Joint Public Health Informatics Taskforce

Recommendations for Public Health and Informatics Partners to Support Uptake of the National Healthcare Safety Network's Antimicrobial Use and Resistance Modules

June 2018

Background

Infections caused by antimicrobial-resistant organisms are a grave threat to our nation's health. Key strategies for combating this threat include tracking antimicrobial-resistant infections, performing prevention and control activities, and evaluating the effectiveness of such activities in healthcare facilities in real-time. The National Healthcare Safety Network (NHSN) is an important healthcare-associated infection tracking system that utilizes data from multiple sources.

Funded and supported by CDC's Division of Healthcare Quality Promotion, NHSN relies on data from healthcare facilities and provides a bridge between clinical care and public health. NHSN is used for a range of healthcare-associated infection (HAI) surveillance purposes and the antimicrobial use (AU) and antimicrobial resistance (AR) modules help public health, healthcare stakeholders, and providers identify, prevent, and respond to AR outbreaks using data available from the unit, facility, regional, and state levels.

Using health information technology (HIT), NHSN launched new modules in 2011 and 2014 for tracking key events in healthcare facilities: (1) use of antimicrobial medications and (2) positive laboratory results for antimicrobial-resistant organisms. These modules capture and tabulate data on antimicrobial administration that appears in electronic medication administration records or bar code medication administration systems, and on antimicrobial resistance that appears in lab information or admission-discharge-transfer systems. Those data are then provisioned to NHSN using a Clinical Document Architecture (CDA) file[1] and are used to identify units, facilities, and regions with higher than expected healthcare-associated infections and antimicrobial use to inform prevention and management activities.

The Issue

While the NHSN system is widely used, the utility of AU/AR module data is often limited because of the relatively few healthcare facilities that contribute to them. While adoption of the NHSN has increased over time, the vast majority of healthcare facilities do not report AU/AR data to the system. To leverage the full capacity of the system, it will be important to increase the number of enrolled healthcare facilities using the AU/AR modules to strengthen the value of available data for surveillance and prevention purposes. By doing so, clinical care providers and public health epidemiologists will have increased capacity to use AU/AR data to monitor and respond to patterns of detected increased antimicrobial resistance. Healthcare facilities must enroll in NHSN, and then either purchase or build these HITs to participate. Beginning in 2018, participation in these modules will be incentivized as one option for public health registry reporting under the Stage 3 Meaningful Use program.[2-3]

Common barriers to healthcare facilities adopting and reporting AU/AR data to NHSN include:

1. Healthcare facility pharmacy software that is not yet compatible with the AU/AR modules.
2. Expenses required to train and retain personnel familiar with NHSN protocols and the IT infrastructure needed to submit AU/AR data.
3. Variable informatics capacity at healthcare facilities.
4. Lack of a facility "champion" to oversee the reporting and infrastructure development and maintenance.

As of June 7, 2018, over 7,500 acute care hospitals were enrolled in NHSN. Of these, 864 facilities have submitted at least one month of data into the AU module and 341 facilities have submitted at least one month of data into the AR module component. Among facilities that routinely submit data to the system, motivated leadership at the facility or health system level is key to long-term engagement with NHSN and the AU/AR modules, in part due to the infrastructure and sophisticated informatics capacity needed to support participation. Among those facilities that participated in the NHSN AU/AR modules but no longer do so, factors that influenced the discontinuation include personnel changes in the facilities (e.g., when a champion leaves her or his position) or changes to electronic medical records systems that are not always immediately compatible with the AU/AR modules.

At this time, participation in the NHSN AU/AR modules is not federally mandated, but one state is beginning to require its use by law: Missouri enacted a state-based mandate in January 2018 that requires facilities to report to NHSN via the AU/AR modules.

Previous experience has shown that policies that support HAI reporting requirements can result in improved and more complete reporting.[4] Before CMS required reporting of HAIs through NHSN, there were challenges to the adoption of reporting for all HAIs. When CMS required reporting of various HAI through NHSN as a condition for receipt of the facility annual payment update, more facilities participated with NHSN, and facilities and states developed strong collaborations for data reporting and validation to ensure data quality.

Recommendations

The Joint Public Health Informatics Task Force (JPHIT), a coalition of national organizations representing public health and informatics professionals, supports increasing the number of healthcare facilities participating in NHSN's AU/AR modules to strengthen national capacity to address the threat posed by antimicrobial-resistant organisms. Engaging with JPHIT and its associated member and partner organizations allows for access to a range of public health informatics professionals with varied experience and expertise.

Based on the work of JPHIT's AU/AR Committee[i] chaired by Richard Melchreit and Monica Huang, JPHIT perceives the issue of low AU/AR module adoption and reporting as a multifactorial problem that can be addressed with a combination of policy and regulatory incentives, technical assistance, partnerships, and

---

[i] To prepare these recommendations, committee members completed a brief poll about perceived challenges to participation in the NHSN AU/AR module, met via conference call to discuss these challenges, and interviewed key informants to gather additional perspectives about challenges and opportunities relating to the use of the AU/AR option.

leadership by healthcare providers, vendors, public health agencies, and local, state, and federal policymakers (Figure 1). Reflected in the following recommendations are opportunities identified by JPHIT members to increase engagement and improve AU/AR module uptake.

Recommendation 1: Evaluate and Communicate the Value of the AU/AR Modules

- Evaluate or communicate previously-conducted evaluation results concerning AU/AR modules that describe for public health and healthcare stakeholders and decisionmakers the value proposition for using the modules. Evaluation findings should include a description of the attributes of facilities and IT infrastructure necessary to support full use of the AU/AR modules and the utility of the data output from the AU/AR modules for clinical decision-making.

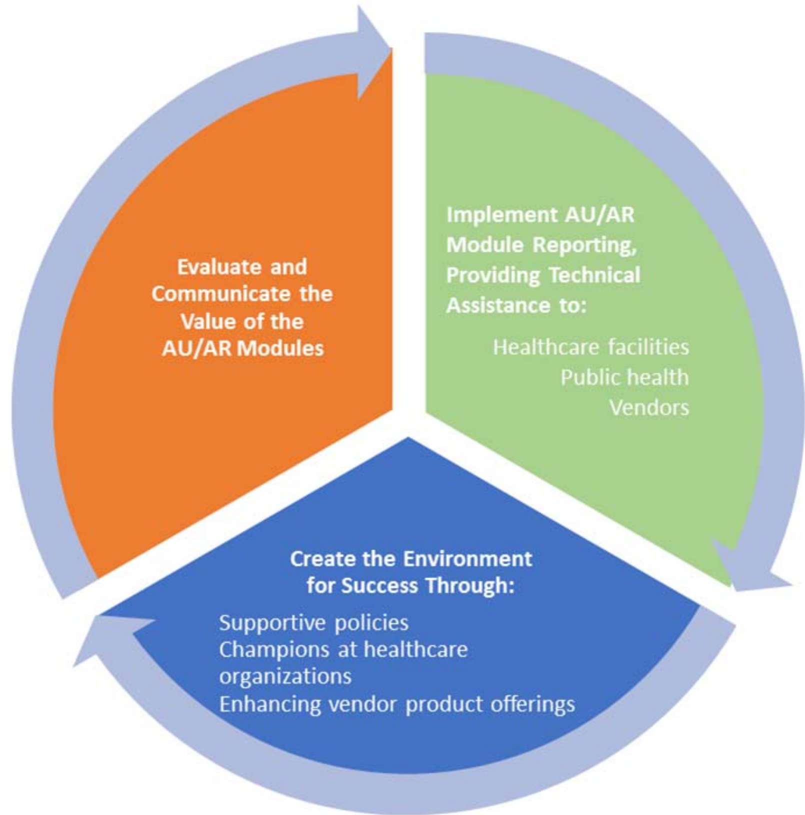

Figure 1: Opportunities to increase engagement and improve uptake of the AU/AR module.

Recommendation 2: Create the Environment for Success

Consider the following approaches to foster the conditions for increased uptake:

Implementing Supportive Policies

Incentivize AU/AR module adoption and reporting at the federal level.

Options for incentivization might include:

- Reimbursement adjustments for participation in NHSN's AU/AR modules; inclusion of a measure that uses AU/AR data as part of CMS hospital quality improvement programs; establishing the antimicrobial stewardship components of the conditions of participation for acute care hospitals and/or as a condition of facility accreditation by organizations, such as The Joint Commission and similar bodies.

When AU/AR reporting is required by states, allow reporting requirements to be met by the AU/AR reporting functionality.

Facilitating Champions at Healthcare Organizations

- Facilitate engagement and buy-in by pharmacists and antibiotic stewardship coordinators, highlighting the importance of engaging staff across a facility with knowledge of the system and expertise in

antibiotic stewardship and informatics. Options for product development to support champions include creating succinct documents that describe the value and implementation burden of participation with the AU/AR modules.

Enhancing Vendor Product Offerings

- Engage health IT vendors to understand and address current technical and financial barriers to AU/AR module adoption and reporting.
- Key partnerships and resources to engage IT vendors include: the Council of State and Territorial Epidemiologists' (CSTE's) Antimicrobial Resistance Surveillance Task Force and health IT trade associations (HIMSS or EHRA) who can serve as conduits for these conversations.

Recommendation 3: Implement AU/AR Module Reporting and Technical Assistance

For Public Health Leaders

- Increase the quantity of training resources beyond what currently exists and give public health leaders ready access to support building competencies for promoting and advancing AU/AR data reporting partnerships. Examples might include: demonstration videos, checklists, quick reference guides, technical documentation, and data use agreements.
- Engage patient safety coalitions and professional organizations representing pharmacists, infection preventionists (such as the Association for Professionals in Infection Control), state hospital associations, and hospitals to advocate for and demonstrate the value of facility adoption and sustaining AU/AR reporting. Encourage states to share their programming language and reports to facilitate onboarding and orientation for facilities and stakeholders.

For Healthcare Facilities

- Accelerate the identification and dissemination of practical lessons learned and technical insights gained from the experience of professionals implementing and maintaining AU/AR module data reporting through supporting national and regional communities of practice.
- Encourage facilities to purchase an IT product from an experienced vendor for extracting, transforming, and loading AU/AR data into CDA-based files. By using a vendor-developed system, facilities can limit costly updates to IT systems when terminology changes. CDC's Division of Healthcare Quality Promotion can provide connections to vendors that have been successful supporting AU/AR data submission.
- Increase access to and ensure the adequacy of implementation resources that healthcare leaders can use in promoting and influencing decisions to adopt and sustain reporting to the AU/AR modules. Examples might include: case studies demonstrating the benefits and costs for facilities/health systems participating in the NHSN AU/AR modules; implementation cost estimates; NHSN data security information or audits; and guidance on legal requirements for establishing AU/AR data reporting.

For Vendors

- Increase access to and ensure the adequacy of guides and technical assistance for vendors and in-house health IT developers to establish, implement, and maintain AU/AR data reporting within a given healthcare facility beyond what is currently available through CDC.

- Conduct a needs assessment to understand technical barriers that vendors can address.

Acknowledgements

JPHIT AU/AR Committee Co-Chairs

- Monica Huang (formerly of CSTE)
- Richard Melchreit, Council of State and Territorial Epidemiologists (consulting)

Committee Members

- Pat Merryweather, Partnership for Patient Safety
- Vivek Virendra Singh, Unit Nations Children's Fund
- Janae Meyers, Indiana State Department of Health
- Kelley Chester, Consultant
- Kathy Turner, Idaho Department of Health and Welfare
- Lilly Kan, National Association of County and City Health Officials
- Sarah Gilbert, Public Health Informatics Institute
- Jeff Duncan, Utah Department of Health
- Shandy Dearth, International Society for Disease Surveillance
- Janet Hamilton, Florida Department of Health
- Catherine Staes, University of Utah

Committee Staff

- Kate Heyer, Association of State and Territorial Health Officials
- Charlie Ishikawa, JPHIT Executive Secretary (consulting)

This publication was supported by cooperative agreement CDC-RFA-OT13-1302CONT16 funded by the Centers for Disease Control and Prevention. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention or the Department of Health and Human Services.

---

[1] Health Level Seven International. "HL7 Implementation Guide for CDA® Release 2: Healthcare Associated Infection (HAI) Reports, Release 1." Available at http://www.hl7.org/implement/standards/product_brief.cfm?product_id=20. Accessed 7-9-2018.
[2] CMS. "Eligible Professional Medicaid EHR Incentive Program Stage 3 Objectives and Measures, Objective 8 of 8." Available at https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/Downloads/MedicaidEPStage3_Obj8.pdf. Accessed 7-9-2018.
[3] Federal Register. "Medicare and Medicaid Programs; Electronic Health Record Incentive Program-Stage 3 and Modifications to Meaningful Use in 2015 Through 2017." Available at https://www.federalregister.gov/articles/2015/10/16/2015-25595/medicare-and-medicaid-programs-electronic-health-record-incentive-program-stage-3-and-modifications. Accessed 7-9-2018.
[4] CDC. "National and State Healthcare-Associated Infections Standardized Infection Ratio Report." Available at https://www.cdc.gov/hai/pdfs/sir/national-sir-report_03_29_2012.pdf. Accessed 7-9-2018.