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Surveillance of antibiotic use in the private sector in Namibia using sales and claims data

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Introduction: Antibiotics are among the most commonly used therapeutic agents for humans globally, and their use has been associated with the development of resistance. The objective of this study is to identify sources for quantifying antibiotic usage patterns and to assess such use in ambulatory patients in the private health sector of Namibia.

Methodology: A retrospective analysis of prescription claims data and sales data for the period 2008 to 2011 was conducted. Antibiotic use was expressed in the number of antibiotic-containing prescriptions and volume of units sold and then standardized using defined daily dose per 1,000 inhabitants per day.

Results: Antibiotic usage was highest in females (53%), in people 18–45 years of age (41%), and in Windhoek (34%). Overall, wholesale data showed higher antibiotic use than prescription claims data. However, both sources showed similar patterns of antibiotic use. Penicillin was the most used pharmacological group, with amoxicillin/clavulanic acid combination being the most used of the agents.

Conclusion: Antibiotic use in the private sector of Namibia is comparable to that of high-consuming European countries such as Italy. A trend observed in this study was the decrease in the use of narrow-spectrum antibiotics in favor of broad-spectrum and newer antibiotics. Since this was the first study to assess antibiotic use in the private sector of Namibia, it could serve as a starting point for continued monitoring of antibiotic use in the whole of Namibia in the context of the World Health Organization's Global Action Plan to contain antibiotic resistance.

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Alternative to antibiotics: The development of a novel vaccine against MRSA

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*S*taphylococcus aureus (S. aureus) is a common pathogen found in the community and in hospitals. Most notably, methicillin-resistant *S. aureus* is resistant to many antibiotics, which is a growing public health concern. The emergence of drug-resistant strains has prompted the search for alternative treatments such as immunotherapeutic approaches. Prophylactic vaccination is the best approach to combat against MRSA since it can provide protection without any concerns regarding antibiotic resistance. To date, most clinical trials of vaccines or passive immunization against *S. aureus* have ended in failure. In this study, we investigated two ESAT-6-like proteins secreted by *S. aureus*, SaEsxA and SaEsxB, as possible targets for a vaccine. Mice vaccinated with these purified proteins elicited high titers of anti-SaEsxA and anti-SaEsxB antibodies, but these antibodies could not prevent *S. aureus* infection. On the other hand, rSaEsxA and rSaEsxB could induce Th1- and Th17-biased immune responses in mice. Mice immunized with rSaEsxA and rSaEsxB had significantly improved survival rates when challenged with *S. aureus* compared with the controls. These findings indicate that SaEsxA and SaEsxB are two promising Th1 and Th17 candidate antigens, which could be developed into multivalent and serotype-independent vaccines against *S. aureus* infection. We further included several other antigens to create a multi-component vaccine against several strains of *S. aureus*. Animal test indicated a protection rate over 90% in several animal models against multiple strains of *S. aureus*.

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