



## ELLIS MEDICINE IMPROVES CLINICAL PHARMACY WORKFLOW, INTERVENTIONS AND COST SAVINGS

### CASE STUDY

## ANTIBIOTIC STEWARDSHIP PROGRAM SUPPORTED BY THERADOC® INCREASES PHARMACY INTERVENTIONS AND REDUCES COSTS

Ellis Medicine in Schenectady, N.Y., had policies and procedures in place for monitoring and dosing several antibiotics, but did not have a robust antimicrobial stewardship program. In early 2016, recommendations from the New York State Department of Health and new Joint Commission requirements spurred the hospital to develop a program.

To help meet these regulatory standards, Ellis Medicine turned to Premier technology—Clinical Surveillance, powered by TheraDoc®. Like many other hospitals using electronic clinical surveillance systems, Ellis Medicine pharmacists have observed improvements in workflow, pharmacy interventions, and cost savings, due primarily to discontinuation and de-escalation of antibiotics.<sup>1,2</sup>

### THE NEED FOR CLINICAL SURVEILLANCE SYSTEMS

In establishing an antibiotic stewardship program, Ellis Medicine pharmacists found that they were not able to easily identify drug-bug mismatches, duplication of therapy, and opportunities for de-escalation or discontinuation of therapy using manual methods, which were time-consuming and labor-intensive.

To help streamline and automate the process, Ellis Medicine adopted TheraDoc to help streamline and automate the process. The clinical surveillance solution was implemented for general pharmacy use for all patients, and was separately tailored for antimicrobial stewardship using customizable alerts focused on de-escalation and discontinuation, duplication of therapy, targeted antimicrobial therapy, and other stewardship-related activities. Now Ellis' clinical pharmacy team were armed with the clinical insights and tools to help monitor patients and identify potential interventions, including standardized and customized alerts, dashboards, workflow tools, and reports.

“Without a doubt, if we didn't have TheraDoc, our stewardship would not be as efficient,” said Sara Bassi, clinical pharmacy manager at Ellis Medicine. “It saves a lot of time and costs by helping us quickly identify which patients need interventions or extra monitoring—we now have a system that does much of the legwork for us.”

### PHARMACY INTERVENTIONS YIELD REAL RESULTS

Ellis Medicine pharmacists initially focused on vancomycin, a challenging antibiotic that often requires dosing and continuous monitoring by pharmacists based on physician orders, and also meropenem, a broad-spectrum antibiotic with increasing antibiotic resistance. TheraDoc was used to automate monitoring and improve coordination between shifts since dose adjustments may need to be made at any time. Interventions and cost savings were tracked, and pharmacists began presenting results monthly at

### RESULTS

286% improvement in appropriate antibiotic prescription of meropenem within 5 months of stewardship recommendation.

According to the Centers for Disease Control and Prevention, a modifiable risk factor for antibiotic resistance is the improper prescribing of antibiotics—approximately 20–50 percent of all antibiotics prescribed in U.S. acute care hospitals are either unnecessary or inappropriate.<sup>3</sup>

## ELLIS MEDICINE

Sole provider of acute hospital care in Schenectady County, N.Y. which consists of four campuses—Ellis Hospital, McClellan Street Health Center, Bellevue Women's Center, and the Medical Center of Clifton Park.

the Stewardship Committee meeting and quarterly at Pharmacy and Therapeutics Committee and Infection Control meetings.

Cost savings for de-escalation and discontinuation of antibiotics were calculated by entering into the clinical surveillance system the number of days of therapy saved. During monthly data reviews, the stewardship pharmacist refers to a spreadsheet with the price of the medications to calculate the cost savings for their interventions.

From May 2016 to May 2017, the stewardship team completed **1,718** reviews—130 cases were de-escalated for vancomycin and 200 for meropenem. Cost savings for discontinued and de-escalated antibiotics were:

**\$55,091** for vancomycin and meropenem

**\$67,305** for all antibiotics combined

An analysis of intervention types revealed that 23 percent were for antibiotic de-escalation, 11 percent for discontinuation, six percent for therapy adjustment, four percent for initiation or escalation of therapy, one percent for dose/interval adjustment, one percent recommended culture draw, and one percent recommended therapeutic drug monitoring. In addition, 53 percent of cases reviewed by the stewardship team required only monitoring and no direct intervention with the primary team covering the patient.

Since January 2017, the hospital has had access to an antibiotic indicator report focused on evaluating vancomycin and meropenem, looking at total courses of the drugs ordered, the physician group that ordered them, and the indication. It provides the percent of courses de-escalated or discontinued based on stewardship recommendations. From January 2017 to May 2017 the percent of vancomycin courses de-escalated and discontinued increased from 20 to 25 percent and courses of meropenem de-escalated and discontinued increased from 15 to 43 percent.



**SARA BASSI**  
PharmD

Clinical pharmacy manger at Ellis Medicine, leads clinical pharmacy programs, oversees the hospital's use of TheraDoc, and supervises the antimicrobial stewardship pharmacist program.

## BROADENING THE USE OF THERADOC

TheraDoc has helped expand the pharmacy department's reach, allowing pharmacists to clinically monitor all patients—even those on floors without dedicated pharmacy coverage.

"TheraDoc has certainly increased our ability to review more patient cases and provide appropriate recommendations," Bassi said. "We're able to complete many more clinical activities than we've ever been able to before because we now have a tool to help us quickly determine which patients we need to focus our attention on."

The pharmacy department plans to adopt additional capabilities within TheraDoc to receive real-time alerts and track additional interventions focused on strengthening its antimicrobial stewardship program. The increase in pharmacy interventions and cost savings achieved to date demonstrates the value of TheraDoc and its ability to help ensure the appropriate use of antimicrobials. "We are now able to identify and address patient safety concerns that may otherwise have been missed without a pharmacist going through every patient file every day," Bassi said.

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