

Duke-Margolis Center for Health Policy
Exploring Opportunities to Reform Antimicrobial Payment and Post-Market Incentives
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The Premier healthcare alliance thanks the Duke-Margolis Center for Health Policy for the opportunity to share how Premier is leveraging new technologies and data analytics to target, implement and measure improvement efforts in the fight against antimicrobial resistance (AMR). My name is Soumi Saha and I serve as the Senior Director of Advocacy for Premier.

Premier is a leading healthcare improvement company, uniting an alliance of more than 4,000 U.S. hospitals and health systems and approximately 175,000 other providers to transform healthcare. With integrated data and analytics, collaboratives, supply chain solutions, consulting and other services, Premier enables better care and outcomes at a lower cost.

Premier recognizes the critical need for antibiotic stewardship and is committed to reducing antibiotic resistance by 1) slowing the emergence of resistant bacteria and preventing the spread of resistant infections and; 2) strengthening national surveillance efforts to combat resistance. Using an array of data-driven solutions, research and educational services, and performance improvement collaboratives, Premier is leading actionable, measurable and timely initiatives to combat AMR.

Using a clinical surveillance system to help translate data into action to improve antibiotic prescribing outcomes

Inappropriate use of antimicrobial agents is a significant contributor to the development of antimicrobial resistance. Establishing an antimicrobial stewardship program and electronic surveillance of antibiotic use are two of the most proven strategies available to help prevent the inappropriate use of antibiotics. This is what has driven Premier to focus on clinical analytics technologies that detect patient care issues with the surveillance, interventions and reporting capabilities that are needed to support antimicrobial stewardship programs.

More than 1,000 facilities use Premier's clinical surveillance technology, powered by TheraDoc®, that delivers a comprehensive, easy-to-use solution that helps clinicians individualize antibiotic therapy.

The clinical surveillance system utilizes data from electronic health records (EHRs), helping clinicians and pharmacists identify overuse of antibiotics and drug-bug mismatches, reduce time-to-appropriate therapy and enhance therapy for difficult-to-treat pathogens. Key to this is the clinical surveillance system's automated record review for each patient and real-time alerts that flag actionable items for the healthcare team.

Armed with the clinical insights and tools to help monitor patients and identify potential interventions, hospitals around the country can:

- Discontinue medications where there was a drug-bug mismatch or where unnecessary;

- Prevent adverse drug events;
- Switch from intravenous medications to less expensive oral formulas;
- Eliminate redundant antimicrobials;
- Switch patients to narrower and less expensive antimicrobials;
- Shorten the duration of drug therapy to align with recommended guidelines;
- Restrict the use of certain drugs without approval of an infectious disease specialist;
- Easily transmit Antimicrobial Use and Resistance (AUR) data to the CDC's NHSN program to understand community dosing and resistance patterns;
- Utilize a Bayesian dosing methodology, at the point of care, for difficult to dose medications like vancomycin and the aminoglycosides, to model potential doses and understand which dose gets the patient into the therapeutic window faster and keeps them there, reducing the chances of unintended consequences such as kidney injury.

Some bright spots and successes with this solution include:

- 27% reduced median time to appropriate therapyⁱ
- Reduced odds of infection-related mortality by 76%ⁱⁱ
- Reduced hospital Length of Stay (LOS) by two daysⁱⁱⁱ
- 286% improvement in appropriate prescription of antibiotics^{iv}
- 40% antibiotic intervention rate within outpatient wound care center^v
- 33% increase in antibiotic interventions^{vi}
- Five times faster antimicrobial stewardship program interventions^{vii}
- 64% reduced time to effective antimicrobial therapy for *C. difficile*^{viii}
- Contributed to the prevention of 261 adverse drug events^{ix}

These interventions also contributed to significant cost savings for health systems, including:

- \$1,469,907 incremental cost savings in first year^x at Good Shepherd Medical Centers
- \$29,144 *C. diff* intervention savings in one year^{xi} at St. Elizabeth's Hospital
- \$241,756 cost savings from interventions^{xii} for South Texas Veterans Healthcare System

With these successes, Premier then leverages our nationwide collaboratives to scale and spread these identified best practices and innovations across the nation to enable hospitals and health systems to truly move the mark in this area. For example, through our collaboratives Premier reduced the rate of *C. difficile* infections by more than 46% across more than 500 hospitals since 2015.^{xiii} This translates to an estimated \$27 million saved on avoided hospital costs. This is one example of how bringing data, technology, analytics, and subject matter experts together in a collaborative manner speeds performance improvement and continually raises the bar in healthcare across the nation.

These efforts are also being employed in antimicrobial stewardship programs in Veterans Health Administration medical centers (VAMCs) to ensure appropriate and safe use of antibiotics for the men and women who have served our country. Three VAMCs in Martinsburg, WV, Washington DC and Baltimore, MD decided to integrate their antimicrobial stewardship programs in 2015 and collaborate using TheraDoc®. Working together to change the way they administer antibiotics, the VAMCs^{xiv}:

- Saved an estimated \$2.3 million in just two years; and
- Increased their number of pharmacy interventions prompted by antimicrobial concerns from 2,946 in 2016 to 10,016 in 2017.

If scaled system-wide, the potential for savings and improved outcomes for veterans across the country would be considerable.

Clinical decision support can play an important role in antibiotic stewardship

Another area of technology that can be leveraged in the fight against AMR is clinical decision support (CDS), such as Stanson Health, that uses artificial intelligence and is embedded directly in EHRs, providing real-time, patient-specific best practices at the point of care. CDS provides clinical support best practices content for enhanced patient safety including safe prescribing practices and antibiotic stewardship. CDS can also leverage and pull data from evidence-based practice guidelines to provide patient-specific recommendations to ensure patients are on the most clinically appropriate and cost-effective treatment regimen. In addition, CDS can also serve as a solution for electronic prior authorization (ePA) and minimize the time between prescribing and a coverage decision, thereby expediting patient access to necessary treatments to further combat AMR.

Finally, another potential role for CDS and ePA revolves around submitting for new technology add-on payments (NTAP). Currently, this process is extremely cumbersome, and we hear often from hospitals that they forego submitting for NTAP payments due to the laborious process. CDS and ePA should be explored as vehicles to help streamline and automate the NTAP submission process to ensure hospitals are receiving adequate reimbursement for the use of novel antibiotics when clinically appropriate.

However, to realize the true potential of CDS and ePA, we need to address barriers to interfacing with EHRs.

Ensuring access to older generic antibiotics is critical to AMR

To shift gears slightly, another area that warrants attention in the discussion around AMR is drug shortages. Several older generic injectable antibiotics have been on the FDA drug shortage list for years including commonly used products such as penicillin, cefazolin, cefotaxime, and erythromycin to name a few. When these older antibiotics are not available for patient use due to a drug shortage, clinicians are often forced to use a broader spectrum or novel antibiotic that can presumably provoke AMR and result in increased healthcare costs. Market-based solutions, such as Premier's ProvideGx, are working to create market stability by incentivizing the manufacturer of these older generic injectable antibiotics to ensure that the right drug is available for the right patient at the right time for the right microbe.

In conclusion, as a leader in researching, analyzing, developing and implementing measurable antimicrobial stewardship strategies, Premier will continue to work alongside healthcare providers to co-develop, scale and enhance its data-driven solutions, research and educational services, and best practices to improve antimicrobial stewardship across the U.S.

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