Quality and Productivity Commission

34th Annual Productivity and Quality Awards Program

"Leading with Excellence"

2021 APPLICATION

Title of Project (Limited to 50 characters, including spaces, using Arial 12-point font):

NAME OF PROJECT: ID PHARMACIST MANAGEMENT OF RESTRICTED ANTIBIOTICS

DATE OF IMPLEMENTATION/ADOPTION: **MAY 15, 2020**

(Must have been **fully** implemented **for a minimum of** at least one year - on or before July 1, 2020)

☐ **CHECK HERE IF THIS PROJECT IS BEING SUBMITTED FOR THE *COVID-19 IMPACT AWARD* ONLY**. (Projects must be implemented on or before December 31, 2020. **Note**: Projects implemented less than one year ago will not be eligible for any other PQA awards. In addition, once a project is submitted, you cannot submit the same project for awards consideration in subsequent years).

PROJECT STATUS: X Ongoing _____ One-time only

HAS YOUR DEPARTMENT PREVIOUSLY SUBMITTED THIS PROJECT? _____ Yes X No

EXECUTIVE SUMMARY: Describe the project in 15 lines or less using Arial 12 point font. State clearly and concisely what difference the project has made.

Every year in the US, up to 50% of antibiotics prescribed are unnecessary. The most significant collateral damage from misuse of antibiotics is development of resistance, labeled as one of the biggest threats to global health by the World Health Organization (WHO), and known to be associated with longer hospital stays and higher medical cost. In May 2020, the Division of Infectious Diseases, Antimicrobial Stewardship Program and Pharmacy collaborated to augment antimicrobial restriction by utilizing ID Pharmacists to manage prescribing of restricted antimicrobials during business hours, which had been previously managed by ID Fellows. In the six months after ID Pharmacists began the new roles, pharmacists had greater engagement (↑17%) with intervening/managing antimicrobials. Time to antibiotic optimization within 24hr also improved, with early stoppage of antibiotics and initiation of targeted treatment. Our increased efforts to stop the misuse of antibiotics reserved for treating multidrug-resistant infections, labeled as urgent threats per WHO, have prevented significant increases in resistance. Consequently, this change allowed for both departments to practice more efficiently and dedicate more time for the care of our patients.

BENEFITS TO THE COUNTY

(1) ACTUAL/ESTIMATED **ANNUAL** COST AVOIDANCE	(2) ACTUAL/ESTIMATED **ANNUAL** COST SAVINGS	(3) ACTUAL/ESTIMATED **ANNUAL** REVENUE	(1) + (2) + (3) = TOTAL **ANNUAL** ACTUAL/ESTIMATED BENEFIT	SERVICE ENHANCEMENT PROJECT
$	**$**	**$**	**$**	☒

ANNUAL = 12 MONTHS ONLY

SUBMITTING DEPARTMENT NAME AND COMPLETE ADDRESS Department of Pharmacy, Olive View-UCLA Medical Center 14445 Olive View Dr, 1C-101, Sylmar, CA 91342	**TELEPHONE NUMBER** 747-210-3059
PROGRAM MANAGER'S NAME Brian Kim, Niki Arab, Julianne Joo, Nadrine Balady-Bouziane	**TELEPHONE NUMBER** 747-210-8078 **EMAIL: BKIM2@DHS.LACOUNTY.GOV**
PRODUCTIVITY MANAGER'S NAME AND SIGNATURE **(PLEASE CALL (213) 893-0322 YOU DO NOT KNOW YOUR PRODUCTIVITY MANAGER'S NAME)** Joselin Escobar-Duran *Joselin Escobar* **DATE** 6.18.21	**TELEPHONE NUMBER** 747-210-3001 **EMAIL** joescobar@dhs.lacounty.gov
DEPARTMENT HEAD'S NAME AND SIGNATURE Christina Ghaly, M.D **DATE** 06/25/2021	**TELEPHONE NUMBER** 213-288-8050

****ELECTRONIC, WET, OR SCANNED SIGNATURES ARE ACCEPTABLE****

We Support Plain Language

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1st FACT SHEET – LIMITED UP TO 3 PAGES ONLY:

Challenge:

Every year in the United States, up to 50% of antibiotics prescribed are either unnecessary or inappropriate (Centers for Disease Control and Prevention [CDC]). In addition, approximately 150,000 adults are treated in emergency departments annually due to adverse events from antibiotics (Centers for Disease Control and Prevention [CDC]). The most significant collateral damage from misuse of antibiotics is the development of antibiotic resistance, labeled as one of the biggest threats to global health, food security, and development today according to the WHO. Although antibiotic resistance occurs naturally, misuse of antibiotics in humans, as well as animals, is accelerating the process. Antibiotic resistance has been demonstrated to result in longer hospital stays, higher medical costs, and increased mortality. In order to combat the development and progression of antibiotic resistance, the US government established in 2014 the *U.S. National Strategy for Combating Antibiotic-Resistant Bacteria*, including efforts to strengthen detection of resistance, slow the emergence and spread of resistance, and improve antibiotic use. At Olive View-UCLA Medical Center, the clinical best practice of restricting antibiotic prescribing has been adopted and implemented into routine patient care. The Division of Infectious Diseases, and the Antimicrobial Stewardship Program are responsible for selecting restricted antibiotics, determining criteria for approval, and granting approval upon prescribing of such restricted antibiotics. As a medical training program serving our community, the medical center participates as a practice site of the UCLA Infectious Diseases Fellowship. As such, the ID Fellows receive extensive and intensive training in infectious diseases practice as it pertains to our patients and the needs of the community that we serve. In addition to caring for patients on the ID Consultation service, the ID Fellow is also responsible for granting restricted antibiotic approvals. Dedicated time is warranted to review each case thoroughly to provide the best care for the patient, inclusive of rejecting the restricted antibiotic request given the prospect otherwise for misuse. However, the use of the ID Fellow's time to improve antibiotic use comes at an expense of time that could have been devoted caring for the ID Consult patients. As such, the ID Fellow's time may not be allocated in such a way to maximize benefit to where maximum benefit is most warranted. In February 2020, the UCLA ID Fellowship program inquired the prospect of conferring the responsibility of restricted antibiotic approvals away from the ID Fellows in order for them to dedicate more time to the ID Consult service. Consequently, this decision left a void in existing services, one that is especially paramount to our community and patients in light of the continued threat of antibiotic resistance, and the potential anticipated misuse of antibiotics in the future given the lack of antibiotic prescribing restriction.

Solution:

In May 2020, the Division of Infectious Diseases, Antimicrobial Stewardship, and

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Pharmacy began a multidisciplinary collaboration to fill in the gap in service for approving restricted antibiotics. The objective of this plan was to provide continuity of care for our patients, foster best practices for antibiotic use in our community, and to continue working towards the goal of mitigating the rise in antibiotic resistance. In terms of resources, the ID Pharmacists routinely review active antibiotics for appropriateness and provide treatment recommendations, and therefore, they served as a readily available resource that we envisioned would be in the best position to authorize restricted antibiotics moving forward. In addition, the ID Pharmacists currently collaborate with the Department of Microbiology to facilitate data acquisition essential in the review of actively prescribed antibiotics. As such, technology that is utilized as part of this solution includes newly developed rapid diagnostic testing that would provide identification of the bacteria causing infection immediately relative to the time it would take to do the same by using traditional methods in the laboratory. The ID Pharmacists also utilize the electronic health record to review data, and furthermore, to document interventions and recommendations pertaining to restricted antibiotics. Of note, the project is innovative in that pharmacists who are trained in infectious diseases/antimicrobial stewardship are tasked with the responsibility of approving restricted antibiotics, where historically, the ID Fellow physicians were responsible for this role. Additionally, the solution is unique in that the approach to approving restricted antibiotics embraces a multidisciplinary approach that includes involvement with the Department of Pharmacy, Department of Microbiology and the Department of Medicine.

Benefits:
In the six months after the ID Pharmacists began approving restricted antibiotics, the pharmacists had greater engagement with intervening and managing restricted antibiotics. Compared to the prior six months (pre-implementation of pharmacist approval of restricted antibiotics), there were 415 interventions in the post-period vs 367 in the pre-period for the antibiotic vancomycin used to treat *methicillin-resistant Staph aureus* (MRSA). For antibiotics used to treat the multidrug-resistant pathogen *Pseudomonas spp.*, there were 106 interventions in the post-period vs 87 in the pre-period. Additionally, there were 35 interventions vs 16 interventions in the pre- vs post-period for the antibiotic meropenem, which is reserved for severe resistant infections. In total, there were 1,098 in the six months after implementation vs 938 in the six months prior. Among these, 98% of the interventions in the six months after implementation were accepted by the prescribing provider **(Fig. 1)**. In the six months after implementation, a greater proportion of infection treatment was optimized within 24 hours from ID Pharmacist intervention compared to that during the previous six months **(Table 1)**. The relative percentages of infection treatment optimization within 24 hours pre- vs post are compared as follows: cefepime 68.3% vs 82%; piperacillin/tazobactam 82% vs 89.5%; vancomycin 81.4% vs 88.3%; meropenem 71.4% vs 84%; and ertapenem 78% vs 92%. Our increased efforts to stop the misuse of key antibiotics reserved for treating MRSA and Extended-spectrum Beta-

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Lactamase infections (ESBL), both of which are labeled as urgent threats by the WHO, have demonstrated stable resistance without development of significantly greater resistance **(Fig. 2).** When responding to restricted antibiotic approval requests, the Antimicrobial Stewardship pharmacists provide education to the ordering prescribers, thereby enhancing the level of training for resident physicians and county employees. The emergence of antibiotic resistance is considered a national priority with public policy aimed at combating antibiotic-resistant bacteria (e.g. the National Action Plan released by the White House in 2020). Our Antimicrobial Stewardship program supports the effectiveness of this public policy by routinely submitting antibiotic use data and resistance data to the CDC National Healthcare Safety Network (NHSN) – in turn, the NHSN provides facilities, states, regions, and the nation with data needed to identify problem areas, measure progress of prevention efforts, and ultimately eliminate healthcare-associated infections.

Table 1: Antibiotic Treatment Optimized within 24 hours of Intervention

	Pre-Period (11/2019 to 4/2020)	Post-Period (6/2020 to 12/2020)
Cefepime	68.3%	82%
Piperacillin/tazobactam	81.8%	89.5%
Vancomycin	81.4%	88.3%
Meropenem	71.4%	83.9%
Ertapenem	77.8%	92.3%

Figure 1:

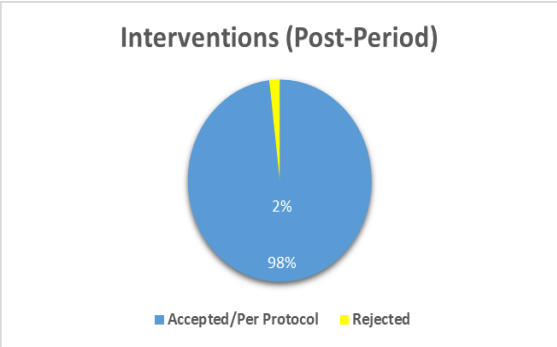
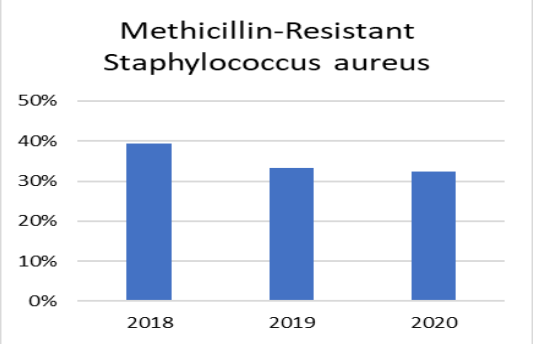
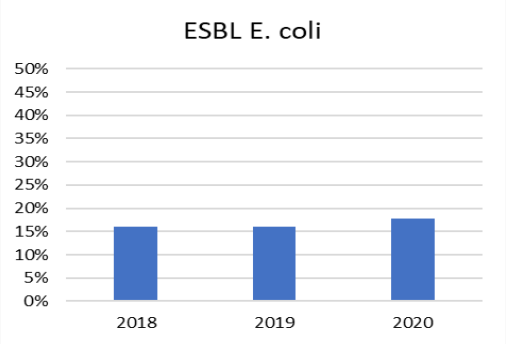


Figure 2:





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Linkage to the County Strategic Plan – 1 page only. Which County Strategic Plan goal(s) does this project address? Explain how. Use Arial 12-point font.

Our project addresses the **County Strategic Plan Goal III: Realize Tomorrow's Government Today, Strategy III**.1 – Continually Pursue Development of Our Workforce. The Antimicrobial Stewardship Program engages in the training and development of staff from relevant departments with the aim of improving the care that we collectively deliver to our patients and community. In addition, our program fosters professional growth through direct engagement in innovative practices that are currently at the forefront of patient care, including the use of novel technology that aids in the rapid diagnosis of infectious diseases and expanding the role of the pharmacists in patient care practice (e.g. Antimicrobial Stewardship Pharmacists performing restricted antibiotic approvals, which was previously performed by Infectious Diseases Physicians). We further foster professional growth and training of our staff through multidisciplinary approaches that result in synergistic productivity. Our program consists of multiple departments with routine collaboration, consisting of the Department of Microbiology, Department of Medicine, Department of Pharmacy, Hospital Quality Services, and the Department of Infection Control. Through direct engagement with the staff, the Antimicrobial Stewardship Program provides proactive learning opportunities, as well as passive training inherent to antibiotic interventions and treatment management.

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COST AVOIDANCE, COST SAVINGS, AND REVENUE GENERATED (ESTIMATED BENEFITS TO THE COUNTY): If you are claiming cost benefits, include a calculation on this page. Please indicate whether these benefits apply in total or on a per unit basis, e.g., per capita, per transaction, per case, etc. You must include an explanation of the County cost savings, cost avoidance or new revenue that matches the numbers in the box. Remember to keep your supporting documentation. Use Arial 12-point font

Cost Avoidance: Costs that are eliminated or not incurred as a result of program outcomes. Please indicate whether these are costs to the County or to other entities.

Cost Savings: A reduction or lessening of expenditures as a result of program outcomes. Please indicate whether these were expenditures by the County or by other entities.

Revenue: Increases in existing revenue streams or new revenue sources to the County as a result of program outcomes.

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