AcademyHealth

Improving Antibiotic Use Through Collaboration Among Clinicians, Researchers, and Medicaid

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KEY MESSAGES:

- Improving antibiotic use in the outpatient setting is key to reducing the development of antibiotic resistance
- Medicaid claims data are useful for measuring antibiotic prescribing
- Statewide collaboration ensures inclusion of vulnerable geographic areas and practice settings
- Partnering with Medicaid can promote discussions for meaningful policy changes

Introduction

Improving antibiotic use is a key strategy for managing the growing public health threat of antimicrobial resistance. According to the Centers for Disease Control and Prevention (CDC), there are at least 2.8 million cases of resistant infections, resulting in 35,900 deaths annually.[1] Approximately 80-90% of all antibiotic use occurs in the outpatient setting where at least 30% of prescriptions are considered unnecessary.[2,3] In 2016, the CDC published The Core Elements of Outpatient Antibiotic Stewardship, providing a framework for establishing Antibiotic Stewardship Programs (ASP) in all outpatient settings.[4] The Core Elements of outpatient stewardship include: (1) Commitment; (2) Action for policy and practice; (3) Tracking and reporting; and (4) Education and expertise. By implementing the four core elements, outpatient practices will be working towards the ultimate goal of antibiotic stewardship -- to maximize the benefit of antibiotic treatment while minimizing harm to individuals and communities. Despite these recommendations, there remains a lack of widespread implementation of ASP practices in the outpatient setting.

Key barriers to appropriate outpatient prescribing and subsequent stewardship efforts include patient demand, time constraints, diagnostic uncertainty and externalized responsibility.[5] While some efforts have been made to implement antibiotic prescribing interventions in large healthcare systems,[6,7] these efforts are difficult to establish and maintain. This burden can be even more significant for smaller, private practices which lack the clinical and administrative support for implementing and tracking quality improvement efforts. Previous studies suggest that inappropriate prescribing is highest in certain geographic areas[8] and practice settings,[9] highlighting the importance of widespread implementation of stewardship efforts across the outpatient care continuum.

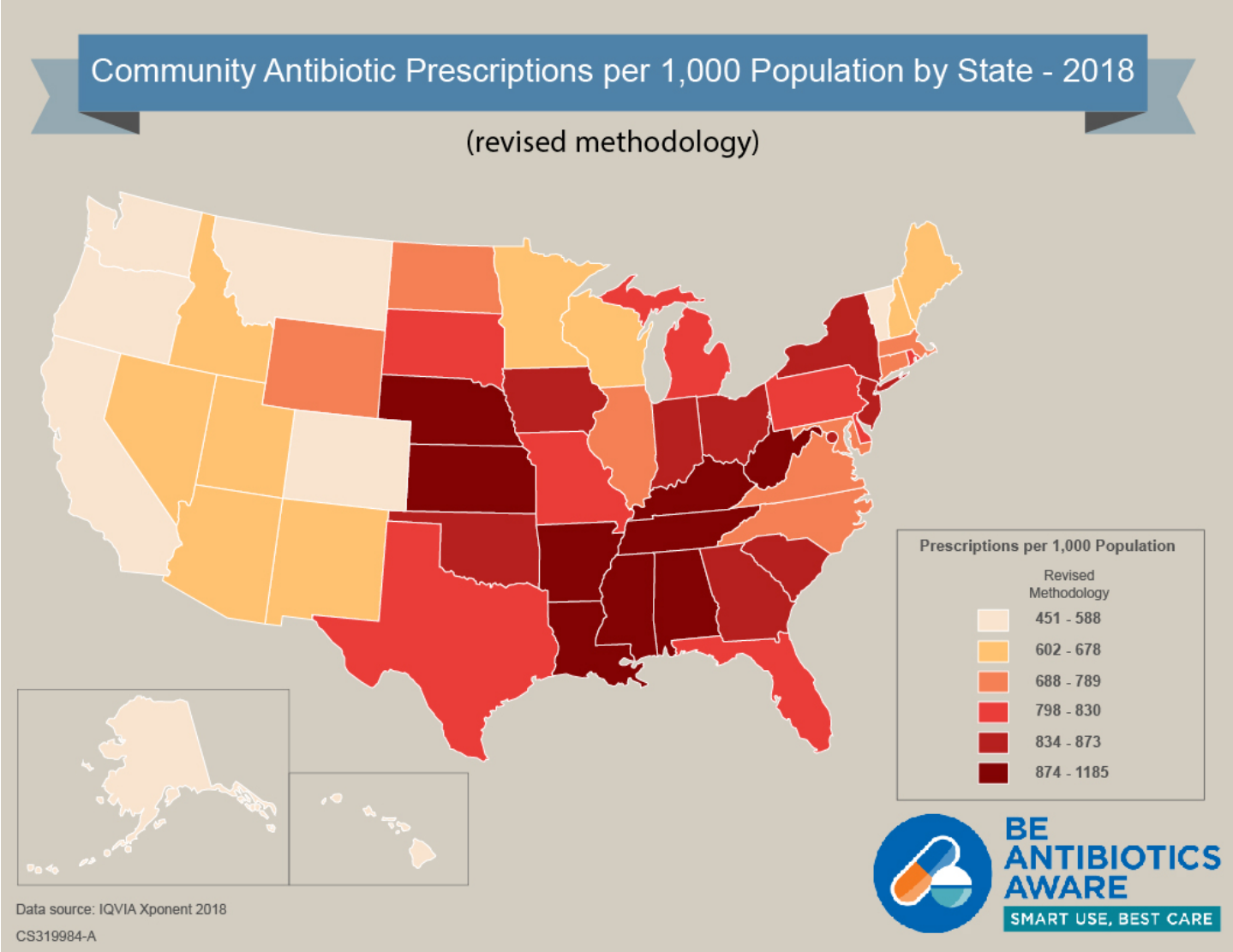
Health insurers are uniquely positioned to contribute to outpatient antibiotic stewardship efforts through utilization of valuable health claims data, provider outreach, and incentives.[10] This issue brief describes key strategies that could be employed by collaborations among academic clinicians, researchers, Managed Care Organizations (MCOs) and Medicaid departments, that could lead to statewide reductions in inappropriate antibiotic use.

Measuring Antibiotic Use

Measuring antibiotic use is a critical component of antibiotic stewardship and is included in various ASP recommendations.[4, 11, 12] In the outpatient setting, tracking and reporting antibiotic use is one of the Core Elements[4] provided by the CDC and a required Element of Performance for Joint Commission Ambulatory Care Center accreditation.[12]

Annually, the CDC describes national and state-specific antibiotic prescribing data using prescriptions from community pharmacies from all payers (IQVIA Xponent database).[13] In 2018, this data source included nearly 250

Figure 1: Antibiotic prescriptions per 1,000 persons by state (sextiles) for all ages— United States, 2018, estimates created using revised methodology accounting for reversed and voided prescriptions across weeks[13]



million antibiotic prescriptions, also measured as 763 prescriptions per 1000 persons.[13] Volume of antibiotic prescribing by state provides a useful baseline in identifying areas of higher prescribing (Figure 1). For instance, the Southern region of the US has consistently higher rates of antibiotic prescribing.[13]

To understand more about antibiotic overuse and areas for improvement, it is also important to consider the appropriateness of antibiotic prescribing. Historically, appropriateness has been described using the National Ambulatory Medical Care Survey (NAMCS), a nationally representative survey of office-based physicians.[3,14] This data source is useful for national representation, but has limitations including time lags and exclusion of important outpatient settings (retail clinics and virtual visits).[3,14] Pharmacy and medical claims data are another useful data source to evaluate the appropriateness of antibiotic prescribing.[15] Recent publications have provided robust classification systems to identify whether prescriptions are appropriate based on associated International Classification of Diseases (ICD) codes.[16,17,18]

The comprehensive nature of Medicaid claims data and ability to assess appropriateness of antibiotic prescribing, makes it an ideal source for measuring antibiotic use. Further, due to the frequency of antibiotic prescribing in the outpatient setting, antibiotic expenditures are a large portion of Medicaid spending and reducing unnecessary prescriptions has the potential to result in significant cost-savings.[21,22] For example, analyses of Kentucky Medicaid claims data suggest that certain geographic regions, especially rural areas, are more likely to have higher rates of antibiotic prescribing.[19] Previous studies have also shown that some outpatient practice settings, such as urgent care centers, emergency departments, and telehealth visits, have higher rates of inappropriate prescribing.[20,21] These findings suggest the importance of widespread outpatient stewardship policy and practice interventions, in order to capture some of the most at-risk populations and practice settings.

Educational Materials and Resources

Education to both patients and healthcare providers is another key strategy to reduce inappropriate antibiotic use. For providers, the CDC has an interactive, online **Antibiotic Stewardship Training** series with over 10 hours of free continuing education.[23] Providers and health educators can also make an impact by sharing antibiotic awareness messages to the public. The CDC's campaign, **Be Antibiotics Aware,** has a variety of online and printable materials available for free download for use in outpatient offices, hospitals, long-term care, and public education settings.[24] In addition to national resources, many states have individual antibiotic awareness campaigns. The **Kentucky Antibiotic Awareness** campaign is supported by a State University Partnership contract between Kentucky Medicaid and the University of Louisville.[25] For a list of state and local stewardship efforts, visit: **CDC State Antibiotic Stewardship Implementation Resources.**[26]

CDC Antibiotic Stewardship Resources

- Provider training series
- Patient handouts
- Posters
- Graphics
- US Antibiotic Awareness Week

Kentucky Antibiotic Awareness Resources

- Outpatient ASP Implementation Workbook
- Commitment Posters
- Kids Activity Book
- Quarterly Newsletters
- Facebook and Twitter accounts (@KYAbxAwareness)
- Sick Child Handout

Collaboration and Policy Implications

In addition to collaboration among clinicians and Medicaid departments, it is important to consider how public health officials, professional societies, and community stakeholders can assist in dissemination of outpatient stewardship efforts. If clinicians limit their stewardship initiatives to local activities within a health care system, high priority areas such as rural, private practices could be overlooked. Stewardship leaders are encouraged to reach out to local, state, and national stakeholders to identify opportunity for collaboration. Whether the result is alignment of active project work or dissemination to a wider audience, engaging key players will assist in establishing widespread uptake of antibiotic stewardship efforts.

In order to implement widespread improvement in outpatient antibiotic use, policy changes are needed. In hospitals, antimicrobial stewardship is now a mandatory requirement for Joint Commission accreditation and Centers for Medicare & Medicaid Services (CMS) reimbursement.[27] In outpatient settings, the only existing requirement is for Joint Commission Ambulatory Care Center accreditation.[12] By including Medicaid departments and managed care organizations in antibiotic stewardship efforts, these established relationships can provide meaningful policy recommendations, leading to widespread implementation of antibiotic prescribing initiatives. For example, clinician researchers in Kentucky are working with Medicaid to implement provider feedback to implement provider feedback reports on antibiotic use. Reports will include individual-level prescribing data and peer-comparison. MCOs can utilize existing Healthcare Effectiveness Data and Information Set (HEDIS) measures[28] related to antibiotic use and/or broader antibiotic prescribing metrics to encourage providers to improve their practice. Such data could be further leveraged to influence provider reimbursement through new or existing value-based payment programs. Policy changes that would require MCOs to report meaningful antibiotic use data and/or associated incentives would ensure widespread provider dissemination while taking the responsibility off individual organizations and practices.

Future Directions

According to recent publications, several states are already utilizing statewide data to report antibiotic use and prescribing trends: Kentucky[19,22], Tennessee[29,30], South Carolina[31], Ohio[15], and Utah.[32] It is worth noting that many states with the highest antibiotic prescribing rates, also have higher rates of Medicaid beneficiaries.[33] We believe that a multi-state collaboration to evaluate antibiotic prescribing and interventions could accelerate our knowledge and understanding of how to expand outpatient stewardship efforts. For anyone interested in sharing experiences of antibiotic stewardship using Medicaid claims data, please email **KYAntibx@louisville.edu**.

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