Today’s Host

Sarah Konstantino, Project Assistant, Institute for Healthcare Improvement (IHI), assists in programming activities for expeditions, as well as maintaining Passport memberships, mentor hospital relations and collaboratives. Sarah is currently in the Co-Operative Education Program at Northeastern University in Boston, MA, where she majors in Business Administration with a concentration in Management and Health Science. She enjoys cooking, traveling, and fitness.
Audio Broadcast

You will see a box in the top left hand corner labeled “Audio broadcast.” If you are able to listen to the program using the speakers on your computer, you have connected successfully.
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1) Click the button on the right hand side of the screen.
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Audio Broadcast vs. Phone Connection

- If you using the **audio broadcast** (through your computer) you **will not** be able to speak during the WebEx to ask question. All questions will need to come through the chat.

- If you are using the **phone connection** (through your telephone) you **will** be able to raise your hand, be unmuted, and ask questions during the session.

- Phone connection is preferred if you have access to a phone.
Welcome to today’s session!
Please use chat to “All Participants” for questions
For technology issues only, please chat to “Host”
WebEx Technical Support: 866-569-3239
Dial-in Info: Communicate / Join Teleconference (in menu)
When Chatting…

Please send your message to All Participants
What is an Expedition?

ex•ped•di•tion (noun)
1. an excursion, journey, or voyage made for some specific purpose
2. the group of persons engaged in such an activity
3. promptness or speed in accomplishing something
Expedition Support

- All sessions are recorded
- Materials are sent one day in advance
- Listserv address for session communications: ABSExpedition@ls.ihi.org
  - To add colleagues, email us at info@ihi.org
Where are you joining from?
Diane Jacobsen, MPH, CPHQ, Director, Institute for Healthcare Improvement (IHI) is currently directing the CDC/IHI Antibiotic Stewardship Initiative, NSLIJ/IHI Reducing Sepsis Mortality Collaborative. Ms. Jacobsen served as IHI content lead and improvement advisor for the California Healthcare-Associated Infection Prevention Initiative (CHAIP) and directed Expeditions on Antibiotic Stewardship, Preventing CA-UTIs, Reducing C. difficile Infections, Sepsis, Stroke Care and Patient Flow. She served as faculty for IHI’s 100,000 Lives and 5 Million Lives Campaign and directed improvement collaboratives on Sepsis Mortality, Patient Flow, Surgical Complications, Reducing Hospital Mortality Rates (HSMR) and co-directed IHI’s Spread Initiative. She is an epidemiologist with experience in quality improvement, risk management, and infection control in specialty, academic, and community hospitals. A graduate of the University of Wisconsin, she earned her master’s degree in Public Health - Epidemiology.
Today’s Agenda

- Introductions
- Debrief: Action Period Assignment – what are you testing/learning?
- Our Learning Journey: IHI/CDC AB Stewardship Partnership
- Action Period Assignment
Expedition Objectives

At the end of this Expedition, participants will be able to:

- Describe the impact of overuse and misuse of antibiotics on cost of care, antimicrobial resistance and patient complications, including *Clostridium difficile*.
- Establish a multidisciplinary focus to embed antibiotic stewardship into the process of care.
- *Identify and begin improving at least one key process to optimize antibiotic selection, dose, and duration of antibiotics in the patient care setting.*
Schedule of Calls

Session 1 – “Making the Case” for Antibiotic Stewardship  
**Date:** Thursday, March 20th  2:30 PM – 4:00 PM ET

Session 2 – Promoting a Culture for Optimal Antibiotic Use  
**Date:** Thursday, April 3, 3:00 – 4:00 PM ET

Session 3 – Our Learning Journey: IHI & CDC Partnership  
**Date:** Thursday, April 17, 3:00 – 4:00 PM ET

Session 4 – Embedding Stewardship Processes into Care Delivery  
**Date:** Thursday, May 1, 3:00 – 4:00 PM ET

Session 5 – Focus on: 72 Hour Antibiotic “Time-out”  
**Date:** Thursday, May 15, 3:00 – 4:00 PM ET

Session 6 – What Are We Testing & Learning?  
**Date:** Thursday, May 29, 3:00 – 4:00 PM ET
Ground Rules

- We learn from one another – “All teach, all learn”
- Why reinvent the wheel? – Steal shamelessly
- This is a transparent learning environment – Share Openly
- All ideas/feedback are welcome and encouraged!
Action Period Assignment

Listserv discussion: What are you testing/learning?

- Refine/Re-focus one specific intervention to focus on during the expedition

- Test one idea for Promoting a Culture for Optimal Antibiotic Use with the group of people/providers you identified to create a partnership with to support stewardship
Listserv Discussion: what are you testing/learning?

**Testing on a small scale – one unit, one physician, one antibiotic, etc**

- Reviewing all patients receiving Vancomycin (IV or oral) for appropriateness and possibility of discontinuing or switching to another AB once C&S is available.
- Planning a quantitative analysis of antibiotics from next month in each unit, and then will do prospective audits.
- Reviewed and discussed high therapeutic rates of antibiotics in caesarian patients with physician and mutually agreed that we need to decrease by introducing evidence base guidelines and sensitize all physician group.
- Reviewing orders of empiric antibiotic treatment through CPOEs for indication and duration. Initial assessment: orders are based on physician clinical experiences rather than recommended treatment guidelines.
- Establishing a mutually agreed AB treatment guideline within the facility based not only on physician’s own experiences but also on evidence based research guidelines can provide the basis of a strong antimicrobial stewardship program even in the absence of a ID Physician.
- Reviewing antibiotic choice and indication on a medical unit.
Listserv Discussion:

Challenge raised: embedding stewardship in hospitals without infectious disease physicians

- If you’re a hospital without ID physicians, *what experience can you share that would inform others?*

*Response:* Identify a provider with an interest in ID issues, definitely involve your infection preventionist; pick 1 thing and focus on it then report your results
Test one idea for *Promoting a Culture for Optimal Antibiotic Use* with the group of people/providers you identified to create a partnership with to support stewardship.

Identify the group of people/providers you’re partnering with: who? what unit? what discipline? *(hospitalists, pharmacists, microbiology, infection prevention, leadership)*

**AND:** what you’re testing to *Promote a Culture of Optimal AB Use*

- Use the Chat Box to share
- If you’re connected by phone, raise your hand to discuss
Questions?

- Raise your hand
- Use the Chat
Arjun Srinivasan, MD, Associate Director for Healthcare Associated Infection Prevention Programs in the Division of Healthcare Quality Promotion at the Centers for Disease Control and Prevention (CDC), is responsible for oversight and coordination of efforts to eliminate health care-associated infections. He led the CDC health care outbreak investigations team and served as Medical Director for the Get Smart for Healthcare campaign, an effort to improve the use of antimicrobials in in-patient health care facilities. Previously, he was an Assistant Professor of Medicine in the Infection Diseases Division at the John Hopkins School of Medicine, where he was Associate Hospital Epidemiologist and Founding Director of the Johns Hopkins Antibiotic Management Program. Dr. Srinivasan’s research focuses on outbreak investigations, infection control, multi-drug-resistant gram-negative pathogens, and antimicrobial use. He has published more than 70 articles in peer-reviewed journals and is a member of the Association for Professionals in Infection Control and Epidemiology, the Infectious Diseases Society of America, and the Society for Healthcare Epidemiology of America.
Antibiotic Stewardship Expedition Session 3

CAPT Arjun Srinivasan, MD
Medical Director, Get Smart for Healthcare
Division of Healthcare Quality Promotion
Centers for Disease Control and Prevention
A Challenge for Stewardship

Several years ago, people who were trying to implement stewardship noted that there were lots of ideas for interventions in the literature, but that they were not organized in a single place with any structure.

The CDC/IHI Driver Diagram partnership was an effort to address this gap.
Why the Driver Diagram Approach?

• IHI Driver Diagram approach understood and well liked by many administrators
  – Might help garner resources for stewardship
• Driver diagram methodology has been used successfully to affect practice change - translating ideas into practice
What Is a Driver Diagram?

A driver diagram is used to conceptualize an issue and determine its system components which will then create a pathway to get to a GOAL.

For antimicrobial stewardship, the GOAL is timely and appropriate antibiotic utilization in the acute care setting.
Driver Diagram Process

- Begin with a goal
- Determine the “primary drivers”
  - Highest level actions that lead to the goal
- Determine the “secondary drivers”
  - More detailed actions that will support the primary drivers
- Identify “change ideas”
  - Specific actions that will make the secondary drivers happen
Driver Diagram Process

- Began with reviews of the literature and discussions with many experts to identify the drivers and the change ideas.
- Good agreement on what the drivers and change ideas were.
- Agreement that leadership and culture were critical to success and had to underlie all efforts.
- Agreement that antibiotic prescribing and delivery is a really complex process.
Primary Drivers

1. Timely and appropriate initiation of antibiotics
2. Appropriate administration and de-escalation
3. Data monitoring, transparency, and stewardship infrastructure
4. Availability of expertise at the point of care
Timely and Appropriate Initiation of Antibiotics

- Promptly identify patients who need antibiotics
- Obtain cultures prior to starting antibiotics (when appropriate)
- Do not give antibiotics with overlapping activity or combinations not supported by evidence or guidelines
Timely and Appropriate Initiation of Antibiotics

- Determine antibiotic allergies
- Consider local susceptibility patterns in selecting therapy
- Start treatment promptly
- Specify duration of therapy
Appropriate Administration and De-escalation

- Make antibiotics and start dates visible at point of care
- Give the right dose and intervals
- Stop or change therapy promptly based on culture results
- Review and adjust antibiotics at all transitions of care and for any change in patient condition
- Monitor for toxicity
Data Monitoring, Transparency, and Stewardship Infrastructure

- Monitor, feedback and make visible data on antibiotic use, resistance, adverse drug events, C. difficile, cost and adherence to recommendations.
Availability of Expertise at the Point of Care

- Develop and make available expertise in antibiotic use
- Ensure expertise is available at the point of care
Antibiotic Stewardship Driver Diagram

Primary Drivers

- Timely and appropriate initiation of antibiotics

Secondary Drivers

- Decreased incidence of antibiotic-related adverse drug events (ADEs)
- Decreased prevalence of antibiotic resistant healthcare-associated pathogens
- Decreased incidence of healthcare-associated *C. difficile* infection
- Decreased pharmacy cost for antibiotics

- Appropriate administration and de-escalation

- Data monitoring, transparency, and stewardship infrastructure

- Availability of expertise at the point of care

Leadership and Culture
Pilot Testing
October 2011 - June 2012

- Facilities asked to test the feasibility of at least one intervention in each of two drivers
- Goal was to ensure feasibility in any setting

Centerpoint Medical Center, Independence, MO
Community Hospital, Tallassee, AL
Rogue Valley Medical Center, Medford, OR
Seton Medical Center, Austin, TX
St. Francis Medical Center, Peoria, IL
The Reading Hospital & Medical Center, West Reading, PA
UCLA, Los Angeles, CA
Wellstar Cobb Hospital, Austel, GA
Driver Diagram Pilot Testing

- Pilot sites selected to represent the broad spectrum of hospitals: academic, non-academic, large, small, with and without existing stewardship efforts, with and without ID physicians and pharmacists.
- Driver diagram was edited based on feedback from participating facilities.
- Current version now available on CDC Get Smart for Healthcare Website.
Driver Diagram- What’s Next?

• We need to continue to revise it based on feedback
  – It should be a dynamic document
• We’d like to continue to expand the change ideas
  – What are new interventions that people find useful and effective
Scott A. Flanders, MD, MHM, is a Professor in the Division of General Internal Medicine at the University of Michigan, where he serves as Associate Division Chief of General Medicine for Inpatient Programs and Associate Director of Inpatient Programs for the Department of Internal Medicine. Dr. Flanders was a founding member of the Board of Directors of the Society of Hospital Medicine (SHM) and is a Past-President of SHM. In addition to these activities, Dr. Flanders has been active in quality improvement and patient safety at the University of Michigan. His research interests include hospitalists, hospital-acquired conditions and their prevention, dissemination of patient safety and quality improvement practices, and the diagnosis and treatment of lower respiratory infections.
Jeffrey M. Rohde, M.D.

Jeff Rohde, MD, is currently an Assistant Professor in the Division of General Internal Medicine at the University of Michigan, where he serves as Medical Director for the 7A general medicine/telemetry inpatient unit, General Medicine Quality Committee Chair and is an active hospitalist. In addition to these activities, Dr. Rohde has been active in quality improvement and enhancing transitions of care. His research interests include transfusion medicine, hospitalists, health-care associated diseases and their prevention, and quality improvement practices.
Keys Learning Across Pilot Hospitals

Introduction to Hospitalist-led Interventions at University of Michigan

Scott Flanders MD
and
Jeff Rohde MD
Pilot Testing: Lessons Learned

After 8 hospitals tested countless interventions……..

- Driver diagram is very useful
  - Some change ideas are harder to implement than others
  - Barriers WILL BE encountered

- You need a “team” to drive the work
  - Does not need to be big! (but > 1)

- Testing: one physician (provider) champion / pharmacy

- Start small (VERY SMALL) with a coalition of the willing

- Pilot simple interventions
  - UTI treatment guideline
  - Don’t treat asymptomatic bacteriuria; UTI-appropriate duration
Incorporating Stewardship practices into Hospitalists’ workflow

- Documentation/visibility at the point of care
  - Drug and indication
  - Day of therapy and expected duration

- Appropriate length of treatment
  - Easy access to guidelines
  - UTI, pneumonia, skin and soft tissue infections

- 72 hour antibiotic time out
  - Right diagnosis
  - Right drug
  - Right dose and duration
Build Changes into the Process of Care

- Utilize hand-offs / service sign-outs / discharge templates
- Multidisciplinary rounds
- Checklists
- CPOE solutions
- Engage the team
  - Nursing, PAs, Clinical assistants, Pharmacy
- If it ain’t easy to do it ain’t gonna happen reliably
Target Effective Hospitalist Programs

Hospitalist Focused Interventions

- Emory John’s Creek, GA
- Reading Hospital, PA
- Spectrum Health, MI
- Northshore University, NJ
- University of Michigan, MI
Some Planned Interventions

● UM
  - Use d/c planning rounds to prompt antibiotic discussion
  - Build abx into sign out
  - 48-72 hr “timeout” M,W,F with pharmacist

● Emory Johns Creek
  - Establish CAP treatment duration consensus
  - Build CAP expected treatment duration into notes / sign out

● Northshore University
  - Unit based pharmacists; 72 prompt for abx timeout (form in chart)

● Spectrum, MI
  - Education re duration / 72 hr timeout
Early Lessons / Challenges

- Physician and Chart Surveys
  - Indication documented much more often than expected duration
  - Indication, day of therapy, and expected duration = about 0%
  - “I do this well, but my colleagues do not”
  - “We do not have guidelines to help us”

- Expected duration is problematic
  - Local guidelines do not address this or are vague (3-21 days)
  - Provider variability
  - Waiting for tests / consultants
  - The clinical course will dictate duration
  - Fear of discontinuation too early
UMHS (4 Hospitals) 45,429 discharges in 2013
University Hospital 604 beds
General Medicine Service ~20,000 discharges per year
General Medicine at UMHS

- Resident Service
- Non-resident service
  - Daily census 80 – 110 patients
  - Daily admits 20 – 30 patients
  - 9 General Teams and 1 Renal Transplant Team
Initial Plan of Action

- Documentation/visibility at the point of care
  - Assess current state
  - Small test of change

- 72 hour antibiotic time out
  - Assess current state
  - Small test of change

- Appropriate length of treatment
  - Assess current state
  - Small test of change
Reviewed medical records for all patients on Hospitalist service on a single day to assess for antibiotic documentation

- 48/97 (49%) patients were on antibiotics
  - 46/48 (96%) documented the indication for antibiotics
  - 9/48 (19%) documented the starting date or day of treatment
  - 9/48 (19%) documented the expected duration
  - 2/48 (4%) documented all three of the above components
  - 11/48 (23%) had an ID consult following
Documented/Visibility at Point of Care
Small Test of Change

- Approached 3 hospitalists during 1 week of service on non-resident service
  - Document in Daily Progress Note and Service Sign-out
    - Antibiotic with indication
    - Day of therapy
    - Expected duration

- Barriers:
  - Difficult to remember to do
  - Duration is difficult to determine
  - What’s in it for me?
72 Hour Antibiotic Timeout
Assess Current State

2 Episodes of MultiDisc Rounds

AM
Clinical Assistants
RN Discharge Planners
Social Workers

PM
Staff Pharmacists
72 Hour Antibiotic Timeout
Small Test of Change

- AM rounds with DCP, SW and Clinical Assistants
- Engaged Clinical Assistants
  - Inquire about antibiotics
    - Right Drug
    - Right Diagnosis
    - Right Duration

- Barriers:
  - CAs uncomfortable
  - could not assess accuracy
  - Hospitalists no access to EMR
Appropriate Length of Treatment
Assess Current State

GUIDELINES FOR TREATMENT OF URINARY INFECTIONS

<table>
<thead>
<tr>
<th>Clinical Setting</th>
<th>Empiric Therapy (should take into account recent previous cultures)</th>
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<tbody>
<tr>
<td>Asymptomatic Bacteriuria</td>
<td>In most circumstances, treatment of asymptomatic bacteriuria is not required. Symptom-based screening may not be reliable in the following circumstances: patient with complex urinary anatomy (urological tubes, urinary tract stents, urinary diversion surgery, admitted to ICU, neutropenia. Use clinical judgment in these populations. Treatment is recommended in the following circumstances: pregnancy, prior to urologic procedures, and in some renal transplant recipients.</td>
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PREGNANCY
Nefurofurazon 100 mg po BID (contraindicated if CrCl 30-<50 ml/min)
- OR - Ceftriaxone 500 mg po QID OR Fosfomycin 3 gm po once (contraindicated if CrCl 30-<40 ml/min)

Uncomplicated Cystitis
(Non-pregnant female without obstruction, catheters, flank pain, or convoluted conditions except well-controlled diabetes mellitus)

Preferred
TMP/SMX® 1 DS tab po BID OR Nitrofurantoin 100 mg po BID (contraindicated if CrCl 30-<50 ml/min)
- OR - Fosfomycin 3 gm po once (contraindicated if CrCl 30-<40 ml/min) OR Ceftriaxone 500 mg po BID OR

RESTRICTED ANTIMICROBIAL CRITERIA

The use of the following anti-infective agents is restricted at UMHS to the following indications:

<table>
<thead>
<tr>
<th>Restricted Med</th>
<th>Approved Reasons for Use</th>
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<tbody>
<tr>
<td>Aminopenicillin</td>
<td>- Allergy to B-lactams</td>
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<tr>
<td>- Pathogens resistant to other antimicrobials</td>
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</tbody>
</table>
- Exacerbation of pneumonia in patients with cystic fibrosis
- Treatment of nosocomial infections in patients with intolerance to or documented resistance to alternative agents
- Surgical prophylaxis for heart and lung transplant recipients
- Documented or suspected meningitis due to *Pseudomonas* spp
| Cefazolin | - Alternative to Cefepine for the treatment of infections in neonates |
- Exacerbation of pneumonia in patients with cystic fibrosis for organisms resistant to Cefepime
- Pediatric cystic fibrosis patients with anticipated stays < 4 days
| Ceftriaxone | - Treatment of complicated skin and soft tissue infections with suspected or confirmed MRSA in patients with vancomycin intolerance or with a vancomycin non-susceptible isolate. |
- Treatment alternative for documented polymicrobial skin and soft tissue infections with MRSA and ceftriaxone-susceptible gram-negative microorganisms (s).
| Ciprofloxacin | - Documented multi-drug resistant UTIs |
- Empiric double-coverage of HCAP in patients intolerant to amoxicillin/ clavulanate for 72 hours
- Prostatitis
- *Neisseria meningitidis* prophylaxis
- Treatment of intra-abdominal infections in combination with metronidazole in pts with severe penicillin allergy
| *CMV-IgG* | - Documented CMV pneumonitis in combination with antiviral agent against CMV |
- Severe life-threatening or progressive end-organ disease in combination with antiviral agent against CMV
- Consider in BMT patients if persistent or increasing CMV viremia after 21 days of ganciclovir or foscarnet in patients without end-organ disease
- Prophylaxis in recipients – cidofovir + lung transplant patients
| *Daptomycin* | - Documented MRSA or MRSE with documented allergy to vancomycin |
- *Bacillus cereus* endocarditis
- Documented MRSA/MRSE with failure to clear blood cultures after 7 days despite vancomycin troughs 10-15 mg/L with vancomycin MIC 32 mg/L
- Documented vancomycin intermediate or resistant Staph aureus (MIC 16 and 2 mg/L)
- Documented VRE infections; or empirically for suspected VRE infections in patients receiving vancomycin with cultures demonstrating gram-positive cocci
- Documented VRE infections: exception – urinary tract infections that are susceptible to alternative agents such as, ampicillin, doxycycline, or nitrofurantoin, etc.
- Empiric therapy for ICU and/or transplant patients with gram + cocci in pairs/ chains from blood or other sterile sites
- Empiric therapy for patients with *E. faecium* from blood pending susceptibilities

Unacceptable uses for daptomycin:
- Pneumonia (due to inactivation of drug by lung surfactant)
Appropriate Length of Treatment
Small Test of Change

- Improve availability and usability of guidelines
- Attempt to make the recommended duration in guidelines more specific
  - Duration for Community Acquired PNA: 5-10 days
- Condensed guidelines for:
  - Skin and soft tissue infections
  - Pneumonias
  - UTI
  - C. difficle
Expedition Communications

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- To add colleagues, email us at info@ihi.org
- Pose questions, share resources, discuss barriers or successes
Next Session

Thursday, May 1st, 3:00 PM – 4:00 PM ET

Session 4 – Embedding Stewardship Processes into Care Delivery

Jeff Rohde, MD
Megan Mack, MD
University of Michigan