Growth and success highlight antimicrobial stewardship successes at UW Health in 2017!

For the past 15 years, antimicrobial stewardship has focused mostly on improving inpatient antimicrobial utilization and mitigating the emergence of antimicrobial resistance. While many of the 2017 achievements had their genesis before this year, 2017 saw a rapid expansion of stewardship services to pediatrics, ambulatory, and the emergency department. Each of these new opportunities provides a platform to measure and influence antimicrobial prescribing.

First, we welcomed a second clinical coordinator position to the team. Tyler Liebenstein, PharmD joins the stewardship leadership group and made positive forward strides in tracking ambulatory prescribing patterns and resetting patient expectations about antimicrobial prescriptions. Dr. Sheryl Henderson oversaw the initiation of prospective audit and feedback in the American Family Children’s Hospital in 2017. This requires daily chart review and interventions when opportunities exist to improve patient care. Erin McCreary, PharmD and Mike Pulia, MD streamlined antimicrobial prescribing in the Emergency Department and are exploring opportunities to reduce admissions and ensure discharged patients are getting expected results from prescribed antibiotics.

This expansion has challenged our team to be more efficient and effective. Fortunately, in 2017, the Epic ICON module was deployed and implemented through extensive interdisciplinary teamwork. Microbiology, infection control, pharmacy, and medical leadership partnered to review lab reporting practices, create antibiograms, and produce patient care reports which summarize clinical progress and antimicrobial care plans. The efficiencies gained with the ICON module allow us to review approximately 300 patients daily on antibiotics (~60% of the daily census) at University Hospital, American Family Children’s Hospital, and The American Center.

The stewardship team continued to proactively identify and manage antimicrobial shortages. Using an multidisciplinary approach which includes pharmacy, microbiology, and medical leadership, we successfully navigated another year of shortages without sacrificing patient care. We happily welcomed four new antimicrobial agents to the formulary this year. These new agents will help us care for patients with complex and highly drug-resistant pathogens.

We eagerly enter 2018, our 17th year of providing antimicrobial stewardship services to the institution, and look forward to continued growth and opportunities to improve the care of patients at University of Wisconsin Health, our affiliate partners, and regional hospitals throughout the state of Wisconsin.
What is Antimicrobial Stewardship?

Coordinated efforts and interventions designed to improve and measure the appropriate use of antimicrobials by promoting the selection of the optimal antimicrobial drug regimen, dose, duration of therapy, and route of administration. Antimicrobial stewards seek to achieve optimal clinical outcomes related to antimicrobial use, minimize toxicity and other adverse events, limit the selection for antimicrobial resistant strains and reduce health care costs. Given the societal value of antimicrobials and their diminishing effectiveness due to antimicrobial resistance, antimicrobial stewardship at UW Health strives to ensure that all patients receive optimal antibiotics (when indicated) in every scenario.

Antimicrobial Stewardship Team Recognized by The Joint Commission!

Centers for Medicare and Medicaid Services released updated conditions of participation on January 1, 2017 which included the requirement of participating hospital systems to provide antimicrobial utilization oversight. Effectively, this created a mandate for antimicrobial stewardship programs.

The UW Health antimicrobial stewardship program successfully contributed to The Joint Commission visit during the medication management and infection control survey.

Dr. Barry Fox and Lucas Schulz were approached and interviewed by the TJC. The Source is a publication created by the Joint Commission which highlights high-performing programs and compliant hospitals. The Source serves as a resource for surveyors from which to measure best practices and provide examples for hospitals which may be struggling to meet accreditation standards.

Notably, the publication focused on the UW stewardship program’s ability to provide prospective audit and feedback for over 300 patients per day and manage 50 guidelines and protocols related to management of infectious diseases. The publication also examines the impact of our robust antimicrobial restriction process.

It is an honor to be recognized for our ability to improve patient care here at UW, but it is especially rewarding to be recognized for contributing to improved patient care nationally. The stewardship program will continue to strive to contribute to improving the care of patients both near and far!
Despite the current lack of evidence to support its impact on antimicrobial utilization, the timeout has been proposed as a regulatory standard for The Joint Commission and CMS. In coordination with a small team of external partners, pharmacists from the UW Health AMS team are leading a multi-site study to describe how the antibiotic timeout is currently being implemented at hospitals across the country and furthermore to evaluate the timeout’s impact on antimicrobial utilization. Data was collected from 62 sites and results are expected in early 2018.

### Pediatric Antimicrobial Stewardship at American Family Children’s Hospital

Antimicrobial stewardship expanded services to pediatric patients in 2017. A qualitative survey was sent to over 300 providers prior to stewardship expansion to gauge comfort with antimicrobial prescribing, knowledge of antimicrobial stewardship programs (ASP), attitude toward AMS, and perceived benefits and harms of AMS. To launch our pediatric ASP, our team participated in the Centers for Disease Control and Prevention’s “Get Smart About Antibiotics” Week distributing 100 antibiotic awareness buttons and provider checklists to facilitate antibiotic “time outs” on rounds. We educated 168 families about appropriate antimicrobial prescribing and published a blog to the Sharing Antimicrobial Reports for Pediatric Stewardship (SHARPS) collaborative.

The ASP began providing daily patient review for every pediatric patient receiving antimicrobials three times per week on January 1st, 2017. Recommendations were widely accepted (83% acceptance rate) with the most common recommendations pertained to duration of therapy, dosing, and deescalation. During daily review, the ASP monitors for adherence to three new pediatric-specific guidelines, all created and approved in 2017. The pediatric ASP was recognized by SHARPS for our very low rate of inappropriate prescribing!

In February 2017, the Antimicrobial Stewardship team delivered an CE-accredited educational session to pediatric pharmacist and pharmacy residents on Pediatric Infectious Diseases Clinical Pearls. An additional six educational sessions were held for pediatric nurses, medical residents, and faculty between November 2016 and March 2017 for a total of 4 hours of didactic education to over 150 UW Health employees.

### Timeout on the antibiotic timeout: a multi-site evaluation of its impact on antibiotic utilization

Among the action items endorsed in CDC’s Core Elements of Hospital Antibiotic Stewardship Programs is the antibiotic timeout. The timeout can be defined as a prompt to the primary team to re-evaluate a patient’s empiric antimicrobial regimen after a set period of time (usually 48 to 72 hours) based on the available objective information including culture data, laboratory results, and imaging. The rationale for the action is to encourage universal application of stewardship principles and distribute responsibility for rational antibiotic use to frontline clinicians.

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Ambulatory Antimicrobial Stewardship

For 16 years, the Antimicrobial Stewardship Program has worked to improve the judicious use of antimicrobials within the hospital walls. Since 70% of antimicrobial prescribing happens outside the walls of our hospitals, our program embarked on an ambitious effort in 2017 to improve antimicrobial use within our ambulatory clinics.

Ambulatory antimicrobial stewardship aims to reduce unnecessary antimicrobial prescribing for many common viral conditions, including sinus infections, upper respiratory infections, bronchitis, and ear infections. Over treatment of these conditions is common – it is estimated that 50% of all outpatient antimicrobial prescriptions are inappropriate. To do this, we formed a steering team that included key stakeholders from Urgent Care, Internal Medicine, Family Medicine, Pediatrics, Emergency Department, Health Link Ambulatory Operations, and Ambulatory Administration.

Improving outpatient antimicrobial use has been a multi-factorial effort, including provider education, resetting patient expectations, and Health Link enhancements. In 2017, the Antimicrobial Stewardship Program gave in-person education sessions on outpatient antimicrobial stewardship principles to several ambulatory clinic groups, including Urgent Care and Internal Medicine. Patient education posters were developed to reset expectations that antibiotics are not helpful for common viral conditions, and may in fact be harmful. These posters are placed in all Urgent Care exam rooms and primary care waiting rooms. UW Outpatient Pharmacies have also embraced outpatient antimicrobial stewardship. The Antimicrobial Stewardship Program developed a CBT for outpatient pharmacists to help them reinforce to patients the antimicrobial stewardship principles instilled in their doctor’s office visit. Lastly, major Health Link functionality was developed that requires outpatient providers to document an indication for all antibiotic orders. This requirement allows the antimicrobial stewardship program to track antibiotic use and provide feedback to clinics and providers on antimicrobial prescribing habits.

Antimicrobial Shortages - Managing Through Tough Times

The ASP continues to manage shortages allowing clinicians to provide antimicrobial treatments to their patients without interruption. The ASP quickly identifies equivalent alternative treatment therapies, create educational materials, create HealthLink solutions, and, ultimately shift utilization, when possible to alternative therapies, conserving shortage medication for patients who absolutely need it. In 2017 the ASP mitigated 25 drug shortages. Injectable metronidazole required medical and surgical champions to deploy a conservation strategy to prevent patient care interruptions and prevent patient harm.
Antimicrobials represent 10-15% of the total inpatient drug budget of UW Health. A successful antimicrobial stewardship program balances improving patient safety, ensuring effective antimicrobial therapy, and mitigating antimicrobial resistance with fiscal responsibility. Since the program’s inception, reduction in inappropriate antimicrobial use has reduced the annual pharmacy antibiotic acquisition budget by almost 50% per patient admission compared to a decade ago and more than $1.13 million per year compared to drug acquisition costs just 3 years ago. The program continues to be an asset to decreasing the cost of antimicrobial usage. In 2014, actual cost of antimicrobial use was approximately $2 million less than the projected cost for that year (projected cost based on cost of usage in 2002 and 2.5% inflation yearly since then). Since 2002, the average antimicrobial cost per admission has decreased $85 per admission. In general, overall antimicrobial utilization remains consistent in the last few years at an average of approximately 720 days of therapy per 1000 patient days (see Figure below).

15 year cost avoidance = $19,355,365

Antifungal Budget 2002-2017


MEDIA
2017 By the Numbers

Challenges in 2018 and beyond for the antimicrobial stewardship program

1. Monitor ambulatory antimicrobial prescribing and identify improvement opportunities using newly approved antimicrobial indication order tool
2. Develop outreach stewardship program to assist regional hospitals provide optimal antimicrobial therapy
3. Implement Epic Antimicrobial Stewardship and Infection Control Module to improve the efficiency of the stewardship program and provide clinical decision support to providers
4. Expand pediatric antimicrobial stewardship to 5 days per week
5. Continue to expand stewardship presence during infectious diseases consult rounds in response to positive impact demonstrated in 2017 "budget busters" evaluation
6. Implement laboratory stewardship practices to reduce variation and standardize practice
7. Develop outpatient parenteral antimicrobial therapy (OPAT) clinical service development to improve safety and use of infusion center resources

The Antimicrobial Stewardship Team

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Need help with antimicrobial therapy decisions?
Page 3333 – Adult Antimicrobial stewardship MD
Page 0775 – Pediatric Antimicrobial Stewardship MD
Page 4321—Antimicrobial stewardship PharmD