Antimicrobial Resistance and Inequality: Urban Slums

Urban informal settlements, sometimes referred to as “slums” or “shantytowns”, are common in many low- and middle-income settings across the globe. These settlements are typically crowded, may lack legal status, and are prone to flooding due to lack of adequate drainage. Often, residents cannot easily access clean water or toilets (*1*). As a result, infectious diseases like diarrheal illness are exceptionally common (*2*).

Slum residents regularly purchase antibiotics to treat and prevent illness from local drug sellers, who may lack medical training and typically don’t require prescriptions (*3*, *4*). Sometimes, the antibiotics they purchase are not effective. Because visiting a hospital can be prohibitively expensive, residents often try self-medicating with other types of antibiotics instead of seeking medical help (*5*). Frequent antibiotic use can destroy the populations of “good bacteria” living on and inside the human body that normally provide protection against pathogens (*6*). As a result, slum residents can be especially vulnerable to new infections with drug-resistant bacteria that circulate in the environment, including via drinking water, contaminated soil, food, and in animals (*7*).

More of the world’s population is expected to live in urban informal settlements in the next 30 years (*8*). Worryingly, almost 90% of urban population growth will occur in regions where most deaths attributable to drug-resistant bacteria are predicted to occur, namely Asia and Africa (*9*, *10*). As cities develop, ensuring equitable access to public health infrastructure will be critical for preventing the spread of antibiotic resistance.

1. L. W. Riley, A. I. Ko, A. Unger, M. G. Reis, Slum health: diseases of neglected populations. *BMC Int Health Hum Rights*. **7**, 2 (2007).

2. B. U. Mberu, T. N. Haregu, C. Kyobutungi, A. C. Ezeh, Health and health-related indicators in slum, rural, and urban communities: a comparative analysis. *Glob Health Action*. **9**, 33163 (2016).

3. A. Nepal, D. Hendrie, S. Robinson, L. A. Selvey, Knowledge, attitudes and practices relating to antibiotic use among community members of the Rupandehi District in Nepal. *BMC Public Health*. **19**, 1558 (2019).

4. D. J. Morgan, I. N. Okeke, R. Laxminarayan, E. N. Perencevich, S. Weisenberg, Non-prescription antimicrobial use worldwide: a systematic review. *Lancet Infect Dis*. **11**, 692–701 (2011).

5. M. Nair, S. Tripathi, S. Mazumdar, R. Mahajan, A. Harshana, A. Pereira, C. Jimenez, D. Halder, S. Burza, “Without antibiotics, I cannot treat”: A qualitative study of antibiotic use in Paschim Bardhaman district of West Bengal, India. *PLoS One*. **14**, e0219002 (2019).

6. M. Lipsitch, M. H. Samore, Antimicrobial Use and Antimicrobial Resistance: A Population Perspective. *Emerg Infect Dis*. **8**, 347–354 (2002).

7. M. L. Nadimpalli, S. J. Marks, M. C. Montealegre, R. H. Gilman, M. J. Pajuelo, M. Saito, P. Tsukayama, S. M. Njenga, J. Kiiru, J. Swarthout, M. A. Islam, T. R. Julian, A. J. Pickering, Urban informal settlements as hotspots of antimicrobial resistance and the need to curb environmental transmission. *Nature Microbiology*. **5**, 787–795 (2020).

8. A. Prasad, C. B. Gray, A. Ross, M. Kano, Metrics in Urban Health: Current Developments and Future Prospects. *Annu. Rev. Public Health*. **37**, 113–133 (2016).

9. United Nations Population Fund (UNFPA), “State of World Population 2007: Unleashing the Potential of Urban Growth.” (2007).

10. Jim O’Neill, “Tackling Drug-Resistant Infections Globally: Final Report and Recommendations” (The Review on Antimicrobial Resistance, London, 2016), p. 84.