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ePoster Viewing

Antibiotic stewardship programmes

USAGE STATISTICS OF INDIVIDUALLY DESIGNED OPTIMUM DOSING STRATEGIES, A MULTI-MODEL BASED ONLINE APPLICATION TO INDIVIDUALIZE ANTIBIOTIC DOSING IN CRITICALLY ILL PATIENTS

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Objectives: In order to help overcome some of the current challenges for the wide-spread implementation of model based goal oriented dosing of antibiotics, we have launched Individually Designed Optimum Dosing Strategies (ID-ODS[®]) on the web in late 2012. The objective of this study was to evaluate the utilization of this on-line dosing tool used to facilitate the optimal dosing of sixteen antibiotics via estimation of patient specific Probabilities of Target Attainment (PTA) and Bayesian adaptive feedback.

Methods: Continuous data collection on individual queries was supported by Rappor[®], a data analysis and reporting application for the use of the R[®] statistical software environment in the cloud. The number of queries on specific antibiotic templates by geolocalized IP address and anonymised parameters were evaluated for CPU time and for the frequency of successfully generated reports.

Results: The website applications were successfully queried 5678 times during the time of evaluation, 85.9 % of all users connected from North America. The remaining 14.1 % of users joined the site mainly from Europe (47.7%), Asia - Pacific region (25.9%), South America (24.2%) and the rest of the world (2.2%). PTAs for Piperacillin and Tazobactam and estimations of empiric dosing regimens for Vancomycin were the most common reasons for utilization, followed by Bayesian analysis of individual Vancomycin and Aminoglycoside concentration information. They accounted for a combined 54.5% of all data management. Cefepime and Meropenem were the second and third most commonly accessed templates for dose optimization, representing 39.1 % of the entire beta - lactam queries together. CPU times differed substantially for templates running PTAs versus the Bayesian models with a mean \pm SD of 6.88 ± 2.08 seconds and 19.16 ± 17.12 seconds, respectively. Generating the reports was aborted early 13.5 % of the time, where the reasons for failure were most commonly linked to inaccurate data entry.

Conclusions: The world-wide web availability of this cross-platform application provides the framework for a point of care clinical decision support tool on mobile and stationery devices for practitioners interested in optimizing antimicrobial therapy. During the first year in live environment, the system was ran successfully over five thousand occasions, providing computational results of high complexity under the average of 20 seconds of time. The utilization information collected during this period will also help us further improve the system to minimize rates of template failure due to inaccurate data entry.