Antibiotics reduce deaths from infectious bacterial diseases and are important adjuncts to modern medical advances like surgery, transplants and cancer therapy. However, antibiotic usage comes with a serious and growing threat to our nation’s health and economy. Like no other drug, antibiotic usage in one patient can compromise its efficacy in another. Antibiotic resistance leads to more than 2 million illnesses and 23,000 deaths per year in the United States.1 Approximately $20 billion in excess direct health care costs are due to antibiotic resistance. Patients receiving antibiotics will have a seven- to 10-fold increased risk of developing Clostridium difficile. It alone accounts for 453,000 infection cases and 15,000 deaths annually; plus $1 billion in excess direct health care costs and readmissions.2 Antibiotics also cause adverse drug events leading to 142,000 emergency department (ED) visits per year; they are the most common cause of drug-related ED visits in children. Additionally, there is growing evidence that associates antibiotic use with chronic disease due to disruption of the microbiota and microbiome.

Inappropriate antibiotic prescribing is the most important modifiable risk factor for antibiotic resistance. The outpatient setting accounts for more than 60 percent of antibiotic expenditures for humans in the United States. Nearly half of the prescriptions are inappropriate in terms of selection, dosing, duration and unnecessary prescribing.3,4,5 Arkansas is ranked sixth highest in the nation in the rate of antibiotic outpatient prescriptions dispensed with 1,155 antibiotic prescriptions per 1,000 people, compared to the national average of 835.6

**NATIONAL SECURITY PRIORITY**

In September 2014, President Obama issued an executive order declaring antibiotic resistance a serious threat to public health and our economy, deeming it a national security priority. The order instructed the departments of defense and agriculture to take aggressive action on the issue, emphasizing the need for improved antibiotic stewardship. The White House released the National Action Plan for Combating Antibiotic Resistant Bacteria in March 2015. Goals include reducing inappropriate outpatient antibiotic usage by 50 percent and a 20 percent reduction in prescribing antibiotics to hospital inpatients by 2020.7

**CDC’S STEWARDSHIP PLAN**

The Centers for Disease Control and Prevention (CDC) is actively working to improve antibiotic usage to combat antibiotic resistance. Hospitals, nursing homes, clinics and other health care settings are engaging in antibiotic stewardship activities, including measuring and improving the efficacy of antibiotic prescribing, minimizing misdiagnoses or delayed diagnoses leading to underuse of antibiotics, and ensuring selection of the right drug, dose and duration.

The Arkansas Hospital Association and the Arkansas Association of Health-System Pharmacists are addressing the problem with their Pharmacist-Led Collaborative. The Arkansas Department of Health joined the initiative as a collaborating partner, providing ongoing clinical expertise. This collaboration created a shared learning community of 22 hospitals that have established the core elements of an antimicrobial stewardship program in their facilities. Seventeen of these facilities have increased their core activities by at least one between 2014 to 2015. From this collaborative, we have learned there is no one-size-fits-all program because each entity is different in terms of size, location and resources.
The CDC has developed a set of core elements for Antibiotic Stewardship Programs (ASP). In 2014 and 2015 the Core Elements of Hospital Antibiotic Stewardship Programs and the Core Elements of the Nursing Homes were released. The Joint Commission recently adopted antibiotic stewardship standards for hospitals that were effective January 2017 and align with the CDC’s core elements.

In November 2016, the CDC released the Core Element of Outpatient Antibiotic Stewardship along with a checklist for clinicians and facilities. These elements are intended for clinicians (including physicians, physician assistants, nurse practitioners and dentists) in primary care clinics, emergency rooms, health care systems, outpatient specialty and subspecialty clinics, retail and urgent care clinics and dental clinics.

The CDC’s Core Elements are:

1. **Commitment:** Demonstrate dedication to and accountability for optimizing antibiotic prescribing and patient safety.

2. **Action for policy and practice:** Implement at least one policy or practice to improve antibiotic prescribing, assess its effectiveness and modify as needed.

3. **Tracking and reporting:** Monitor antibiotic prescribing practices and offer regular feedback to clinicians, or have clinicians assess their own antibiotic prescribing practices.

4. **Education and expertise:** Provide educational resources to clinicians and patients on antibiotic prescribing and ensure access to needed expertise on optimizing antibiotic prescribing.

Implementation of an ASP may feel overwhelming. Start small and identify one thing to do now. For example, display commitment posters in your clinic lobby and exam rooms. They serve as a reminder of accountability and are great conversation starters for patient education. The CDC’s website includes commitment posters and numerous educational tools for patient education. Another initial step is to determine if you are using evidence-based diagnostic criteria and treatment recommendations. Many patients diagnosed with common bacterial infections in doctors’ offices, EDs and hospital-based clinics are not receiving the most appropriate antibiotic for their conditions. In 2010 and 2011, U.S. prescribing data indicated that sinus infections, middle ear infections, and pharyngitis accounted for 44 million antibiotic prescriptions each year. However, only 52 percent of patients with these infections and treated with antibiotics received recommended first-line drugs based on established practice guidelines.

Implement a policy for “watchful waiting” when appropriate. Antibiotics are frequently prescribed for noninfectious or nonbacterial syndromes. Provide symptomatic relief with a clear plan for follow up if infection symptoms do not improve. Delaying antibiotic prescriptions is another evidence-based approach that can safely decrease antibiotic use when used in accordance with clinical practice guidelines.

Tracking and reporting antibiotic usage is key to help guide your practice and measure progress on improvement. Existing quality measures data, automatic electronic medical record extraction or manual periodic chart review are all potential sources of data. Providing individual antibiotic prescribing reports can be an effective way to ensure adherence to evidence-based treatment guidelines.

Antibiotic stewardship requires commitment to change and thoughtful efforts to improve outcomes. Antibiotic stewardship is one the most important strategies in fighting antibiotic resistance, and keeping our patients safe and our communities healthy.

More information on core elements at [www.cdc.gov/mmwr/volumes/65/rr/rr6506a1.htm](http://rr6506a1.htm).

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### REFERENCES


