

This is a peer-reviewed, accepted author manuscript of the following research conference abstract: Godman, B., Mwita, J., Olalekan, A., Kalungia, A. C., Kurdi, A., Sneddon, J., Meyer, J., & Ogunleye, O. (Accepted/In press). *Is timing and extended prophylaxis with antibiotics to prevent surgical-site infections still a concern across Africa? Findings and implications*. Abstract from British Society for Antimicrobial Chemotherapy Spring Conference 2021

## **Is timing and extended prophylaxis with antibiotics to prevent surgical-site infections still a concern across Africa? Findings and implications**

Brian Godman<sup>1,2</sup>, Julius Mwita<sup>3</sup>, Adesola Olalekan<sup>4,5</sup>, Aubrey Chichonyi Kalungia<sup>6</sup>, Amanj Kurdi<sup>1,2,7</sup>, Jacqueline Sneddon<sup>8</sup>, Johanna Meyer<sup>2</sup>, Olayinka Ogunleye<sup>9,10</sup>

<sup>1</sup>Strathclyde Institute of Pharmacy and Biomedical Sciences, Strathclyde University, Glasgow, UK.

<sup>2</sup>Division of Public Health Pharmacy and Management, School of Pharmacy, Sefako Makgatho Health Sciences University, Ga-Rankuwa, Pretoria, South Africa.

<sup>3</sup>Department of Internal Medicine, Faculty of Medicine, University of Botswana, Gaborone, Botswana.

<sup>4</sup>Department of Medical Laboratory Science, University of Lagos, Idiara, Lagos, Nigeria.

<sup>5</sup>Centre for Genomics of Non-Communicable Diseases and Personalized Healthcare (CGNPH), University of Lagos, Akoka, Lagos, Nigeria

<sup>6</sup>Department of Pharmacy, University of Zambia, Lusaka, Zambia.

<sup>7</sup>Department of Pharmacology, College of Pharmacy, Hawler Medical University, Erbil, Iraq

<sup>8</sup>Healthcare Improvement Scotland, Delta House, 50 West Nile Street, Glasgow G1 2NP, UK.

<sup>9</sup>Department of Pharmacology, Therapeutics and Toxicology, Lagos State University College of Medicine, Ikeja, Lagos, Nigeria.

<sup>10</sup>Department of Medicine, Lagos State University Teaching Hospital, Ikeja, Lagos, Nigeria.

\*submitting author

**Background and Objectives:** Increasing inappropriate prescribing of antimicrobials increases antimicrobial resistance (AMR) - a growing concern across sub-Saharan Africa (SSA). A key area is healthcare-associated infections (HAIs) with their subsequent impact on morbidity, mortality and costs. Major issues include the timing and extended use of antibiotics to prevent surgical site infections (SSIs), with studies across SSA documenting concerns with these two issues, increasing adverse drug reactions, AMR and costs. Successful initiatives can improve future antibiotic use in low- and middle-income countries (LMICs), particularly in SSA. Consequently, a need to document the timing and duration of surgical antibiotic prophylaxis (SAP) among SSA countries together with potential ways forward. **Methods:** A narrative review of submitted and published studies among SSA countries coupled with studies across LMICs documenting successful approaches to improve SAP. **Results:** Inappropriate prescribing of antibiotics for SAP is common in SSA. In Botswana, a study showed only 15% of surgical patients received antibiotics pre-operatively, 58.3% post-surgery, and 26.8% were not prescribed any antibiotic. In Ethiopia, 62.2% of patients received SAP longer than one hour pre-operatively, and in Nigeria, between 57.6% and 83.5% of patients were not administered their first antibiotic dose within the 60-minute window. In Nigeria, 98.7% of patients in one study and all patients in another were given prophylaxis for more than one day with a mean of 8.7 days, and in Botswana extended prophylaxis was common in one study with a mean (SD) of 5 (2.6) days. In a point prevalence survey (PPS) in Botswana, extended prophylaxis was also common, i.e. 100% of tertiary- and primary hospitals, with similar high rates in Ethiopia (88.9%), Ghana (69% to 77%), Kenya (100% in neurotrauma patients) and Rwanda (92%). In recent PPS studies in Nigeria and South Africa, 76.2% and 73.2% patients respectively received SAP for longer than 24 hours. Multiple approaches have been used across LMICs to improve SAP, including educational initiatives and audits. Studies have shown such initiatives improve the timing and duration of antibiotic use and reduce costs. In one study, timing and appropriateness of antibiotics improved from 30.1% to 91.4%, prolonged duration reduced from 92.1% to 5.7% and mean antibiotic costs decreased eleven-fold. Other studies have also shown appreciable improvements. **Conclusion:** There are considerable concerns with the timing and duration of SAP across Africa. Multiple interventions, including effective guidelines, education and audit, can reverse this and provide future direction to reduce AMR and costs.