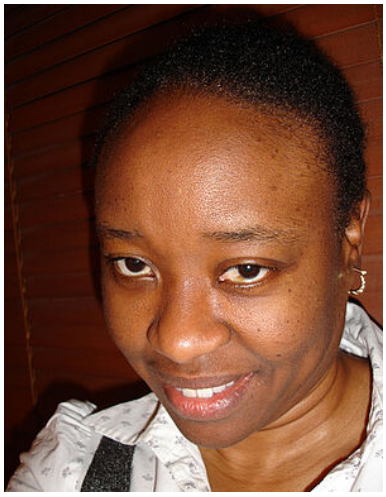

Iruka Okeke, Ph.D.

Associate Professor of Biology

Haverford College, Pennsylvania

Born in 1970 in London

Studied Pharmacy and Microbiology at Obafemi Awolowo University, Ile-Ife, Nigeria and the University of Maryland

FOCUS

PROJECT

Biomedical Science and Health Care in Africa

My microbiology laboratory studies colonization and drug resistance in intestinal bacteria, particularly commensals and diarrheal pathogens from West Africa. Biomedical scientists like me often justify their research by citing the potential it has to impact health. However, science-based interventions that improve health in Africa have been relatively few. Why is this? And what features, if any, do examples that have traversed the gulf between the biomedical laboratory and the African clinic share? I am currently completing a book that makes the case for improving laboratory medicine in Africa. At the Wiko, I will extend my study to other scientific technologies and their relationship to health-related outcomes in Africa.

1. The unfulfilled genomic promise: Advances in genomics have exponentially increased our understanding of pathogens and their vectors. "Global health", and in particular Africa's disease burden, is often used to justify large investments in research. In truth, many rapidly advancing technologies, with ever-increasing potential, have not had commensurate impact on health in Africa today. Most Africa-endemic diseases are still treated with age-old therapies that are compromised by drug resistance; and the slow-flowing pipeline for new drugs, vaccines, and diagnostics is expanding but is still short. The current genomic revolution follows on the heels of a molecular biology revolution, which did not live up to its promises for Africa. I will focus on genomics as I attempt to understand why certain techniques, technologies, or bodies of knowledge are slow to translate into practical outcomes in spite of their frequently cited potential.

2. Drug quality. I will examine drug quality as one "outcome", which should have improved due to recent advances in chemistry, biology, nanoscience, and biomedical engineering. Available evidence suggests that in Africa, drug quality may actually have deteriorated in parallel with advances in these sciences. Drug quality is a useful indicator because it relies on scientific practice, as well as on research and discovery, and because there are private and proprietary interests as well as public ones.

Recommended Reading

Okeke, I. N. and J. Wain. 2008. "Post-genomic challenges for collaborative research in infectious diseases." Nature Reviews Microbiology 6, 11: 858-64.

Okeke, I. N., R. Laxminarayan, Z. A. Bhutta, A. G. Duse, P. Jenkins, T. F. O'Brien, A. Pablos-Mendez, and K. P. Klugman. 2005. "Antimicrobial resistance in developing countries. Part I: recent trends and current status." The Lancet Infectious Diseases 5, 8: 481-93.

Okeke, I. N., O. Ojo, A. Lamikanra, and J. B. Kaper. 2003. "Etiology of acute diarrhea among adults in South-west Nigeria." Journal of Clinical Microbiology 41: 4525-4530. [A critique of this paper by A. Kebede and A.

M. Polderman and our response were published in Journal of Clinical Microbiology 42 (2004): 3909-3910.]

COLLOQUIUM, 01.12.2010

"Big Science", African Biomedical Scientists and Health-related Outcomes

The very limited dissemination of molecular biosciences across Africa in the latter half of the 20th century has made it difficult to answer fundamental biological questions of local significance, or to develop and use new medical tools. The 'molecular biology revolution' has since ushered in a 'genomics revolution', which again has exponentially increased the rate and possibilities for biological discovery, but widened the gap between the skill sets of most African biologists and those of their contemporaries elsewhere. Genomic and other '-omic' sciences have amplified the scale of inquiry from single genes and phenotypes to whole organisms and systems. With this new "big science" has come stated expectations and explicit promises that expensive investments will yield tools for controlling infectious disease in Africa. While it is too soon to say whether the infectious promises of pathogen genomics will be fulfilled, it can already be seen that malaria genomics is indeed feeding pipelines for new medicines, vaccines and diagnostic tests. In contrast, in spite of a rising burden from cholera, genomic knowledge is scarcely being applied to interventions that could expand the diminishing options for dealing with cholera outbreaks in Africa. In this talk, I will use four case studies in pathogen genomics as the basis for the idea that endemic-area researchers are central to directing 'big science' research towards locally applicable health-related outcomes. I aim to demonstrate that research support and career development for local scientists is an overlooked but essential requirement for linking molecular genomics to the needs of patients in Africa.

PUBLICATIONS FROM THE FELLOW LIBRARY

Okeke, Iruka (Cambridge,2020)

Dreams and dream spaces of West African molecular microbiology

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=1725998238

Okeke, Iruka (2011)

Diagnostics as essential tools for containing antibacterial resistance

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=1665048158

Okeke, Iruka (Ithaca,2011)

Divining without seeds : the case for strengthening laboratory medicine in Africa

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=63467031X

The culture and politics of health care work

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=63467031X

Okeke, Iruka (2008)

Post-genomic challenges for collaborative research in infectious diseases

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=757177948

Okeke, Iruka (2007)

Growing problem of multidrug-resistant enteric pathogens in Africa

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=757177506

Okeke, Iruka (2005)

Antimicrobial resistance in developing countries : Part I: recent trends and current status

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=757176534

Okeke, Iruka (2005)

Antimicrobial resistance in developing countries : Part II: strategies for containment

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=75717616X

Okeke, Iruka (2004)

Etiology of acute diarrhea in adults in southwestern Nigeria : authors' reply

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=757177158

Okeke, Iruka (2003)

Etiology of acute diarrhea in adults in southwestern Nigeria

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=757176879