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Healthcare payers are rapidly adopting value-based payments as a model of choice, tasking hospitals with the necessity of designing a healthcare delivery system that can achieve payment reform expectations. Value-based payments are rooted not only in improved clinical outcomes, but also in advancing cost-efficient delivery of care. Stewardship programs are one mechanism by which hospitals can align high quality care and low costs in a manner that benefits not only the payer, but also patients and physicians. Patients benefit from reductions in waste, re-work, redundancy and unnecessary care such as unwarranted antibiotics and expensive radiology services, while high-performing physicians are often eligible for incentive payments or bonuses tied to success in defined areas. Stewardship programs initiate institution-wide changes through development of new protocols (identified from evidence-based best practices) that are designed to elevate standards as well as create multidisciplinary management programs and consistency across delivery systems.



In early June 2016, CMS proposed a change that would require hospitals participating in Medicare and Medicaid to implement antibiotic stewardship programs (ASP)¹. This desire to address growing concern over inappropriate antibiotic use has already been taken on in almost 40% of U.S. hospitals². Overprescribing of antibiotics has drastic consequences that affect health systems and their patients including adverse drug reactions, rising *Clostridium Difficile* hospital-acquired infections and perhaps most alarming, the influx of antibiotic-resistant bacteria. The CDC released a checklist of core elements of antibiotic programs intended to serve as the foundation for the creation of stewardship initiatives. Figure 1 outlines the core elements.

¹ <https://www.cms.gov/Newsroom/MediaReleaseDatabase/Fact-sheets/2016-Fact-sheets-items/2016-06-13.html>

² <http://cid.oxfordjournals.org/content/early/2016/05/18/cid.ciw323.abstract>

Figure 1: CDC's Core Elements of Antibiotic Stewardship Programs³



In addition to the potential for financial incentives from healthcare payers, these programs offer extensive clinical and cost-saving benefits. ASPs equip health systems with enhanced decision support to aid physicians in prescribing the most appropriate antibiotics. As a result, patients receive a higher quality of care and associated increased infection cure rates as well as reduced treatment failures. As patients' antibiotics are used more effectively, hospitals have seen reduction in rates of C. diff infections and improved antibiotic resistance all while saving the hospital money. The economic benefits are equally impressive. This is evident as physicians' transition from reactionary to preventative prescribing, hospitals shed the cost of care associated with hospital-acquired infections, adverse drug events and lengthy treatments. The CDC estimates that the average hospital or health system experiences cost savings ranging from \$200,000 to \$400,000 following the implementation of ASPs. A seven-year study at the University of Maryland surpassed this estimate, saving nearly \$3 million in the first three years of the program's demonstration. When the program was discontinued, the costs associated with antibiotics rose by \$1 million in the first year⁴.

Examples of Successful Stewards

Many hospitals have successfully implemented antibiotic stewardship programs, establishing evidence of both cost-savings and improved utilization.

- *The University of Maryland Shore Health System* developed an ASP in 2009 with the short-term goal to improve patient safety and decrease costs, and a long-term goal to improve patterns of antibiotic resistance. By introducing new protocols for antibiotic prescription they successfully reduced spending on high-cost antimicrobials by 13.7%, and reduced their Defined Daily Doses (DDD) by 9.1% in the first year of the program.
- *BJC Healthcare at Christian Hospital* in St. Louis developed an antibiotic stewardship pilot that introduced new standards for culture tests prior to antibiotic use, de-escalation and careful monitoring of patients. At the end of the pilot period, BJC demonstrated a 92% compliance on culture ordering prior to administering antibiotics, and reported that 80% of patients received appropriate empiric antibiotics.
- *NYU Langone Medical Center* created an ASP to ensure antibiotics are optimized, reduce hospital C. difficile infection rates and to publish research on the safety of antibiotic stewardship programs. The hospital measured success of utilization through monitoring Defined Daily Doses. Over the course of six months, DDD for ciprofloxacin reduced from a range of 24.6-34.3 to 18.3-21.4 and for menopenrem from 10.1-13.3 to 4.4-6.1 (per 100 patient days).

³ CDC Core Elements of Antibiotic Stewardship Programs

⁴ Standiford HC et al. Antimicrobial stewardship at a large tertiary care academic medical center: Cost analysis before, during, and after a 7-year program. *Infect Control Hosp Epidemiol* 2012 Apr; 33:338.

Considerations for Implementation

Several concepts of an Antibiotic Stewardship Program that should be considered prior to development. At the forefront should be ensuring sufficient resources are available as it is likely that an ASP will require an upfront investment in staff and technology in order to be successful down the line. Often programs are funded by the hospital itself, however other opportunities exist through government programs and grants. Many outside organizations such as AARP and the CDC's Get Smart campaign offer resources and clinical tools to aid in ASP development. One such example is the Section 1115 Medicaid Waiver. California recently renewed their Section 1115 Waiver which includes a program called Public Hospital Redesign and Incentives in Medi-Cal (PRIME). In this program, resource stewardship is a large component as it includes expectations for improvements in antibiotic, high cost imaging, pharmaceutical and blood product use. By implementing system-wide change including decision support and development of new protocols to improve clinical outcomes of patients, hospitals are eligible to receive significant incentive funding on an annual basis.

In addition to resources, successful ASP requires participation from pharmacists and clinicians. It is important to consider the culture surrounding antibiotic prescription at your hospital and the influence it may have on your program's success. Finally, hospitals should consider evidence-based best practices as guidelines for developing their specific program. Many existing protocols are nationally recognized and readily available for adoption.

A few best practices for consideration include:

- Hospital-specific antibiograms
- Updated clinical protocols including restrictions on length of therapy and antibiotic choice
- Pocketguides with updated protocols for antibiotic prescription
- Electronic decision-support systems to aid physicians in selecting appropriate prescriptions
- Physician dashboards to hold physicians accountable to their peers

COPE Health Solutions partners with healthcare systems to support project management under federal demonstration waivers. The COPE team is currently engaged with clients in New York, Texas and California to carry out Section 1115 transformation programs that aid in the transition towards value-based care. We provide our clients with the necessary tools, templates and direction to effectively navigate the rapidly changing healthcare landscape.

