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2009 A. Nelson Voldeng Pharmacy Student Research Fellowship Proposal

2009 Pharmacy Practice Student Research Fellowship Proposal

*Title: Evaluating appropriateness of physician antibiotic prescribing: renal dosing and changing from intravenous to oral administration; evaluating effects of antibiotic prescribing on adverse drug reactions, costs, and length of stay*

Antimicrobial stewardship is currently one of the “hot” topics in hospitals across the United States. This is due, in part, to the insufficient number of new antibiotics on the market and currently in development. The Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America published guidelines to help clinicians enhance institutional antimicrobial use in reaction to the limited number of antibiotics, increasing resistance issues, and high costs of antimicrobials.<sup>1</sup>

According to the guidelines, two of the elements that should be considered as part of an antimicrobial stewardship program are dose optimization and parenteral to oral conversion.<sup>1</sup> Since the St. Bernards Pharmacy Department does not automatically adjust doses for renal impairment or change antibiotic routes from intravenous (IV) to oral (PO) at this time without a consult, it is pertinent to know if the institution’s physicians are making appropriate changes in therapy. If the most appropriate changes are not being made by the physicians, then this project may demonstrate the need for additional pharmacists within the institution to assist with correct use of antimicrobials.

The project will consist of the following components: (1) retrospective review of renally-dosed antibiotics and if time allows (2) retrospective review of antibiotics converted from IV to PO. Component (1) of the project is researching two primary outcomes. The first outcome will establish if doses were adjusted appropriately

according to renal function in high volume and high cost antibiotics. The other primary outcome will determine if there were any differences in adverse drug events between the antibiotics that were dosed correctly versus those that were dosed incorrectly. One secondary endpoint will find what percentage of our probable adverse drug events were reported using our internal occurrence reporting systems. Other secondary endpoints will investigate how much money was saved due to correct renal dosing and what additional monies could have been saved. Length of stay will be reviewed to determine if there was a difference between those antibiotics that were dosed correctly versus incorrectly. Finally, the review will reveal if pharmacist intervention notes that are not a part of the permanent medical record effect prescribing patterns of physicians in regards to correct renal dosing.

Component (2) is researching those antibiotics with a high oral bioavailability. This component's primary outcome is to reveal how many of the antibiotics are switched from IV to PO once approved criteria are met. Secondary endpoints will include length of stay and how much money was saved and could be saved due to changing antibiotic administration routes. Again, how pharmacist interventions affect prescribing habits in this area will also be reviewed.

The student fellow will be involved in gathering and compiling patient data and wholesale pricing information. The fellow will also gain practical experience in how appropriate use of antibiotics effects patient outcomes and institutional costs. The fellow will work directly with the faculty advisor and other clinical and administrative personnel in researching, writing, and submitting an article for publication.

1. Dellit Timothy, Owens Robert, McGowan John, et al. Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America Guidelines for Developing an Institutional Program to Enhance Antimicrobial Stewardship. *Clinical Infectious Diseases* 2007;44:159-77.