New York State Partnership for Patients

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CORE ELEMENT 2: ACCOUNTABILITY FOR AS

What does it mean to "hold providers accountable" for antibiotic use? Does it include feeding back information and publicizing usage rate? What strategies have worked at other hospitals?

Provider accountability has multiple layers, all of which require leadership support. Internal structures helpful to put in place to ensure accountability. One example is the use of an antibiotic usage report card, which would ensure a mechanism is in place to monitor and provide feedback about how well providers are adhering to recommended prescribing practices. The goal of the report card is to identify providers who overprescribe and initiate AS education. If there is a documented trend of higher antibiotic use among specific providers compared to peers, it would likely warrant additional one-on-one usage reviews of providers and AS education. Individual provider-level report cards and department-level data should be shared on a regular basis.

Successes in adherence to AS should be celebrated and highlighted to provide potential opportunities for improvement. Besides a review mechanism, there should be a way for non-adherent providers to receive education on why AS is important to patients, the hospital, and the wider health care environment in reducing the emergence of new multi-drug resistant organisms (MDRO) such as *Clostridium difficile (C. difficile)* and antibiotic adverse events. This can be especially important in small community hospitals that don't have many MDROs.

To help disseminate information and engage providers, your AS team should include representatives from areas in the hospital where there is significant antibiotic usage (for example, surgery, the intensive care unit [ICU], and internal medicine). Consider including AS team membership as part of the position description for select unit representatives who are accountable for the antibiotic usage reports generated for their department or for disseminating the provider-level report cards to the individual providers.

Some effective strategies to engage resistant prescribers (including private practice physicians) include emphasizing the wider public health consequences of reducing the risk of newly emergent MDROs and the risks inherent to the antibiotics themselves. A recent Journal of the American Medical Association (JAMA) paper[1] noted that 20% of patients who receive an antibiotic experience an adverse drug reaction that results in a prolonged length of stay, readmission, emergency department visit, or extra laboratory tests. Though AS can help reduce costs and is a requirement of The Joint Commission (TJC), it may not be effective to emphasize this to providers as the main reason for implementing A.[2] Engaging all staff in AS is critical to successful hospital-wide AS. One recently published Ohio State University paper describes how staff pharmacists

1. Tamma P.D., Avdic E., L.i. DX, Dzintars K., Cosgrove S.E. Association of Adverse Events With Antibiotic Use in Hospitalized Patients. JAMA Intern Med. 2017 Sep 1;177(9):1308-1315
2. Goff, D.A., Kullar, R., Bauer, K.A., File, T.M. Eight Habits of Highly Effective Antimicrobial Stewardship Programs to Meet the Joint Commission Standards for Hospitals. Clin. Infect Dis. 2017 Apr 15:1134-1139

used a scoring tool to make standardized recommendations to promote adherence to Staphylococcus bacteremia prescribing guidelines and to encourage infectious disease consultations.[3] In addition, hospitals just beginning AS programs may find it helpful to connect with hospitals with more mature AS programs as "mentors." The "mentor hospital" approach can help facilitate a smoother rollout and better adherence to AS guidance developed internally, as demonstrated in a recently published paper in the American Journal of Health System Pharmacists.[4]

Of note, the extraction of data to generate antibiotic use report cards may be difficult at a teaching hospital due to the variety of inpatient providers (residents, fellows, interns, etc.), but may be easier with outpatient providers and hospitalists.

How much time should an Antibiotic Stewardship Program (ASP) lead spend on ASP? Does the amount of time differ depending on a hospital's size? How many meetings should we have at the beginning of the initiative? How many hours does it take to set up a good protocol?

The Society of Hospital Medicine published an implementation guide[5] on how to establish AS among hospitalists. Section II includes a table outlining the AS staffing requirements for basic, intermediate, and advanced AS programs. The amount of time allocated to AS likely depends on the hospital (size and services) and how active the program is (i.e., do you want to audit positive blood cultures and restricted antibiotics or have full reviews on all patients with clinical pathways/guidelines). Notably, TJC standards do ask hospital leaders to "establish antimicrobial stewardship as an organizational priority[6]"and suggest accountability documents and performance improvement plans as examples of commitment. Dedicated time for staff to participate in AS is another example of commitment to making AS an organizational priority. Large academic programs such as those at Ohio State University or Johns Hopkins often have larger staffing requirements, and AS teams at larger hospitals can include three full-time ID-trained PharmDs and an internal data manager. The most important way to ensure your program's success is to dedicate time each day to doing AS. It should not be layered atop an existing job.

How should we tie AS metrics to performance reviews or incentive payments? How have others done this, and what is the reaction of the affected staff?

The use of AS metrics for performance reviews or incentive payments requires accurate measures and is usually part of an advanced AS program. Low *C. difficile rates,* lower antibiotic use, lower readmissions, and shorter hospital stays can translate into real savings for the institution. One approach known to be very effective is using a de-identified scorecard benchmarking each MD to his peers' prescribing practices. An anonymized version of this information can be openly shared at division meetings to generate discussion and agreement regarding AS policies. Peer comparison is an effective strategy to highlight prescribing outliers. It also provides the AS team leader with the opportunity to complete one-on-one AS education with outlier prescribers on how to change prescribing patterns.

CORE ELEMENT 4: ACTIONS TO SUPPORT ANTIBIOTIC USE
Do we need to create antibiograms to guide development of internal antibiotic usage guidance, or can we just follow the guidelines issued by the Society for Healthcare Epidemiology of America (SHEA) or the Centers for Disease Control and Prevention (CDC), etc.?

Published, evidence-based guidelines are increasingly including an assessment of local susceptibility data and formulary information to help select empiric therapy. For example, the IDSA's acute uncomplicated cystitis guidelines recommends

3. Wenzler E., Wang F., Goff D.A., Prier B., Mellett J., Mangino J.E., Bauer K.A. An Automated, Pharmacist-Driven Initiative Improves Quality of Care for Staphylococcus aureus Bacteremia. Clin Infect Dis. 2017 Jul 15;65(2):194-200

4. Goff D.A., Karam G.H., Haines S.T. Impact of a National Antimicrobial Stewardship Mentoring Program: Insights and Lessons Learned. Am J Health Syst Pharm. 2017 Feb 15;74(4):224-231

5. Society of Hospital Medicine: Antimicrobial Stewardship, **http://www.hospitalmedicine.org/abx**

6. The Joint Commission. Joint Commission Standard MM.09.01.01. Effective January 2017

to avoid trimethoprim/sulfamethoxazole if resistance prevalence is known to exceed 20%.[7] Another example of guidelines encouraging use of local susceptibility to guide therapy is the 2016 guidelines for ventilator-associated pneumonia (VAP), which recommend using local susceptibility of methicillin-resistant Staphylococcus aureus (MRSA)/gram negative rods for empiric antibiotic selection.[8] Additionally, local susceptibility data is helpful for educating providers on emerging local resistance issues, makes AS protocols more useful.

AS implementation will be most successful when local susceptibility data is used and feedback from key providers (stakeholders) is incorporated into the policies and protocols, along with formulary protocols. If the hospital is small and does not have enough isolates to produce an antibiogram, one potential solution is to work with a shared microbiology lab to get a citywide/local antibiogram, or to include data from a longer time period (two years). And since microbiology laboratories will not report out susceptibilities if there are less than 30 isolates for an antibiogram, shared data is one way to work around the low number of cultures.

Regarding the antibiotic "time out" recommended at 48-72 hours, must we stop in this timeframe, since the cultures often aren't returned by then? If so, what should we do if the cultures aren't back?

This is a great question! Many hospitals struggle with the "time out," especially large facilities. The time out is designed to re-evaluate the need for antibiotics based on clinical, laboratory, and patient factors (i.e., to ensure the current plan is re-evaluated and modified if new data is available; e.g., culture results become available or there is a change in the patient's symptoms).

Some hospitals have implemented a three-day approval limit, meaning a new order for the antibiotic must be placed after three days (i.e., the new order is only placed after a review or there is an automatic re-order pending answers to select questions in the electronic medical record). Other institutions are using vendors that monitor antibiotic use and resistance to track usage and place automatic stops.

It is important that prescribers and frontline staff understand that the goal is not to stop the antibiotic if there is a need to continue. The time out is designed to re-evaluate the need for antibiotics based on clinical, laboratory, and patient factors (i.e., a stop to re-evaluate the current plan more than anything else). In many cases, the stop is an opportunity to re-evaluate and either facilitate a slow de-escalation (i.e., narrower agent, conversion from intravenous to oral antibiotics) or highlight the need to escalate, or continue current therapy and re-evaluate at a later point.

7. Gupta K., Hooton T.M., Naber K.G., et al. International Clinical Practice Guidelines for the Treatment of Acute Uncomplicated Cystitis and Pyelonephritis in Women. A 2010 Update by the Infectious Diseases Society of America and the European Society for Microbiology and Infectious Diseases. Clin Infect Dis. 2011;52(5):e103-20

8. Kalil A., Metersky M., et al. Management of Adults With Hospital-acquired and Ventilator-associated Pneumonia: 2016 Clinical Practice Guidelines by the Infectious Diseases Society of America and the American Thoracic Society. Clin Infect Dis. 2016 Sep 1;63(5):e61-e111