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Review of antibiotic utilisation following the introduction of an antibiotic prescription chart in an academic tertiary hospital in Johannesburg

Salau, Habibat Dolapo

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ABSTRACT

The global rise in antibiotic resistance, alongside the diminishing research and discovery of new antibiotics, requires the conservation of currently available antibiotics for the management of bacterial infections. Antimicrobial stewardship (AMS) programmes to optimise antibiotic use and improve patient outcomes are being advocated. One such intervention is the use of antibiotic prescription charts. Antibiotic prescription charts have improved antibiotic prescribing in several developed countries, however, information regarding the practice and effects of this AMS strategy on antibiotic usage in South Africa is limited. This study aimed to retrospectively review antibiotic use after introducing an antibiotic prescription chart in a tertiary academic hospital.

This study was a retrospective record review of patients who received antibiotics conducted in an adult infectious diseases ward and a paediatric medical ward at Charlotte Maxeke Johannesburg Academic Hospital (CMJAH). Information for a duration of three months was retrieved in the two individual wards before (August to October 2016) and after (August to October 2019) the introduction of the antibiotic prescription chart. These included patient demographics (age, weight, gender), diagnosis, source of infection, prescribed antibiotics per patient, the dosage and frequency of dosing, route of administration, microbial culture and sensitivity, and antibiotic hang time. Data were collected using a revised version of the CMJAH antibiotic prescription chart. The rationale for antibiotic prescribing (prophylactic, empiric or definitive) and whether culture samples were taken before or after initiation of antibiotic therapy were also recorded.

A total of 366 records were reviewed in the adult ward; 200 in the pre-introduction period and 166 in the post-introduction period; while 336 patient records were reviewed in the paediatric ward; 154 in the pre-introduction period, and 182 in the post-introduction period. A statistically significant reduction in the proportion of patients receiving antibiotics from 76.62% in the pre-introduction period to 64.83% in the post-introduction period was recorded in the paediatric ward (p=0.013), while antibiotic prescribing was similar in the adult ward (93.50% vs. 93.98%). A decrease in the mean number of antibiotics per patient was observed in both the adult (2.92 ± 2.30 vs. 2.54 ± 1.62) and paediatric wards (1.60 ± 1.52 vs. 1.31 ± 1.41). Antibiotic regimens of one to seven days were frequent in both study periods across both wards. Overall, there was a

5.07% and 6.78% increase in the proportion of cultures requested in the adult and paediatric wards respectively following the introduction of the antibiotic prescription chart.

The findings of this study show an improvement in the average number of antibiotics prescribed, duration of antibiotic therapy, the frequency of culture and sensitivity testing and documentation of relevant parameters following the introduction of the antibiotic prescription chart. The use of an antibiotic prescription chart can reduce unnecessary antibiotic use and ensure proper detailing of clinical components necessary for antibiotic selection in a hospital setting.