43. Impact of a Five-Year Intervention of an Antimicrobial Stewardship Program on the Optimal Antibiotic Prophylaxis Selection in Surgery in a Hospital without Restrictions on Antibiotics Prescription in Costa Rica

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Session: P-04. Antimicrobial Stewardship: Outcomes Assessment (clinical and economic)

Background. In a private hospital without restrictions on antibiotic prescription, the success of an Antimicrobial Stewardship Program (ASP) depends mainly on promotion, feedback, and education. Previously, the ASP of this hospital (FROA-HCB) managed to achieve a positive impact on the antibiotic prophylaxis in cesarean delivery. The purpose of this study is to characterize the impact after implementing the FROA-HCB on the optimal prophylaxis selection of all the procedures included in the clinical guideline for surgical antibiotic prophylaxis in adult patients.

Methods. A retrospective observational study that compares the selection, duration, antibiotic consumption, bacterial resistance profiles and patient's safety outcomes regarding antibiotic use for all surgical prophylaxis prescription over six months for the periods before (pre-ASP) and after a five-year intervention of FROA-HCB (post-ASP).

Results. After a five-year intervention, the percentage of optimal selection of antibiotic prophylaxis in Surgery was 21.0% (N=1598) in the pre-ASP period and 80.0% (N=841) in the post-ASP period (59% absolute improvement, p < 0.001). Percentage of optimal duration was 69.1% (N=1598) in the pre-ASP period and 78.0% (N=841) in the post-ASP period (8.9% absolute improvement, p < 0.001). Mean ceftriaxone utilization was 217.7 defined daily doses (DDD) per 1,000 patient days DDD for the pre-ASP period and 159.9 DDD per 1,000 patient days (15.8% decrease, p = 0.0189). Mean cefazolin utilization was 14.9 DDD per 1,000 patient days for the pre-ASP period and 6.0 DDD per 1,000 patient days for the ASP period (83.6% increase; p = 0.021). Regarding percentage of bacterial resistance, there was detected an improvement in some isolates like Escherichia coli with a decrease of ESBL detection (11% decrease; p = 0.007). In addition, no serious adverse reactions or an increase in surgical site infections were detected after the intervention.

Conclusion. The implementation of an ASP in the surgical ward showed an overall positive impact on selection and duration of antibiotic prophylaxis. Furthermore, this intervention could have had a positive impact on antimicrobial resistance and at the same time had no negative effects on the patients.

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44. Cost Effectiveness and Clinical Outcomes of Long Acting Lipoglycopeptides Used in Transitions of Care for Deep-Seated Infections

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Session: P-04. Antimicrobial Stewardship: Outcomes Assessment (clinical and economic)

Background. Dalbavancin and oritavancin are long-acting lipoglycopeptides (LaGPs) FDA-approved for one-time only dosing for skin and skin structure infections. The use of these agents in serious, deep-seated infections requiring protracted antibiotic courses is of increasing interest. The purpose of this study is to evaluate the economic and clinical utility of LaGPs in patients requiring protracted antibiotic courses who are not ideal candidates for oral transition or outpatient parenteral anti bacterial therapy (OPAT).

Methods. This is a retrospective, observational, matched cohort study of adult patients who received a LaGP. Patients who received a LaGP were matched 1:1 to those who received standard of care (SOC) therapy by age (+/- 10 years), infection type, microorganism, and socioeconomic factor (e.g. persons who inject drugs, homelessness). Cost effectiveness was evaluated as total healthcare-related costs between groups. Clinical failure was a composite endpoint of mortality, recurrence, or need for extended antibiotics beyond planned course within 90 days of initial infection. Secondary outcomes included hospital length of stay and proportion of patients who received extended antibiotics beyond planned course within 90 days of initial infection.

Results. A total of 46 patients were included (23 per group). The most frequent indication was endovascular infection and the most common organism methicillin-resistant Staphylococcus aureus. The average length of stay was 22.9 days vs. 31.9 days in...
the LaLGP and SOC cohorts, respectively (p<0.153). The average total healthcare-related cost of care was USD 295,589 in the LaLGP cohort compared to $326,089 in the SOC cohort (p=0.282). LaLGP's were associated with a mean savings of $30,500 - $55,831 per patient (cumulative cost savings of $701,510). There was no difference in clinical failure between the two cohorts (22% vs. 30%; p=0.491). Nearly 26% of patients in the SOC cohort left AMA compared to 0% in the LaLGP cohort (p=0.032).

**Conclusion.** Receipt of LaLGP's may be a beneficial treatment option for patients with socioeconomic factors and deep-seated infections who are not candidates for oral therapy or OPAT.

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45. Significantly Decreased Broad Spectrum Antimicrobial Use (Carbapenems And Fluoroquinolones) with Implementation of Antibiotic Stewardship Program (ASP) and Pharmacist Interventions

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**Session:** P-04. Antimicrobial Stewardship: Outcomes Assessment (clinical and economic)

**Background.** According to the WHO, carbapenems and fluoroquinolones (FQ) should be key targets for stewardship programs.

**Methods.** A multifaceted antimicrobial stewardship program (ASP) was implemented in July 2018 at a 160-bed tertiary care center serving the tristate area of Iowa, South Dakota and Nebraska. Carbapenem and FQ use during pre-ASP intervention period (P1: 12/01/2016-6/30/2018) was compared with ASP-intervention period (P2: 07/01/2018-1/31/2020). ASP interventions included: stewardship educational pearls in monthly physician newsletters; educational posters in provider areas; suppression of carbapenem results on microbiology susceptibility reports; provider counseling for appropriate ordering; creating carbapenem alternative alert in order-entry software; removing FQ and carbapenems from order-sets where appropriate; default antibiotic stop dates changed to 7 days in EMR (Epic); adverse effects warning fired as an alert when ordering FQ. Pharmacist interventions: procalcitin protocol allowing pharmacists to reorder follow-up procalcitin and make recommendations to discontinue therapy where appropriate.

**Results.** FQ use declined significantly from a mean of 133 days of therapy (DOT) per 1000 patient days during P1 (p<0.0001). Carbapenem use declined significantly from a mean of 65 DOT per 1000 patient days during P1 to 9 DOT per 1000 patient days in P2 (p<0.001). All hospital units showed a significant decrease in use, with intensive care units (ICUs) noting 56% reduction (p<0.00001) in FQ use. The ASP program resulted in a 33% reduction in use of carbapenems with 9 DOT per 1000 patient days in P2 (p<0.001). All hospital units showed a significant decrease in use of all antimicrobials to later in the afternoon, which would not only prevent waste, but also allow the AMS team to effectively audit appropriate antimicrobial use.

**Conclusion.** Adding a templated comment to urine cultures was associated with a significant reduction in the number of antifungals prescribed in patients with candiduria. This strategy is an effective low-cost, passive education technique to improve antimicrobial stewardship.

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47. Transitioning to Batch Dosing of High-Cost Antimicrobials in the Inpatient Setting

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**Session:** P-04. Antimicrobial Stewardship: Outcomes Assessment (clinical and economic)

**Background.** Antimicrobial stewardship (AMS) committees ensure appropriate antimicrobial utilization. One stewardship intervention is to evaluate the delivery model of high-cost antimicrobials to better utilize resources and mitigate expenses. We analyzed the total medication use and costs of high-cost antimicrobials, specifically daptomycin, ertapenem, amphotericin, and micafungin, at our institution and propose an innovative cost-savings changes at a systems level.

**Methods.** This retrospective study consisted of 263 patients. All patients were at least 18 years old who was admitted to our academic institution from January 2020 to April 2021 and received daptomycin, ertapenem, amphotericin, or micafungin. Demographics, daily medication dosage, total doses received, the date and time of the start of the medication, last administered dose, and discontinued order were recorded.

**Results.** The daptomycin cohort consisted of 143 patients with 46.2% females and average age of 56.3 years. In this group, 145.3 vials were wasted which equated to a loss of $22,630. The ertapenem group had 53 patients with 62.3% females and a mean age of 62.3 years. There were 24 vials wasted with a calculated loss of $1080. The amphotericin cohort had 32 patients with an average age of 52.2 years and 43.8% females. There were 189 vials wasted with a loss of $46,116. The micafungin group had 35 patients with 42.9% females and average age of 60.4 years. This group had 12 vials wasted with a loss of $2052.

**Conclusion.** Each antimicrobial has a specific formulation protocol. Daptomycin and ertapenem formulation occurs in the early morning. Amphotericin formulation occurs 2 hours prior to medication use. Micafungin formulation occurs at the time the order label prints. These medications were more often administered in the late morning to early afternoon timeframe. The order to discontinue the medications also occurred at the same interval. One reason could be due to decisions made on morning rounds from primary teams and specialty input. These orders would then be placed after rounds. A cost-saving method would be to batch and change the formulation time for all antimicrobials to later in the afternoon, which would not only prevent waste, but also allow the AMS team to effectively audit appropriate antimicrobial use.

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