



Contents lists available at ScienceDirect

Journal of the American Pharmacists Association

journal homepage: [www.japha.org](http://www.japha.org)

## EXPERIENCE

## Antimicrobial stewardship in the Federal Bureau of Prisons: Approaches from the national and local levels

Michael J. Long\*, Brian N. LaPlant, Justin C. McCormick

## ARTICLE INFO

## Article history:

Received 21 November 2016

Accepted 30 November 2016

## ABSTRACT

**Objectives:** To determine the impact of national and local antimicrobial stewardship measures on overall antibiotic prescribing in the Federal Bureau of Prisons (BOP).

**Setting:** Care was delivered to more than 160,000 inmates in 122 BOP facilities in the United States and Puerto Rico.

**Practice description:** Medical centers and health services clinics staffed by in-house medical staff, consultants, and specialists. Staffs include a variety of disciplines, including physicians, pharmacists, dentists, nurses, infection control personnel, therapists, health services administrators, and institution executive staff.

**Practice innovation:** Innovations occurred on 2 levels: local components were used to reinforce national initiatives. Local institutions used a multidisciplinary team approach including education and focused evaluations of all antibiotic prescriptions before dispensing. National initiatives included the development of a closed formulary, clinical practice guidelines, an antimicrobial stewardship group led by pharmacy, development of tools and strategies for institutions, inclusion in the BOP strategic plan, and a drug utilization evaluation.

**Evaluation:** This was a study of antimicrobial stewardship within BOP and the resultant impact on antibiotic prescriptions. In addition, one institution's antimicrobial stewardship methods were reviewed to determine the impact on antibiotic prescribing practices.

**Results:** The total number of antibiotic prescriptions in BOP-managed institutions in fiscal year (FY) 2010 (October 2009 to September 2010) was 142,907 and progressively decreased to 105,832 in FY2015. The number of antibiotic prescriptions per 1000 inmates correspondingly decreased from 829 in FY2010 to 625 in FY2015. The overall number of antibiotic prescriptions as a percentage of total prescriptions decreased from 7.64% in FY2010 to 5.84% in FY2015.

**Conclusion:** A robust multidisciplinary antimicrobial stewardship program has likely contributed to a decrease in both the total number and the rate of antibiotic prescriptions on a per-1000-patient basis in BOP.

Published by Elsevier Inc. on behalf of the American Pharmacists Association.

Antibiotics pose a unique challenge to the health care community compared with other medications. It is estimated that 50% of outpatient antibiotic prescriptions may be inappropriate.<sup>1</sup> Overprescribing of antibiotics is associated with increased adverse reaction risk, increased resistance, and

mortality.<sup>2</sup> As antibiotic use increases, resistance to antibiotics is displayed by target bacterial organisms and not individuals taking medication, thereby posing an increased risk to the greater human population. In the United States, antibiotic-resistant organisms are estimated to cause 23,000 deaths and 2,049,442 infections every year.<sup>3</sup>

Recognizing the threat that resistant organisms present to the United States' population, in 2014 the President issued a National Strategy for Combating Antibiotic-Resistant Bacteria and an Executive Order: Combating Antibiotic-Resistant Bacteria. These 2 presidential directives focus executive-branch agencies on addressing the various issues associated with antibiotic resistance.<sup>4,5</sup>

Within the greater population, correctional medicine must address populations particularly vulnerable to infection and

**Disclosure:** The authors declare no relevant conflicts of interest or financial relationships. Opinions expressed in this article are those of the authors and do not necessarily represent the opinions of the Federal Bureau of Prisons, the US Department of Justice, or the U.S. Department of Health and Human Services.

\* **Correspondence:** Michael J. Long, RPh, MPH, Captain, U.S. Public Health Service, Mid-Atlantic Regional Chief Pharmacist, Federal Bureau of Prisons, PO Box 1000, Butner, NC 27509.

E-mail address: [mzlong@bop.gov](mailto:mzlong@bop.gov) (M.J. Long).

**Key Points****Background:**

- The President has established that appropriate antibiotic use and prevention of the subsequent development of antibiotic resistance is a national public health priority.
- Pharmacists in the outpatient setting, particularly those in closed systems, such as in correctional settings, are well positioned to improve antibiotics use.

**Findings:**

- Antibiotics prescribing in the Federal Bureau of Prisons has decreased by approximately 25% in the past 6 years.
- A national antimicrobial stewardship program has been established and developed in the Federal Bureau of Prisons. The program includes a variety of approaches, including formulary restrictions, clinical guidelines, development of an antimicrobial stewardship group, and dissemination of a tool kit to individual institutions.
- Pharmacists have played key roles and have the opportunity for future impact in antimicrobial stewardship programs both at the national level and at local institutions.

harboring resistant bacteria. Inmates are housed in close proximity, often have greater incidence of chronic and infectious conditions, and are more likely to have participated in high-risk behaviors.<sup>6</sup>

The Federal Bureau of Prisons (BOP) houses one of the largest correctional populations in the country. The average daily population is more than 160,000 adult inmates with an average age of 40.4 years. Inmates are housed in 122 institutions across 6 geographic regions in the United States.<sup>7</sup> (BOP also contracts with 6 other institutions to house more than 22,000 inmates. There are also more than 13,000 inmates in community-based facilities.) As part of its mission, BOP provides inmates necessary medical care through in-house medical staff, contract consultants, and in-house and contracted specialists. The BOP Health Services Division (HSD) is directed by an Assistant Director and a Medical Director and includes more than 3600 health care professionals. Since 2001, HSD has undertaken several initiatives to improve antibiotics prescribing practices. As the national program has developed, it has been complemented by local initiatives.

*Practice innovation, national setting: Development of BOP national antimicrobial stewardship program*

Since the 1990s, when the first BOP closed national formulary was developed, BOP has expanded the use of evidence-based medicine by regularly issuing clinical practice guidelines (CPGs). “Management of Tuberculosis” and “Management of Methicillin-Resistant *Staphylococcus aureus* (MRSA) Infections” were the first CPGs directly addressing

antibiotics prescribing. Since then, BOP has expanded on this evidence-based foundation utilizing a variety of initiatives to develop a robust antimicrobial stewardship program (ASP; Table 1).

In 2010, the Medical Director began the expansion of the ASP beyond disease-specific CPGs. He was addressing the high costs associated with prolonged inmate hospitalization in the community. These hospitalizations were often related to the need for intravenous (IV) antibiotics that many times could have been completed on an outpatient basis. This resulted in a request for guidance from the pharmacy branch on the provision of IV therapy within a prison facility. A multidisciplinary group was convened and produced a “Technical Reference Guide for Injectable Therapy” followed by the “Antimicrobial Stewardship Guidance” CPG. In addition, a pharmacist-led Antimicrobial Stewardship Workgroup was established.

The Antimicrobial Stewardship Guidance CPG provides information on various aspects of stewardship, including diagnosis, culture and sensitivities, therapy selection, conversion from IV to oral therapy, multidrug-resistant organisms, communication strategies, and competencies.<sup>8</sup> In addition to guidelines for treatment of other infectious diagnoses, the CPG specifically covers several upper respiratory infections that the Centers for Disease Control and Prevention and the Infectious Disease Society of America identify as usually viral in nature and not requiring antibiotic therapy.<sup>9–11</sup> In 2014, to evaluate how BOP prescribers were complying with these recommendations, a national drug utilization evaluation was completed.

As these initiatives developed, educational updates were provided to a variety of disciplines, including physicians, pharmacists, dentists, nurses, infection control personnel, therapists, health services administrators, and institution executive staff. These updates have consisted of numerous one-on-one interactions, as well as a variety of presentations given at conferences, webinars, and staff meetings. In addition, since 2010, 22 BOP pharmacists have been funded for advanced training programs, such as the Society for Infectious Disease Pharmacists Antimicrobial Stewardship Certificate Program. Additional pharmacists have been encouraged to pursue similar trainings on their own due to a lack of designated antimicrobial stewardship program funding.

*Local practice setting: Practice innovation*

To examine how local antimicrobial stewardship efforts complemented the national ASP, the reviewers focused on 1 institution (Institution 1) known to have an active program. Institution 1 is a minimum-security federal correctional institution with a detention center that averaged 1181 care level (CL) 1 and 2 male inmates from October 2009 to September 2015. (BOP categorizes inmates into 4 separate care levels based on medical acuity and associated intensity of services required. CL1 inmates are healthy patients or those with simple chronic conditions, CL2 are outpatients with stable chronic conditions and are independent in activities of daily living [ADLs], and CL3 inmates are outpatients with conditions that require frequent clinical contacts [monthly to daily]. CL3 inmates may require assistance in performing some ADLs, but do not require daily nursing care. CL4 inmates require 24-hour nursing services and usually include patients requiring ongoing intensive treatment, such as dialysis,

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات