Committee: Infectious Disease
HAI Standards Committee
HAI Subcommittee

Title: Recommendations for Strengthening Antimicrobial Stewardship in the United States, including the Role of the State and Local Health Departments

I. Statement of the Problem:
Despite the undisputed benefit of antimicrobial drugs (i.e., antibiotics, antivirals, and antifungals) to control infectious disease, it is widely recognized that antimicrobial agents are commonly prescribed unnecessarily or inappropriately. From a patient safety perspective, overuse and misuse of antimicrobial drugs puts patients at unnecessary risk for adverse effects and drug interactions. Improper use is also associated with increased risk of Clostridium difficile infection (CDI), a potentially deadly antibiotic-associated diarrhea, and development of drug resistance, which in turn contributes to transmission of CDI and resistant organisms within healthcare settings and communities. The expansion of antimicrobial resistance and need to preserve antimicrobial agents were recognized in a 2013 CSTE surveillance position statement. Overuse of antimicrobial drugs and opportunities to improve prescribing have been demonstrated in nearly every type of healthcare setting in the United States. A recent report showed that antibiotic prescribing could be improved in over one-third of common clinical scenarios among hospitalized patients, a finding consistent with previously published literature. In outpatient settings, it has been shown that approximately 50% of prescriptions are for conditions for which antibiotics are rarely indicated and that broad-spectrum agents constitute the majority of antibiotics prescribed. A need to improve antimicrobial prescribing has also been established in long-term acute care, skilled nursing facilities, and dialysis settings.

Antimicrobial stewardship refers to coordinated interventions designed to improve and measure the appropriate use of antimicrobial agents. Antimicrobial stewardship programs have been proven to increase optimal prescribing for therapy and prophylaxis, improve the quality of patient care, reduce adverse events associated with antimicrobial use (including rates of CDI and antimicrobial resistance), and offer cost-savings to hospitals. In recognition of the urgent need to improve antibiotic use and the benefits of antibiotic stewardship programs, CDC recommends that all acute care hospitals implement antibiotic stewardship programs (ASPs) and it provides information about principles and actions for appropriate antibiotic use stewardship in the both the acute care and ambulatory care settings.

State and local health departments have important roles in addressing antimicrobial stewardship. Since 2009, the Patient Protection and Affordable Care Act has supported state and local health departments in their efforts to make progress towards healthcare-associated infection (HAI) reduction goals set forth in the US Department of Health and Human Services (HHS) National Action Plan to Prevent HAIs. Funded activities for state health departments have included promoting and tracking proven HAI prevention practices and increasing facility use of the National Healthcare Safety Network (NHSN) to track and report HAIs and identify potential areas for improvement. For over a decade, state health departments have been supported by CDC to develop appropriate antibiotic use and stewardship activities to improve outpatient antibiotic use. States with active programs have lower outpatient antibiotic prescribing rates compared to states without these programs. Stewardship programs provide a robust mechanism for state health departments to serve the entire population of the state. Through their HAI programs, state health departments have demonstrated they are in a unique position to build collaborations across the state, offer shared learning opportunities, and administer surveillance programs to identify needs and drive improvement. Local health departments have opportunities to interact with healthcare facilities in their communities, which can be used for expanded and in-depth efforts to implement antimicrobial stewardship and HAI prevention activities. Funding for local health departments has enabled these agencies to coordinate with state health departments, strengthen and expand
collaborations with healthcare facilities and other partners, and increase awareness of HAIs and prevention strategies. Antimicrobial stewardship is a key intervention to addressing multidrug-resistant organisms in healthcare settings and supporting broader efforts to eliminate HAIs. Many state HAI programs have included antimicrobial stewardship activities in their programs; these activities have included surveys on stewardship activities, training programs, and collaborative activities.

Although several states have moved forward with stewardship programs, their impact has been limited due to a number of challenges to implement stewardship on a state level.

1. **Limited Practical Models for Inpatient Stewardship Implementation.** Healthcare facilities have varying levels of infrastructure and capacity to improve antimicrobial use. In 2007, hospital-based antimicrobial stewardship program (ASP) guidelines were published by the Infectious Diseases Society of America (IDSA) and the Society of Healthcare Epidemiology of America (SHEA). While hailed as a gold standard, this initial set of practice guidelines requires staffing resources not found in many smaller, community hospitals. Nursing homes and other healthcare settings outside acute care hospitals face greater challenges due to scarcity of resources, staffing models, and higher staff turnover.

2. **Lack of Standardized Benchmarking Metric.** The US public health infrastructure lacks a systematic means for ongoing assessments of antimicrobial consumption in hospitals to quantify national usage patterns, correlate usage patterns with resistance, or facilitate valid inter-facility comparisons. Other healthcare settings, such as nursing homes, face greater challenges in implementing stewardship; these settings often lack necessary information technology infrastructure and communication with their laboratory is often impaired given that the laboratory is typically located outside of the facility.

3. **Impact of Improving Antimicrobial Use and Resistance Patterns Needs to Be Strengthened.** Although it is well established that antimicrobial use causes antimicrobial resistance at the individual and patient care unit, the literature regarding the effectiveness of ASPs in reducing resistance on a population level continues to emerge and is inconclusive at this time. Therefore, further research to evaluate which stewardship interventions or antimicrobial targets yield the greatest benefit and measuring impact of stewardship activities on resistance patterns is needed.

4. **Limited Federal Regulations for Requirement of Antimicrobial Stewardship Programs.** Currently, there are limited regulatory standards regarding antimicrobial stewardship in the United States. One exception is California Senate Bill 739 that requires all hospitals develop processes to evaluate the judicious use of antimicrobials. Other states could benefit from a federal requirement for all hospitals to develop antimicrobial stewardship programs. The power of federal policy in driving activities that lead to improvements in patient care has been demonstrated in federal Inpatient Prospective Payment System HAI reporting requirements and through the experience with the inclusion of infection control practices in CMS Conditions of Participation that are translated to Joint Commission standards.

Despite these barriers, and indeed because of them, health departments have a critical role to engage facilities in antimicrobial stewardship in their jurisdictions. These challenges are considered in the statement of desired actions.

**II. Statement of the desired action(s) to be taken:**

1. CSTE recommends all state health departments evaluate and incorporate stewardship activities across healthcare settings into their HAI programs. The degree to which health departments can include these programs depends upon the resources, including training and access to subject matter
expertise, and funding available. Examples of activities that can be conducted with current and with expanded funding levels are presented in Appendix 1.

2. CSTE recommends that CDC identifies a standardized metric for measuring inpatient antimicrobial use to facilitate risk-adjusted benchmarking and evaluation of national trends of antimicrobial usage over time using data reported to the National Healthcare Safety Network’s Antimicrobial Use and Resistance (AUR) Module and train health departments on the use of these metrics. These data can then be used by state and local health departments in their antimicrobial stewardship efforts.

3. CSTE recommends that CDC evaluates existing measures for monitoring outpatient antibiotic prescribing practices and determine whether expansion of existing measures or development of new measures are needed.

III. Public health impact:

- Builds capacity and infrastructure for stewardship that will effectively allow the state and the local health departments’ roles in both inpatient and outpatient settings to expand as funding and resources allow.
- Improves the ability for public health to understand trends of antimicrobial stewardship activities in the state.
- Focuses public health and state resources to make an impact on antimicrobial resistance.

IV. References


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Appendix 1: Sample Antimicrobial Stewardship Activities Conducted by Public Health Departments

1. **Convene a State Workgroup on Antimicrobial Stewardship.** A unique ability of a state is that it can convene workgroups on issues of public health significance. State-led workgroups can raise awareness, build community support and infrastructure, assess and address stakeholder insights and concerns, educate stakeholders on the science of the problem and its solutions, and establish priorities for the state program. A state workgroup can take several forms: it can be a standing agenda item on the state HAI Advisory Committee, a subcommittee to the advisory committee, a coalition of organizations aligned with addressing resistant disease in a state or region, or an alliance of academic, public and private research programs.

2. **Assess Antimicrobial Stewardship Activities and Needs.** To understand the needs of facilities and the populations served, state and local health departments can assess efforts to optimize antimicrobial use for their target population, such as acute and long-term care hospitals, nursing homes, ambulatory settings, or consumers. Options include:
   - **Surveys and Assessment Tools.** California, Florida, Massachusetts, Washington and other states have conducted surveys of their hospitals and/or long-term care facilities.\(^9\)–\(^12\) The CDC has released an assessment tool (checklist) for hospitals in its Core Elements for Hospital Antibiotic Stewardship Programs.\(^7\) Connecticut has developed a survey of ambulatory group practices and community health centers based on the CDC assessment tool.
   - **Focus Groups.** To obtain additional information on attitudes and barriers to practices, some states have supplemented their quantitative survey data with qualitative data from focus groups in health facilities and among outpatient care providers and patients.

3. **Support Interest and Efforts to Collect and Evaluate Antimicrobial Use Data.** Despite known challenges regarding surveillance for antimicrobial consumption, given the need for such data, state and local health departments should encourage and engage facilities and practices to monitor and track their antimicrobial usage. States can encourage hospitals to use the National Healthcare Safety Network (NHSN) AUR Module and share their data with the state health department for aggregation to the state level.\(^20\)
Acknowledging delays in all healthcare facilities submitting data to NHSN, interim surveillance options include:

- **Point Prevalence Surveys.** Some states, as an interim measure, evaluate antimicrobial use on a quarterly basis using a point prevalence survey until enough data are available in the NHSN AUR Module to produce a standardized risk adjustment metric.

- **Days of Therapy (DOT) per 1,000 days present.** States can evaluate using DOT as an interim measure of antimicrobial use until enough data are available in the NHSN AUR Module to produce a standardized risk adjustment metric.

- **Behavioral Risk Factor Surveillance System (BRFSS).** Some states have placed questions about the public's perceptions, attitudes, and expectations about antimicrobial use in the custom module of their state BRFSS. Such data may be helpful for public information and community education programming.

4. **Educate and Provide Tools for Antimicrobial Stewardship.** States have an important role in bridging the gap between practice and guidelines, such as the SHEA/IDSA guidelines and the Institute for Healthcare (IHI) and Public Health Foundations Driver Diagrams for Stewardship.\(^{21,22}\) Many public health staff and health providers need training on the science of antimicrobial resistance and on its prevention. Health departments can ensure their own staff receive training and may facilitate training for health providers across the spectrum of care. Examples of education programs include seminars, web sites with tools and resources, and opportunities for providers to share experiences of applying stewardship principles in their facilities. States and local health departments may consider “Calls for Action” from health department leadership to key leaders in healthcare facilities, ambulatory practices, and associations of prescribers; and educational institutions to promote antimicrobial stewardship activities. States may also consider implementing public information campaigns to promote changes in public perceptions, attitudes and expectations to facilitate proper use of antimicrobials.

5. **Support, Coordinate, and/or Participate in State and Local Prevention Collaboratives on Antimicrobial Stewardship.** Health departments can incorporate activities listed under items 1 through 4 above into an antimicrobial stewardship collaborative for facilities and ambulatory practices.