CHALLENGES and SOLUTIONS for ANTIBIOTIC STEWARDSHIP for INPATIENT, OUTPATIENT, and NURSING HOME FACILITIES

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December 7th, 2022
STRENGTHENING HAI/AR PROGRAM CAPACITY

- Funded under the American Rescue Plan Act of 2021
- Broadly intended to provide critical resources to state, local and territorial health departments
  - Support of a broad range of healthcare infection prevention and control (IPC) activities
  - Epidemiologic surveillance related activities to detect, monitor, mitigate and prevent the spread of SARS-CoV-2
  - Address healthcare associated infections (HAI)
  - Antimicrobial resistance (AR)
NCDHHS and SPICE activities intended to further strengthen and expand HAI/AR programs include four project areas:

- **Project I. HAI/AR Program Network for Prevention and Response**
- **Project II. Antibiotic Stewardship**
- **Project III. Enhancing Use of National Healthcare Safety Network (NHSN)**
- **Project IV. Project Firstline**

**NC Clinical Antibiotic Stewardship Partners (NC CLASP)** is a new initiative created to support antibiotic stewardship efforts in outpatient, acute care, and nursing home settings across the state.

https://spice.unc.edu/

https://www.ncdhhs.gov/
Statewide Program for Infection Control & Epidemiology

Promoting prevention and control of healthcare associated infections through education and consultation across the healthcare spectrum.

https://spice.unc.edu/
All the information from today’s session will be on our website 
https://spice.unc.edu/ncclasp/
ANTIMICROBIAL RESISTANCE AND ANTIMICROBIAL STEWARDSHIP
The microbes are educated to resist penicillin and a host of penicillin-fast organisms is bred out.... In such cases the thoughtless person playing with penicillin is morally responsible for the death of the man who finally succumbs to infection with the penicillin-resistant organism.

Sir Alexander Fleming, 6/14/1945, New York Times
ANTIBIOTIC RESISTANCE THREATS
in the United States, 2013

Estimated minimum number of illnesses and deaths caused by antibiotic resistance*:

At least 🌟2,049,442 illnesses,
💀23,000 deaths

*bacteria and fungus included in this report

Estimated minimum number of illnesses and death due to *Clostridium difficile (C. difficile)*, a unique bacterial infection that, although not significantly resistant to the drugs used to treat it, is directly related to antibiotic use and resistance:

At least 🌟250,000 illnesses,
💀14,000 deaths

CDC’s 2019 AR Threats Report: PREVENTION WORKS.

↓ 18% fewer deaths from antibiotic resistance overall since 2013 report
↓ 28% fewer deaths from antibiotic resistance in hospitals since 2013 report

AND DECREASES IN INFECTIONS CAUSED BY:

↓ 41% Vancomycin-resistant Enterococcus
↓ 33% Carbapenem-resistant Acinetobacter

↓ 29% Multidrug-resistant Pseudomonas aeruginosa
↓ 25% Drug-resistant Candida

↓ 21% Methicillin-resistant Staphylococcus aureus (MRSA)
STABLE Carbapenem-resistant Enterobacteriaceae (CRE) & drug-resistant tuberculosis (TB disease cases)

WHAT WAS WORKING?

- **Infection Prevention**
  - Known MDRO infections:
    - Screening, isolation
    - Information sharing between facilities
    - Surveillance
  - Reduction in Hospital-Acquired Infections
    - CLABSI, VAP, CAUTI

- **Antimicrobial Stewardship**
  - Stopping or avoiding unnecessary Abx
  - Targeting antimicrobials
  - Reducing durations
  - Judicious use of broad-spectrum drugs
Available data show an alarming increase in resistant infections starting during hospitalization, growing at least 15% from 2019 to 2020.

- Carbapenem-resistant *Acinetobacter* (+78%)
- Antifungal-resistant *Candida auris* (+60%)*
- Carbapenem-resistant Enterobacterales (+35%)
- Antifungal-resistant *Candida* (+26%)
- ESBL-producing Enterobacterales (+32%)
- Vancomycin-resistant Enterococcus (+14%)
- Multidrug-resistant *P. aeruginosa* (+32%)
- Methicillin-resistant *Staphylococcus aureus* (+13%)
WHY DID ANTIMICROBIAL RESISTANCE GET WORSE IN THE PANDEMIC?

- SARS-CoV-2 is a virus
- Outpatient antibiotic prescribing dropped significantly in 2020
WHY DID ANTIMICROBIAL RESISTANCE GET WORSE IN THE PANDEMIC?

Increased HAIs

- Diversion of Infection Prevention Resources
- Prolonged hospitalization
- Staffing shortages
- Greater burden of critical illness
WHY DID ANTIMICROBIAL RESISTANCE GET WORSE IN THE PANDEMIC?

- Antibiotic Overuse
- Increased HAIs (real and suspected)
- More critical illness
- Staffing shortages
ANTIMICROBIAL STEWARDSHIP LANDSCAPE

- ASPs began in large hospitals
  - Antimicrobial resistance problems; access to experts and data
  - Joint Commission Standard went into effect 2017

- How to do stewardship in:
  - Smaller community hospitals?
  - Long-term care facilities?
  - Outpatient setting?
Patients move between acute care hospitals, long-term care, and home
AR pathogens move with the patients
A gap in infection prevention or antibiotic stewardship in one location creates problems for all
NEED FOR OUTPATIENT STEWARDSHIP

80-90% of all antibiotic consumption by outpatients

At least 30% of outpatient antibiotics are unnecessary

50% of antibiotics for acute respiratory infections are unnecessary

$10.7 billion spent annually on outpatient antibiotics

Nearly five times more antibiotics prescribed in highest-use state compared to lowest-use state
ANTIBIOTIC STEWARDSHIP IN NURSING HOMES

4.1 million Americans are admitted to or reside in a nursing home in any year.

Up to 70% of nursing home residents receive at least 1 antibiotic a year.

Up to 75% of antibiotics are prescribed inappropriately.

NC CLASP OVERVIEW

➢ NC CLASP is a new initiative created to support acute care, outpatient, and nursing home settings to improve antibiotic stewardship and the health of our patients.
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WHAT CAN NC CLASP DO FOR YOU?

➢ Provide a judgment-free forum for learning from experts and peers
➢ Interactive educational sessions
  ➢ Regularly scheduled for each setting
  ➢ Focused on key antibiotic stewardship issues
  ➢ Utilize case discussions
WHAT CAN NC CLASP DO FOR YOU?

- **Mentoring and Coaching**
  - Experts in Infectious Diseases, Quality Improvement, and Geriatrics ready to help
  - Q&A sessions to discuss your needs

- **Templates**
  - For policies
  - For procedures
  - For tracking tools
WHAT CAN NC CLASP DO FOR YOU?

➢ Priority setting
  ➢ Help healthcare settings and administrators identify internal priorities

➢ Assistance with data and analytics
  ➢ Help you review prescribing patterns by healthcare setting
EDUCATIONAL SUPPORT

- Clinical providers (MD, DO, NP, PA, PharmD)
- Nursing staff (RNs, LPNs, CNAs)
- Patients and families

http://www.rochesterpatientsafety.com/index.cfm?Page=For%20Nursing%20Homes
WHAT CAN NC CLASP DO FOR YOU?

➢ Quality improvement support: Help you get SMART on outcomes important to your setting
  ➢ Specific
  ➢ Measurable
  ➢ Achievable
  ➢ Relevant
  ➢ Time-bound
WHAT CAN NC CLASP DO FOR YOU?

Key Topics

- Creating a Culture of Safety
- Developing and Improving Your Stewardship Program
- Learning Best Practices for Common Infectious Syndromes
- Review the 4 Moments AHRQ Framework

The Long-Term Care Toolkit from AHRQ, https://www.ahrq.gov/antibiotic-use/long-term-care/index.html
NC CLASP COLLABORATIVE SERIES

- For all settings we want to conduct regularly scheduled virtual meetings education, quality improvement, and mentoring and coaching sessions.

- Antibiotic stewardship isn’t isolated to one setting. We want to provide support for each of the following health care settings: acute care hospitals, outpatient clinics, and nursing facilities.
**EXAMPLE OF HOW NC CLASP CAN HELP YOU**

<table>
<thead>
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<th>Clinical Event</th>
<th>Evaluation by R.N. or M.D.</th>
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<td>Resident noted by her family member to have dark urine, with a foul odor.</td>
<td>The nurse sends a urine sample and has the covering provider sign the order for the urine culture.</td>
<td>Urine culture: &gt;100,000 cfu/mL Gram-negative rods. The nurse notifies the on-call clinician, who orders ciprofloxacin.</td>
<td>On day 8 of ciprofloxacin, her INR is &gt;7 and she is sent to the ED.</td>
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https://www.ahrq.gov/antibiotic-use/long-term-care/improve/program.html
Clinical Event

Son notes resident has dark urine, with a foul odor. Her son states the last time she had a dark urine she had a UTI. He wants her to be tested.

PROBLEM:
No discussion with the family or attempt to educate.
IDENTIFYING THE PROBLEMS—2

**Clinical Event**

Son notes resident has dark urine, with a foul odor. Her son states the last time she had a dark urine she had a UTI. He wants her to be tested.

**PROBLEM:**
No discussion with the family or attempt to educate.

**Evaluation by R.N. or M.D.**

The nurse sends the urine sample and then asks the on-call covering clinician to sign the order.

**PROBLEM:**
No diagnostic criteria used to evaluate the resident.
IDENTIFYING THE PROBLEMS—3

Clinical Event
Son notes resident has dark urine, with a foul odor. Her son states the last time she had a dark urine she had a UTI. He wants her to be tested.

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Evaluation by R.N. or M.D.
The nurse sends the urine sample and then asks the on-call covering clinician to sign the order.

PROBLEM:
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Decision To Prescribe Antibiotic
Urine culture grows > 100,000 cfu/mL Gram-negative rods. The nurse notifies the on-call provider, who orders ciprofloxacin.

PROBLEM(S):
No evaluation of resident. No review of guidelines to determine if therapy is indicated.
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Outcome
On day 8 of ciprofloxacin, INR is >7

PROBLEM(S):
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IDENTIFYING THE PROBLEMS—5

PRE-PREScriptive

POST-PREScriptive
A 37-year-old male is recovering in SICU after a motor vehicle collision with multiple injuries.

On hospital day 6, he develops fever to 38.7°C, with no signs of sepsis or increased support requirements. Chest X-ray is unchanged from prior. No sign of wound infection.

Blood, urine, and respiratory cultures are obtained. He is started on broad-spectrum antibiotics (vancomycin plus cefepime)
After 48 hours, he has had no further fever.
- Blood culture: no growth to date
- Urine culture: final negative
- Respiratory culture: 3+ *Pseudomonas aeruginosa*

He receives cefepime for 7 days for presumed VAP

Three days after completing antibiotics, he has another fever to 38.4.
- Antibiotics initially held, but blood and respiratory cultures repeated
- Another ETT aspirate returns positive three days later for *Pseudomonas aeruginosa*
- Cefepime is restarted

Patient develops diarrhea and abdominal distention. *C. difficile* test is positive.
CASE #2: GAPS

- “Pan-culture” for new fever in the ICU
  - Blood culture reasonable; other sites should be symptom-directed

- Overdiagnosis of “VAP”
  - Pneumonia should be accompanied by chest X-ray changes, increased oxygen requirement, increased sputum production

- Repeat respiratory cultures often stay positive after treatment
A six-year-old girl presents to her pediatrician with a sore throat. She has also had fever up to 100.7, cough, and runny nose for two days.

- She has been treated for strep throat three times in the last six months
- Mom reports that the symptoms are “always the same”

After rooming the patient, the MA obtains a throat swab for Group A Strep antigen testing, which is positive.

The pediatrician examines the patient and does not see typical signs of streptococcal pharyngitis. But he prescribes amoxicillin.

The patient’s mother asks for a referral to ENT for tonsillectomy.
CASE #3: GAPS

- Failure to recognize Group A streptococcal colonization
  - May persist for months

- Missed opportunity to educate parent/family

- Diagnostic testing obtained before complete evaluation

- Incorrect diagnosis → unnecessary antibiotics, possibly surgical referral
Stay in Touch

To receive additional information or to express interest in partnering, please complete this form:

☐ I am interested in more information on NC CLASP.
☐ I would like to participate in NC CLASP.