Building a new antimicrobial stewardship program

Approximately 20-50 percent of antibiotics prescribed in hospitals in the U.S. are either inappropriate or unnecessary.[1-6] It's no secret that the misuse of antibiotics contributes to the growing problem of antimicrobial resistance. This grave threat to public health impacts not only the U.S., but the entire world.[7] The Centers for Disease Control and Prevention (CDC) reports that an estimated two million people in the U.S. are infected with antibiotic-resistant organisms each year, leading to 23,000 deaths.[8] A growing body of research shows that antimicrobial stewardship programs (ASPs) can optimize how infections are treated and reduce deleterious effects associated with antibiotic misuse, thereby improving patient safety and quality outcomes.[9] The CDC report notes that infection preventionists (IPs) are key in supporting and enhancing the work of ASPs.[10]

Because *Prevention Strategist* seeks to help IPs translate the science of infection prevention into practice, we began sharing profiles from healthcare organizations with ASPs, starting with the spring 2016 issue. Here we profile Genesis Health System, which established its ASP program in 2015. Read more about how they're building the program, barriers they face, successes, and next steps. We hope that these profiles not only inform you, but inspire you to assess and champion positive changes in your ASP.

Genesis Health System

Davenport, Iowa

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LEADERSHIP

The Genesis Health System contains a total of 712 beds spread over six hospital campuses, including three critical access hospitals. Established in 2015, the ASP is led by the system's infectious disease physician and infectious disease pharmacist.

ASP TEAM MEMBERS

The members of the Genesis Health System ASP team include:
- Hospital epidemiologist
- Infection preventionist
- Infectious disease physician
- Pharmacist
- Microbiologist
- Director of pharmacy
- Nursing informatics specialist
- IT physician liaison (assists with physician education)
- Informatics pharmacist
- Family medicine physician
- Infectious disease pharmacist
- Registered nurse
- Executive sponsor

Genesis assigns an executive leader to each committee to help ensure that the project moves forward and to assist with the removal of any barriers, per Lean Six Sigma principles.

THE MAIN COMPONENTS OF GENESIS HEALTH SYSTEM'S ANTIMICROBIAL STEWARDSHIP PROGRAM

The components of Genesis Health System's ASP include:
- Formulary restriction
- Preauthorization (approval programs)
- Prospective audit and feedback
- Education
- Guidelines and clinical pathways (clinical decision support)
- Parenteral to oral conversion protocol
- Dose optimization/automatic dose adjustment
- Streamlining/de-escalation of therapy
- Time-sensitive automatic stop orders

THE INFECTION PREVENTIONIST'S ROLE IN THE ASP

The infection preventionist provides data on healthcare-associated infections, including *C.diff* and MDROs. Later in 2016, the

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ASP team will be implementing an antibiotic rounding team, and the IP will be a part of this team. The rounds will be led by the ID pharmacist.

Since the program has been rolled out, the IP also presents evidence-based guidelines to ensure the ASP follows best practices. The IP was also part of the team that developed the antimicrobial stewardship module in the system's electronic medical record (EMR).

FUNDING

The ASP is part of the system's pharmacy budget. Administration (IT) funded the development of the antimicrobial stewardship module in the EMR.

READ MORE ABOUT ANTIMICROBIAL STEWARDSHIP IN THE *AMERICAN JOURNAL OF INFECTION CONTROL*

From Multidrug Resistance to Antimicrobial Stewardship: Early Evaluation in 85 Hospitals of a Single System, Fraine, Gail R., et al., *American Journal of Infection Control*, Volume 42, Issue 6, S33.

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Implementation of a Pilot Antimicrobial Stewardship Program in Pediatric Long-Term Care, Jackson, Olivia, et al., *American Journal of Infection Control*, Volume 43, Issue 6, S5.

Antimicrobial stewardship to optimize the use of antimicrobials for surgical prophylaxis in Egypt: A multicenter pilot intervention study, Saied, Tamer, et al., *American Journal of Infection Control*, Volume 43, Issue 11, e67–e71.

Impact of an Antimicrobial Stewardship Program on the Length of Stay of Patients Admitted to Hospital with Community-acquired Pneumonia, DiDiodato, Giulio, et al., *American Journal of Infection Control*, Volume 42, Issue 6, S5.

Multifaceted Antimicrobial Stewardship Targets Education, Prescriber Guidelines & Medication Use Evaluation for Clinical & Economic Impacts in a Community Hospital, Gonzales, Adrian J., et al., *American Journal of Infection Control*, Volume 42, Issue 6, S5–S7.

New American Hospital Association antimicrobial stewardship toolkit provides resources from multiple organizations, *American Journal of Infection Control*, Volume 42, Issue 9, 941.

Knowledge, beliefs, and confidence regarding infections and antimicrobial stewardship: A survey of Veterans Affairs providers who care for older adults, Jump, Robin L.P., et al., *American Journal of Infection Control*, Volume 43, Issue 3, 298–300.

FREQUENCY OF MEETINGS

The IT team members currently meet on a weekly basis. This is because they are leading the development of three distinct phases of the technology integration component of the program. Phase one included a revision of our order sets (our physician orders are all entered electronically) that included the required fields of indication and duration. In phase two, we implemented the half-time infectious disease pharmacist who reviews the orders daily and works with the medical staff to make sure that the orders are appropriate. In phase three, the infection control surveillance module will be implemented. In that module, we will be able to create our antibiogram from the EMR, in addition to enhanced reporting capabilities. The IT team members will meet weekly until all phases of the project have been implemented.

The entire ASP committee meets monthly.

ASP MEETINGS IN ACTION

The Genesis Health System ASP team starts the meetings by approving minutes from previous meetings. Then, each respective committee team member provides updates to the entire group on the progress of their assignments. Barriers are addressed and escalated to the executive sponsor as needed. Next, the team discusses the following metrics: average days of therapy, average defined daily dose, total patients on the therapy (e.g., all antimicrobials, Levaquin, Zosyn, Vancomycin), percentage of antimicrobials delivered via IV with associated doses, average length of stay for patients on antimicrobials, average antimicrobial cost per patient day, percentage of inpatients diagnosed with an HAI, and hospital-acquired *C. diff* rates per 1,000 patient days. The pharmacy team members lead a discussion on antibiograms, antimicrobial indication data, antimicrobial daily reports, formulary restrictions/antimicrobial therapeutic interchange, and formulary policy review. The information technology representative leads the discussion on the EMR system updates and the impact those updates may have on the antimicrobial stewardship program. The meeting closes with a review of major decisions and team member assignments.

MEASURING THE IMPACT OF THE PROGRAM

Genesis Health System uses the antimicrobial stewardship module in the EMR to track its progress. The Value Creation Office—a group of IT staff who are assisting with the development of the computer-based program—are currently assisting with the creation of the reports, but soon the pharmacy informatics specialist will take on this task.

GOALS OF THE ASP

We will be establishing goals for the ASP on an annual basis. The committee will make these decisions based on what the data in the antimicrobial stewardship EMR show. That being said, the goals are always subject to change. Recently, the team reviewed its current metrics and will be making some changes to them to better reflect current practices in our organization. We want the data and reports to be meaningful and easy to use. Some of the nice-to-know information was overshadowing the need-to-know information.

PROGRAM SUCCESSES

In the short period of time since its inception, the ASP has had the following successes:

- Working with IT colleagues to implement an electronic tracking system for antimicrobial stewardship
- Creating a pharmacy position that is dedicated to infectious diseases
- Requiring antibiotic duration and indication with every order
- Instituting a hard stop for antibiotic orders

FACTORS THAT MAKE THIS ASP EFFECTIVE

Administrative support and motivated and dedicated team members have made the ASP effective. In addition, the medical staff have been very supportive with the changes as a result of the ASP.

ONE FACTOR THAT COULD IMPROVE THIS ASP

One lesson learned during the implementation of the duration and indication piece is to be sure that all players are involved. We initially thought that we had included the appropriate clinical staff, but we underestimated the number of procedures that are scheduled in advance. For example, as the go-live date approached, our informatics nursing liaisons began working with our preadmission testing department to be sure that all patients scheduled for surgical procedures on our go-live date and beyond had antimicrobial duration and indication included in the order. We did not want patients to experience a delay when they were admitted for surgery. Informatics nursing liaisons and pre-admission testing nurses contacted the surgeons and were able to revise the orders prior to the patients' arrival. In hindsight, we should have had a nurse from preadmission testing on the team. We needed to contact all of the surgeons to update the orders before we could go live. ₧

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