

Letter to the Editor

What about race and ethnicity in antimicrobial stewardship?

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To the Editor—Although research on antimicrobial stewardship is on the rise, much is still unknown about how various social determinants of health affect antimicrobial prescribing among different populations. In particular, there is a dearth of research on disparities of antimicrobial resistance among different racial and ethnic populations.¹ Among the studies that look into racial disparities, most have focused on White, Black, and Hispanic patient populations, with limited data on Asians, Native Americans, and American Indians.² Studies have suggested that individuals of White race are twice as likely to make antimicrobial drug prescription fills and to be diagnosed with a *Clostridioides difficile* (*C. difficile*) infection, but this has been difficult to generalize to the broader US population.^{1,2} There are also contradictory studies showing greater risks of *C. difficile* infections among other racial groups.² Although many of these studies focus on the prevalence of antimicrobial prescription or resistance, few studies focus on the reasons behind these disparities. Social, political, and economic factors that drive racial disparities in antimicrobial stewardship are not well understood. Further research is needed to better understand how race and ethnicity may affect antimicrobial prescribing practices and antimicrobial resistance development in various settings. In particular, there are gaps in the literature concerning how racial disparities differ between adult and pediatric patients along with inpatient versus outpatient settings.

Patient-level characteristics have been shown to affect antibiotic use as soon as an infant is born.³ Gender, race, and ethnicity have been correlated with differences in antibiotic use rate in the neonatal intensive care unit setting.³ Pediatric studies suggest similar racial prescription patterns to adult healthcare settings, with White children more likely to receive antibiotics compared to Black and Hispanic children.⁴ More research is needed to explore whether racial disparities persist across different pediatric age groups, from infants to adolescents. We must also consider different factors that influence antibiotic prescription in pediatric settings. Parental anxiety and expectations are major factors for physicians prescribing antibiotics for viral infections.⁴ Parental trust in physicians should also be considered. Cultural differences in parent's perceptions of the severity of their child's illness may impact how likely children are to be brought into a healthcare setting, which may impact the likelihood of inappropriate antibiotic prescription.

On the other hand, studies in adult inpatient settings have highlighted the need to understand social factors for antimicrobial prescribing, but little evidence exists on the reasons behind how race and ethnicity drive differences in prescription practices.⁵ Studies highlighting the differences between pediatric and adult settings can help us better tailor our antibiotic stewardship programs.

Although many antimicrobial stewardship studies are conducted in the inpatient setting, more studies are needed to elucidate the role of race and ethnicity in outpatient antibiotic usage. Understanding the outpatient setting may arguably be more important because much of antibiotic use occurs outside the hospital.⁶ As physicians have more limited interactions with patients in an outpatient setting, altered perceptions of adherence and difficulty communicating in a limited time could affect prescription patterns. In addition, we must consider the role of nonprescription antimicrobial use in the outpatient setting. Use of nonprescription antibiotics highly correlates with community antimicrobial resistance and must be considered in community-wide antimicrobial stewardship programs.⁷ This use of nonprescription antibiotics is likely to be an increasing problem, as the coronavirus disease 2019 (COVID-19) pandemic may discourage patients from seeking care at clinics and drive them to utilize nonprescription antibiotics instead. The use of nonprescription antibiotics may be particularly high among racial and ethnic minorities, given barriers to access to health care among these demographics.⁸ Capturing the prevalence of nonprescription antibiotics will provide a more complete picture of antibiotic use among different demographics, and may account for differences in antimicrobial prescription refill rates as observed in prior studies. Much of the existing literature focuses on Hispanic/Latino populations and persons who use intravenous drugs, leaving a lack of understanding of what leads to nonprescription antimicrobial use in other demographics.⁸ These factors are crucial in developing effective public health interventions to decrease nonprescription antibiotic use across populations. For instance, one study demonstrated that being able to obtain antibiotics from a bodega was a key factor to increasing nonprescription drug use in a Latino neighborhood.⁸ An intervention designed to reduce antibiotic acquisition in bodegas would have greater effects for the Latino/Hispanic population, but it would have minimal effect on Black or Asian communities.

More questions should be asked to tease out the relationship between race and/or ethnicity and antibiotic use. Are there certain diseases for which White patients are more likely to be prescribed antibiotics compared to nonwhite patients? Are certain antibiotics more likely to be prescribed to Black and Hispanic patients, and are those antibiotics more likely to lead to antimicrobial resistance? It

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is paramount that we consider race and ethnicity in our pursuit to improve antimicrobial stewardship. Racial and ethnic disparities have been well documented in the many healthcare settings, and antibiotic stewardship is no different.⁹ Understanding the role of these factors in different settings will help improve physician training with respect to antibiotic prescribing practices. It can be incorporated into physician implicit-bias training to help mitigate differences in antibiotic prescription practices. It can be utilized to improve community outreach programs and promote patients' understanding of the dangers of antibiotics and how to properly advocate for themselves. As antibiotic resistance becomes a greater threat to our health worldwide, let us not disregard the healthcare disparities that may exist in antimicrobial stewardship.¹⁰

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Addressing stigma in the context of the coronavirus disease 2019 (COVID-19) outbreak: A socio-ecological approach

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To the Editor—The coronavirus disease 2019 (COVID-19) epidemic has sparked social stigma and discrimination against people from certain regions, countries, occupations, or ethnic groups, as well as anyone perceived to have been in contact with the virus. Research on infectious diseases has suggested that stigma presents barriers to prevention, diagnosis, and treatment, increasing physical suffering and psychological burden on the individual who has been victimized in the process.¹ To describe the stigma that exists and its impact in the context of COVID-19, we provide a taxonomy by employing a socio-ecological model that categorizes the broad lessons learned from communicable diseases into the following levels: intrapersonal, interpersonal, community, institutional, and public policy.² Approaches that address stigma at each level will inform efforts to reduce and control stigma during a pandemic (Fig. 1).

The socio-ecological theory holds that individual factors such as knowledge, attitudes, behaviors, and skills are malleable, constructed with constant feedback from the social environment.³ During an epidemic, people develop a relatively consistent set of risk perceptions

through perceived likelihood of infection, personal susceptibility, and disease severity. However, they exhibit individual emotional differences in decision making, especially when confronted with highly uncertain risks.⁴ Existing studies utilizing socio-ecological theory have demonstrated the effectiveness of education as an intervention tool. It is critical that local public-health risk assessments be continuously improved and that they provide real-time, context-sensitive guidance for clinical practice.⁵ Furthermore, psychological assistance is indispensable for all people due to different vulnerabilities and susceptibility to stress. Service providers need to understand the experience and meaning of the disease to the person and to reframe the discourse by empowering the public.

According to social identity theory, the behavioral decisions of potentially stigmatized groups can be influenced not only by personal motivations and skills but also by fear of losing social ties.⁶ COVID-19 has shown the power of continuous human-to-human transmission, so family, friends, neighbors, colleagues, and acquaintances may show euphemistic rejection and ostracism in words and actions, and the expected stigma may make people feel a diminished social identity.⁷ Significant social relationships, under complex changes of the COVID-19 epidemic, need to be constantly adjusted and adapted to bridge differences and enhance

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