Timothy Amukele also further breaks this down to indicate that the laboratory determines health versus disease via reference ranges, and we also have the ability to assess diagnosis versus outcome because our testing is involved in so many diagnostic decisions. As laboratorians, we're really good at data, and it is a key for helping us identify health disparities, consider their causes, and create

interventions as pointed out by Dr. Gabrielle Winston-McPherson in her contribution to the Q&A. As an example, there's an increased prevalence of sexually transmitted infections in populations of color regardless of their sexual behaviors. As a clinical laboratory, we can identify this in our own populations. We can then assess if STI screening is happening in an unbiased manner and work with our clinical colleagues to implement standard testing algorithms to allow for earlier STI detection to mitigate the infection spread. Additionally, labs have defined high-quality data. We run lots of quality control and participate in external proficiency testing. This data can then effectively be used in collaboration with our clinical colleagues to bring more standardized care. We can also be the impetus for creating more defined EMR language, whether that's providing needed gender options in the EMR to ensure appropriate reference intervals are made available, or creating more defined test algorithms that allow for more equity and diagnostic testing and early disease diagnosis.

Bob Barrett: Well finally Dr. Wheeler, what existing policies are focused on reducing health disparities in medicine and can clinical laboratories align their efforts with these policies?

Sarah Wheeler: Definitely, the Department of Health in Human Services has several initiatives to combat health disparities including the Healthy People initiatives, which has been setting measurable goals since 1980 to improve the health of people in the U.S. Healthy People 2000 focused on reducing health disparities, Healthy People 2010 on eliminating health disparities, and Healthy People 2020, which is just concluding, focused on achieving health equity, eliminating health disparities, and improving overall health. The next decade goals for Healthy People 2030 was just released and has a substantial focus on the social determinants of health to address health disparities. They define the social determinants of health to be how the conditions and environments affect health including where people are born, live, work, and age.

Additionally, the National Institutes of Health and the Center for Disease Control have developed multidisciplinary strategies to address health disparities and health equity for a healthier nation. The National Institute on Minority Health and Health Disparities within the National Institutes of Health has roots back to 1990, and the research from this institute has been critical in shaping our understanding of health disparities as well as successful interventions for this. Dr. Eliseo Perez-Stable, the current Director of the NIMHD that we just spoke about who also contributed to this Q&A, indicated that many of the health disparities we see today were and continued to be driven by policies that have perpetuated economic inequality, structural racism, and

facilitated unhealthy behaviors. Addressing these social and structural concerns are part of the solution, better education, healthier food options, safe environments, and increase economic opportunity. In health policy setting specifically addressing basic access to care is also an important starting point.

Also important is that considering all of these strategies to eliminate health disparities, we need to make sure that we don't marginalized populations. Being aware of unconscious bias and engaging the communities we serve are fundamental ways to avoid marginalization. Importantly, if we all learn about health disparities and take a few small steps to improve them, we can see enormous results in that combined effort. We have to approach this with humility, knowing that our understanding will continue to change and new approaches will be needed as we continue our progress on reducing health disparities.

Bob Barrett:

That was Dr. Sarah Wheeler, an Assistant Professor of Pathology in the School of Medicine at the University of Pittsburgh. She served as moderator for the Q&A feature of the October 2020 issue of *Clinical Chemistry* on "Examining Laboratory Medicine's Role in Eliminating Health Disparities." I'm Bob Barrett. Thanks for listening.