Antimicrobial Stewardship for New Mexico

Informational Webinar on the Quickstart Curriculum
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Susan M. Kellie, MD, MPH
Curriculum Lead
Conflict of Interest Disclosure

The presenter has no financial, professional or personal interests/relationship that might represent a conflict of interest or bias.
Overview

- **What?** A Webinar-based interactive curriculum on antimicrobial stewardship with didactic and consultative sessions supported by written materials and tools. Faculty: infectious diseases physicians and pharmacists, microbiologists.

- **Who?** Pharmacists, laboratorians, and physician champions. Other potential participants could include quality assurance staff, IT personnel and infection preventionists.

- **When?** First session is **Monday, October 28, 2013**, then every other Tuesday starting November 12, at noon, with a break over the holidays (see schedule).

- **Where?** On your desktop

- **How?** Via GoToMeeting and [DRUGS4BUGS.ORG](http://www.drugs4bugs.org)
• Antimicrobial stewardship is a key part of the strategy to keep patients safe from the threats of multidrug-resistant organisms and *C. difficile*.

• Antimicrobial stewardship is essential to fulfill the triple aim of modern *healthcare*—*Better care for more people at less cost and to mitigate waste of healthcare dollars*. 
Why?

• About 30 percent of health spending in the United States in 2009—about $750 billion—was wasted on unnecessary services, excessive administration costs, fraud and other problems (per the IOM).

• Inefficiency, a vast amount of data and other economic and quality issues obstruct efforts to improve health and threaten the nation's economic stability and global competitiveness, the document warned.

• Numerous inefficiencies caused needless suffering. One estimate indicates that about 75,000 deaths might have been prevented in 2005 if every state had delivered health care at the level of the best-performing state.

• "Achieving higher-quality care at lower cost will require an across-the-board commitment to transform the U.S. health system into a 'learning' system that continuously improves by systematically capturing and broadly disseminating lessons from every care experience and new research discovery."
Why?

• Antimicrobial stewardship is part of the Joint Commission’s National Patient Safety Goal for control of multidrug resistant pathogens

• CMS are piloting measures of antimicrobial stewardship in their new facility survey (not currently scored)
The CMS pilot survey in acute care

Proposed quality indicators for stewardship:

- Facility has a *multidisciplinary process* in place to review antimicrobial utilization, local susceptibility patterns, and antimicrobial agents in the formulary *and* there is evidence that the process is followed.

- *Systems are in place* to prompt clinicians to use appropriate antimicrobial agents (e.g., computerized physician order entry, comments in microbiology susceptibility reports, notifications from clinical pharmacist, formulary restrictions, evidence-based guidelines and recommendations).
More quality indicators

• Every antimicrobial order should have an indication

• There is a mechanism in place to prompt clinicians to review antibiotic courses of therapy after 72 hours of treatment

• Note: Existing CMS core measures in acute care that afford opportunities for stewardship include the Surgical Care Improvement Project (SCIP) and Community-acquired pneumonia (CAP)
Defining Antimicrobial Stewardship

• “Optimizing antimicrobial therapy to achieve best clinical outcomes related to antimicrobial use while minimizing toxicity and other adverse events.”

Two major source documents:

• IDSA society guideline: the “what”
  – http://www.id society.org/Antimicrobial_Agents/#Antimicrobial Stewardship

• SHEA/IDSA/PIDS-Policy statement: the “how”
  – http://www.shea-online.org/Policy/PositionsStatements.aspx
Antimicrobial Stewardship is a process that assures the “rights”

- Right **drug** - check cultures for drug-bug mismatch
- Right **reason** - following published guidelines
- Right **dose** - renally and/or weight-adjusted
- Right **formulation** - consider switch to po when ready
- Right **timing** - correct dosing interval or prophylactic timing
- Right **duration** - following published guidelines
- Right **follow-up** - monitor the patient
- Right **consultation** - know when you need help

...and all **without adverse consequences** for the patient
The age of new antimicrobial development is over...

Figure 1: 14 classes of antibiotics were introduced for human use between 1935 and 1968; since then, 5 have been introduced.

* Beta-lactams include three groups sometimes identified as separate classes: penicillins, cephalosporins, and carbapenems.
The Antibiotic Crisis: Can we reverse 65 years of failed stewardship?

• 2 converging public health crises: skyrocketing antibiotic resistance and plummeting new antibiotic development.

• “It’s not too much to state that the introduction of [antibiotics] has represented a force for change in the 20th century of the same kind...as the steam engine in the 18th. The crossing of the historic watershed could be felt at the time. One day we could not save lives, or hardly any lives; on the very next day, we could do so across a wide spectrum of diseases. This was an awesome acquisition of power.” - Walsh McDermott 1981

• Brad Spellberg, Archives of Internal Medicine online Feb 28, 2011. www.archinternmed.com
Figure 2. Crude Mortality Rates for All Causes, Noninfectious Causes, and Infectious Diseases.

Only ID deaths fell precipitously in the 20th century...

Antibiotics caused US deaths to decline by ~220 per 100,000 in 15 years

All other medical technologies reduced deaths by ~20 per 100,000 over the next 45 years

The Carbapenem-Resistant Enterobacteriaceae are Here!
Resistance anywhere is resistance everywhere

Spread of New Delhi metallo-beta-lactamase from India 2010-2011 (E. coli resistant to carbapenems)
Why New Mexico must act now...

http://www.cddep.org/ResistanceMap/bug-drug/CRKP#2

2010 Mountain Region rate of KPC was 0.019%
How treating one patient puts others at risk:

Patient A enters hospital colonized with CRE in bowel

Patient A receives extended broad-spectrum therapy

Patient A becomes heavily colonized with CRE in bowel and on skin

Patient B becomes colonized with CRE

Patient B undergoes surgical procedure

Patient B develops complications and sepsis, dies of CRE bacteremia

Poor infection control practice allows transfer of organisms
Incidence and mortality of *Clostridium difficile* infection are increasing in US

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Numbers of death certificates with *C. difficile* infection coded as primary cause of death, ICD-10 A04.7, New Mexico, 1999-2012
How much *C. difficile* is there?

- Emerging Infections Program of CDC has done population-based surveillance in Bernalillo County for all cases in 2011 and 2012 so far, including outpatient.

- Approximately 1,100 cases per year have been identified, many in younger people.

- Around 50% of cases have onset in acute care facilities.
Core facts about antimicrobial use and resistance

• 50% of all antimicrobial use is inappropriate, both in inpatient and outpatient settings

• Antimicrobial resistance leads to poor patient outcomes

• New antimicrobial drug development is insufficient to address the problem

• The effects of antimicrobial resistance can be mitigated through stewardship
Don’t mess with the human microbiome!

NY Times: June 18, 2012
Tending the Body’s Microbial Garden
By Carl Zimmer
The Evidence for Antimicrobial Stewardship

  http://www.expert-reviews.com/doi/abs/10.1586/14787210.6.2.209

• 33 studies demonstrating cost savings or cost neutrality of programs.

• 22 studies examining antimicrobial resistance and C. difficile outcomes - 14 were able to demonstrate reduction in gram-negative resistance and/or C. difficile
• Antimicrobial stewardship is a public health priority.

The Challenge

• Scaling antimicrobial stewardship programs to rural and frontier hospitals and non-acute care settings with limited access to infectious diseases specialists and pharmacists with formal ID specialty training.

• Small facilities may also suffer from the “small n” problem where dramatic changes in rare outcomes can be hard to demonstrate, and cost savings may be harder to attain.
Antimicrobial Stewardship on the Frontier: A Pilot Study of Training Using an Electronic Learning Network

• Spring of 2011-4 hospitals with 22, 25, 91, and 106 beds, 3 in rural and 1 in a frontier county, participated in an electronic curriculum on antimicrobial stewardship.

• At that time, Lovelace Downtown, UNM Hospitals, and VA had formal stewardship programs, only two antimicrobial-trained PharmDs in state doing stewardship work.

— published in Infection Control and Hospital Epidemiology, November 2012; 33: 1181-3.
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<th>In place prior to curriculum</th>
<th>Implemented during or after</th>
<th>Expanded during or after</th>
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Results of a pilot electronic learning network in antimicrobial stewardship in rural and frontier hospitals, New Mexico 2011
Participants to date:

- Gerald Champion Regional Medical Center
- Plains Regional Medical Center
- Cibola General Hospital
- Roosevelt General Hospital
- San Juan Regional Medical Center
- Northern Navajo Medical Center
- Gila Regional Medical Medical Center
- Lovelace Women’s Hospital
- Carlsbad Medical Center
- Roosevelt General Hospital
- MountainView Regional Medical Center
Long term goals: establish antimicrobial stewardship tailored to every setting

- Acute care hospitals—from tertiary care facilities to critical access hospitals
- Long-term acute care hospitals
- Long-term care and skilled nursing facilities
- Outpatient settings: ambulatory care, dialysis, infusion centers and ambulatory surgery centers
Overall objectives of the curriculum:

• Participants will develop and apply an antimicrobial stewardship program appropriate for their facility’s needs and capacity.

• By the end of the curriculum, participants will have:
  – performed a risk assessment,
  – selected a target for an antimicrobial stewardship intervention,
  – designed the intervention, and
  – implemented and collected data on the intervention.
Curriculum Overview

• 7 modules, two sessions each with electronic tools and materials

• Opportunity for interaction and consultation

• Tailored to needs of participants
Content Overview:

• Making the case-do a risk assessment and establish facility support
• High-impact interventions through formulary management
• Implementing clinical guidelines
• Low-hanging fruit in individual orders
• Working with the lab
• Integrating work with infection control and core measures for quality outcomes
• Measuring your impact and developing an annual report
National Outcomes Tracking

- Partners in infection control will do surveillance for
  - *Clostridium difficile* infection (CDI) &
  - MRSA bacteremia starting in January 2013,
  - Ongoing: all organisms causing HAI with resistance profile
  - as part of requirements for CMS mandatory reporting of healthcare-associated infections, via data entry into...
How to get CPE and CME credits

• Each of the 14 sessions is separately accredited for live CPE credits and CME credits.

• You need not attend all the sessions to get credits.

• In order to claim credit hours, each participant must complete an on-line evaluation for each session.
What to do now:

• Gather your team for Session 1: Making the case for antimicrobial stewardship Part 1, October 28, 2013 at noon (the only Monday session)

• Suggested team composition: pharmacist, physician champion, plus: laboratorian. Could include infection preventionist, IT, Quality Outcomes or PI staff

• This first session will cover how to do a risk assessment for your facility and learn how to make the case for an antimicrobial stewardship team at your hospital
To learn more about the impact on patients:

• Open access general background readings:
  • [Link](http://www.cddep.org/sites/cddep.org/files/publication_files/12-21mr55_2.pdf?issuusl=ignore)
Key Partners

www.shea-online.org  apic.org

CDC sites:
http://www.cdc.gov/getsmart/
http://www.cdc.gov/getsmart/healthcare/index.html
Questions?