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Antibiotic resistance needs global solutions

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We agree with Ramanan Laxminarayan and colleagues¹ that antimicrobial resistance (AMR) in bacteria that cause community and health-care-associated infections (HAI) in low-income countries poses a serious threat to global health. In the first 60 years of antibiotic use, resistance predominantly emerged from hospitals in high-income countries; now, health-care environments in low-income countries have also become an important crucible for the evolution of resistance. The increased resistance is eroding the effectiveness of local management strategies for life-threatening diseases such as pneumonia and meningitis. Increased interconnectedness means that resistance genes emerging in one place rapidly become a global threat.

AMR and HAI are tightly related issues that are both poorly described in low-income settings, and basic data on the burden of disease are extremely scarce.² The Global Burden of Disease studies have never estimated the effect of either HAI or AMR, but this is hardly surprising, in view of the scarcity of primary data from low-income countries, especially sub-Saharan Africa. For funding bodies and policy makers who use these estimates to guide allocation of scarce health resources, HAI and AMR in low-income countries are therefore not just neglected diseases, but invisible ones.

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A large study of paediatric admissions at one hospital in rural Kenya between 2002 and 2009 estimated nosocomial bacteraemia to occur in six of 1000 admissions, with a very high associated mortality (53%).³ Deaths in this study were attributable, at least partly, to antimicrobial resistance. Based on these data, we estimated the disease-specific burden in sub-Saharan African children in 2005 by applying the admission rates,⁴ risk per admission, case-fatality ratio, and impact per case³ determined at this site for regional child population estimates.⁵ On the basis of these assessments, nosocomial bacteraemia could have accounted for 25 000 deaths and 270 000 additional inpatient days in African children in 2005. This approach has limitations; essentially, we multiplied the disease rate at a single site by the African child population, nonetheless, HAI and AMR contribute substantially to the morbidity and mortality burden in African children. Furthermore, detectable nosocomial bloodstream infections are merely the tip of the iceberg; most episodes of HAI are not bacteraemic, and the sensitivity of paediatric blood cultures is inherently poor.

Results from studies in high-income countries show that HAI are usually preventable, and interventions are usually cost effective to implement and sustain. Health-care facilities in low-income countries face different challenges to infection control to those in high-income settings²—in low-income facilities, the effect of introducing infection control interventions largely remains to be determined. However, in view of the large size of this problem, and the affordability of interventions such as improved hand hygiene and surgical checklists, the gains could be high and hugely cost effective. A reduction in the amount of infections caused by antibiotic-resistant bacteria at their source would undoubtedly have measurable local and global health benefits.

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