NJHA's Institute for Quality and Patient Safety
Antimicrobial Stewardship Collaborative
Charter

I. Introduction

The New Jersey Hospital Association's (NJHA) Institute for Quality and Patient Safety (Institute) is committed to working with its members to improve hospital Antimicrobial stewardship programs (ASP) and associated patient outcomes. In March 2016, NJHA hosted a Best Practices in Antimicrobial Stewardship and *C.difficile* management conference moderated by Arjun Srinivasan, MD, FSHEA, CAPT USPHS, associate director for Healthcare Associated Infection Prevention Programs at the Centers for Disease Control and Prevention (CDC). Before the conference, an in-depth survey was disseminated to NJHA members based largely around the CDC Core Elements of Hospital Antimicrobial Stewardship. Results were then presented to all attendees of the conference to assess points of strength and opportunities for improvement. To gain further information, an additional pre- implementation assessment will be disseminated among members to identify gaps and strengths in current antimicrobial practice. Based on the National Quality Forum's *National Quality Partners Playbook: Antibiotic Stewardship in Acute Care*, the assessment and subsequent interventional collaborative framework, delineates best practice interventions of ASPs – Basic, Intermediate or Advanced. Result of the assessment will be used to help guide collaborative content development and organization-specific program planning and implementation.

II. Background

Improving the use of antimicrobials in healthcare to protect patients and reduce the threat of antimicrobial resistance is a national priority. Antimicrobial stewardship refers to a set of commitments and actions designed to "optimize the treatment of infections while reducing the adverse events associated with antimicrobial use." The CDC recommends that all acute care hospitals implement an antimicrobial stewardship program and have outlined the seven core elements which are necessary for implementing successful ASPs. CDC also recommends that all long-term care facilities (LTCF) including nursing homes, as well as outpatient hospital settings, take steps to improve antimicrobial prescribing practices and reduce inappropriate use.

Inappropriate antimicrobial use, which includes prescribing drugs that are unnecessary, no longer necessary, or incorrectly dosed or using broad-spectrum agents when narrow-spectrum agents are appropriate for susceptible bacteria, is a national patient safety and public health concern. This practice perpetuates and exacerbates antimicrobial resistance and contributes to conditions such as *Clostridium difficile*–associated diarrhea, as well as adverse drug effects and increased morbidity and mortality. A CDC 2014 Vital Signs report found that 20% to 50% of all antimicrobials prescribed in acute care hospitals in the United States are unnecessary or inappropriate. Few studies have examined the percentage of inappropriate use of antimicrobials in LTCFs; however, estimates of appropriate antimicrobial use in LTCFs range from 49% to 62%. For example, a 2001 study found that just 49% of prescriptions in LTCFs met appropriate

diagnostic criteria. An analysis of antibiotic prescriptions estimated that in 2010-2011 at least 30% of antibiotic prescriptions written in outpatient settings were unnecessary. Control of multidrug-resistant organisms in all healthcare settings requires attention to judicious antimicrobial use through adoption of an antimicrobial stewardship program.

III. Mission

The mission of the NJHA Antimicrobial Stewardship Learning Action Collaborative is to promote the use of the appropriate agent, dose, duration, and route of administration of antimicrobial agents both in the acute care setting and in the post-acute care setting in order to improve quality of patient care and patient safety while reducing excessive costs attributable to inappropriate antimicrobial use.

IV. Goals

Collaborative goals:

- By the end of 2019 the collaborative participants will demonstrate 100% implementation of all seven CDC core elements of antibiotic stewardship
- Establish a statewide baseline antimicrobial use rate

These bold goals will be achieved through the following annual milestones:

By the end of 2017, all participating organizations will:

- Establish antimicrobial stewardship programs
- Implement one or more “basic” intervention(s) for each of the seven core antimicrobial stewardship elements
- Submit both outcome and antimicrobial use data to the collaborative as part of the baseline and early measurement phase

By the end of 2018, all participating organizations will:

- Complete a year two process assessment survey
- Implement one or more “intermediate” intervention(s) for each of the seven core antimicrobial stewardship elements
- Continue to submit both outcome and antimicrobial use data to the collaborative as part of the implementation and measurement phase

By the end of 2019, all participating organizations will:

- Complete a year three process assessment survey
- Implement one or more “advanced” intervention(s) for each of the seven core antimicrobial stewardship elements
- Continue to submit both outcome and antimicrobial use data to the collaborative as part of the final implementation and measurement phase

V. Methods

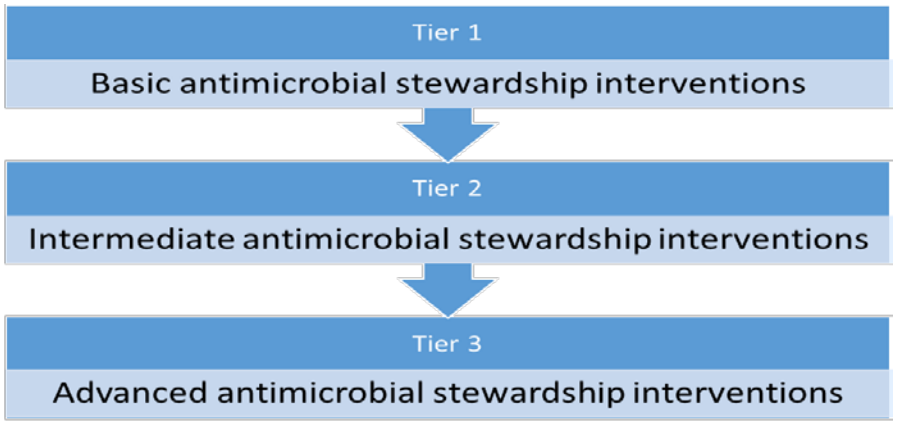
To achieve the collaborative goals, an approach will be used that combines the clinical expertise of core faculty, experiences of best practice healthcare organizations, and the organizational strength and data capabilities of the Institute.

To have the greatest impact on reduced harm due to misuse of antimicrobials, organizations must work collaboratively. Participants are expected to share successes, challenges, experiences and ideas during all facilitated events such as face-to-face meetings, calls and Webinars. Senior leadership support and multidisciplinary team involvement is required.

Through this work, teams are expected to successfully implement the following seven core elements of antibiotic stewardship:

- **Leadership Commitment**: Dedicating necessary human, financial and information technology resources;
- **Accountability**: Appointing a single physician leader and a single nurse leader responsible for program outcomes;
- **Drug Expertise**: Appointing a single pharmacist leader responsible for working to improve antimicrobial use;
- **Action:** Implementing policies and interventions to improve antimicrobial use, such as systemic evaluation of ongoing treatment need after a set period of initial treatment (i.e. "antibiotic time out" after 48 hours);
- **Tracking**: Monitoring antimicrobial prescribing and resistance patterns;
- **Reporting**: Regular reporting information on antimicrobial use and resistance to doctors, nurses and relevant staff;
- **Education**: Educating clinicians about resistance and optimal prescribing.

Based on the needs of the organizations, participants will be expected to assess and implement antimicrobial stewardship interventions through a progressive tiered approach over the course of the three years.



VI. Overview of Collaborative

The collaborative will span 36 months, beginning in January 2017, and ending in December 2019. Antimicrobial stewardship-related content will be delivered through learning sessions led by expert faculty and peer-to-peer sharing. Learning sessions will consist of monthly Webinars and multiple in- person learning sessions. A combination of outcome and process metrics will be collected to measure progress.

A. Collaborative Leadership

Collaborative faculty and partners will consist of experts in the field of infectious disease, pharmacology, medicine, nursing, and healthcare quality improvement.

1. Lead clinical faculty:

Cindy Hou, DO, MBA, FACOI
Physician Infection Control Officer
Kennedy Health

Marianne Kraemer, RN, MPA, ED. M., CCRN
Chief Nursing Officer
Kennedy Health

David Condoluci, DO, MSc., and M.A.C.O.I.
Chief Patient Safety & Quality Officer
Kennedy Health

2. Lead collaborative coordinators:

Aline M. Holmes, DNP, MSN, RN
Senior Vice President, Clinical Affairs
New Jersey Hospital Association

Shannon Davila, RN, MSN, CIC, CPHQ
Director, NJHA Institute for Quality and Patient Safety
New Jersey Hospital Association

Lauren Rava, MPP
Project Coordinator
New Jersey Hospital Association

3. Core Collaborative partners

New Jersey Department of Health
Healthcare Quality Strategies Inc
Centers for Disease Control and Prevention

4. Other partners

Ernest Mario School of Pharmacy
Ronald G Nahass, MD, MHCM – President ID Care

Quality Insights Renal Network 3
New Jersey APIC (The Association for Professionals in Infection Control and Epidemiology) Northern and Southern chapters
Alex T. Makris, MD, CMD
ID Society

B. Data collection

1. Outcome measure:
Healthcare Facility-Onset C. difficile (reported as labID through NHSN)

2. Process measures:
Assessment of Current Antimicrobial Stewardship Practice – rate of core antimicrobial stewardship elements met

3. Antimicrobial Usage:
Primary measure:

Total Days of Therapy (DOT)
Numerator
Aggregate sum of days for which any amount of a specific antimicrobial agent was administered to individual patients as documented in the medication administration record.

Example*:* A patient to whom 1 gram Vancomycin is administered intravenously twice daily for three days will be attributed 3 days of therapy. A second patient is administered an oral dose of amoxicillin three times a day for four days and received a one-time dose of intravenous cefepime on one day and will be attributed 5 days of therapy, for an aggregate total of 8 days of therapy for both patients.

Denominator (two options: days present OR admissions, based on NHSN Antimicrobial Use Module definitions)
Days present (calculated as per 1000 days present): Days present are defined as the time period during which a given patient is at risk for antimicrobial exposure for a given patient location**.** Days present is calculated as the number of patients who were present in an inpatient location either facility-wide or location-specific, for any portion of each day of a calendar month. The aggregate measure is calculated by summing all the days present for a given month. The aggregate measure for all inpatient locations is calculated by summing all of the days present for a given month.

For facility-wide inpatient analyses, days present is calculated as the number of patients who were present in an inpatient location within the facility for any portion of each day of a calendar month. The aggregate measure is calculated by summing up all of the days present for facility-wide inpatient for a given month. Thus, a sum of days present from

location-specific analyses would be higher than days present for the facility, because transfers between wards can account for multiple location "days present" for a given patient on a single calendar day. The calculation must be a separate summation for facility-wide inpatient analyses.

For location-specific analyses, days present is calculated as the number of patients who were present, regardless of patient status (e.g., inpatient, observation), for any portion of each day of a calendar month for a specific patient care location. The aggregate measure is calculated by summing up all of the days present for that location and month. The day of admission, discharge, and transfer to and from locations will be included in the days present count. Below are examples that illustrate appropriate counting of days present:

- A patient admitted to the medical ward on Monday and discharged two days later on Wednesday will be attributed three days present on that medical ward because the patient was in that specific location at some point during each of the three calendar days (i.e., Monday, Tuesday, and Wednesday).
- On the day a patient is transferred from a medical critical care unit to a medical ward the patient will be attributed one day present on the medical critical care unit as well as one day present on the medical ward because the patient was in both locations at some point during that calendar day.
- One patient can only account for one day present for a specific location per calendar day (i.e., one patient cannot contribute more than one day present to any one unique location on the same day, but can contribute a day present to two different locations on the same day). For example, a patient transferred from the surgical ward to the operating room and back to the surgical ward in a calendar day contributes one day present to the surgical ward and one day present to the operating room.

Admissions (calculated as per 100 admissions): Admissions are defined as the aggregate number of patients admitted to an inpatient location within the facility (i.e., facility-wide inpatient) starting on first day of each calendar month through the last day of the calendar month. The aggregate measure for all inpatient locations is calculated by summing all of the admissions for a given month.

<u>Inclusion</u>

- Antibiotics, antivirals, antifungals administered by the following routes: intravenous, intramuscular, digestive, and respiratory
    - Intravenous (IV): An intravascular route that begins with a vein.
    - Intramuscular (IM): A route that begins within a muscle.
    - Digestive Tract: A route that begins anywhere in the digestive tract extending from the mouth through rectum
    - Respiratory Tract: A route that begins within the respiratory tract, including the oropharynx and nasopharynx.
- All adult inpatient locations

<u>Exclusion</u>

- Any antimicrobials administered via the following routes: antibiotic locks, intraperitoneal, intraventricular, irrigation, topical

- Inpatient pediatric and neonatal locations, all outpatient locations

Sources of data:
Paper, electronic medication administration records or bar coding medication record

Secondary measure: (*If hospitals do not have capability to measure DOT, Defined Daily Dose (DDD) will also be accepted)*

Defined Daily Dose (DDD)
Defined daily dose (DDD) total number of grams of an antimicrobial agent used divided by the number of grams in an average adult daily dose of the agent. (for adults only). Drug consumption data presented in DDDs only give a rough estimate of consumption and not an exact picture of actual use. It estimates antimicrobial use in hospitals by aggregating the total number of grams of each antimicrobial administered or dispensed during a period of interest divided by the World Health Organization's assigned Anatomical Therapeutic Chemical Classification System with Defined Daily Dose (ATC/DDD). Compared to DOT, DDD estimates are not appropriate for children, are problematic for patients with reduced drug excretion such as renal impairment, and are less accurate for between-facility benchmarking.

Link to World Health Organization's current ATC/DDD index:
https://www.whocc.no/atc_ddd_index/

Numerator:
Aggregate sum of Defined Daily Doses for all antimicrobials either dispensed or administered with one calendar month.

Example: The hospital pharmacy has dispensed 5 grams of polymyxin B within one month. The ATC/DDD for polymyxin B is 0.15 grams. The DDD for that month of polymyxin B dispensed was 33.3.

Denominator (two options: days present OR admissions)
Days present (calculated as per 1000 days present): Days present are defined as the time period during which a given patient is at risk for antimicrobial exposure for a given patient location**.** Days present is calculated as the number of patients who were present in an inpatient location either facility-wide or location-specific, for any portion of each day of a calendar month. The aggregate measure for all inpatient locations is calculated by summing all of the days present for a given month.

For facility-wide inpatient analyses, days present is calculated as the number of patients who were present in an inpatient location within the facility for any portion of each day of a calendar month. The aggregate measure is calculated by summing up all of the days present for facility-wide inpatient for a given month. Thus, a sum of days present from location-specific analyses would be higher than days present for the facility, because transfers between wards can account for multiple location "days present" for a given

patient on a single calendar day. The calculation must be a separate summation for facility-wide inpatient analyses.

For patient care location-specific analyses, days present is calculated as the number of patients who were present, regardless of patient status (e.g., inpatient, observation), for any portion of each day of a calendar month for a patient care location. The aggregate measure is calculated by summing up all of the days present for that location and month. The day of admission, discharge, and transfer to and from locations will be included in the days present count. Below are examples that illustrate appropriate counting of days present:

- A patient admitted to the medical ward on Monday and discharged two days later on Wednesday will be attributed three days present on that medical ward because the patient was in that specific location at some point during each of the three calendar days (i.e., Monday, Tuesday, and Wednesday).
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- All adult inpatient locations

<u>Exclusion</u>

- Any antimicrobials administered via the following routes: antibiotic locks, intraperitoneal, intraventricular, irrigation, topical
- Inpatient pediatric and neonatal locations, all outpatient locations

Sources of data:
Pharmacy records for dispensing or administration.

VI. Team Responsibilities

Participating organizations are expected to:

- Connect the goals of the collaborative work to a strategic initiative in their organization
- Provide a senior leader to sponsor and actively support the team as a champion to spread improvement within the facility
- Provide the resources to support the team, including resources necessary for learning sessions, and staff time to devote to this effort
- Support the critical role of nursing in antimicrobial stewardship
- Provide expert staff from key support units in the organization (Pharmacy, Infectious Disease, Quality Improvement, Infection Prevention, Clinical Policy Development, Information Technology, etc.) to support the team as needed
- Perform tests of change leading to process improvements within the organization
- Share information with the collaborative peer-to-peer network, including details of changes made and data related to collaborative metrics
- Actively participate in all monthly Webinars and in-person learning sessions.
- Recommended teams include: clinical pharmacists, nursing leadership, ID physicians, and infection preventionists

Cost to join collaborative

There is no fee to join the collaborative. Monthly Webinars, in-person learning sessions, toolkits and data collection tools will be offered free of charge to all participating hospitals. This collaborative is funded through the Centers for Medicare and Medicaid Services Hospital Improvement and Innovation Network contract.

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