Antimicrobial Stewardship in Action: Prospective Audit and Feedback

Benjamin P Westley MD, FIDSA
Benjamin P Westley MD LLC
4120 Laurel St. Suite 204
Anchorage, AK 99507
Objectives

- Review the components of effective antimicrobial stewardship programs
- Define “Prospective Audit and Feedback”
- Discuss methods for identification of patients for feedback and methods of collecting and passing information to the treating team
- Discussion with each site on current components and future needs
Key Points

• “Hospital lack of access to an ID physician seen as THE major barrier to effective roll-out of antimicrobial stewardship (AMS) in general and acceptance of clinical recommendations in particular.”

• A basic “package” of knowledge encompasses the MAJORITY of AMS recommendations
  • What we do is VERY algorithmic and logical (Shhhh, Don’t Tell ANYONE!!!) AND it is EVIDENCE BASED

• This webinar series is intended to summarize that evidence

• Support from an ID specialist to validate pharmacist recommendations greatly increases acceptance
  • Intent to have PAMC provide access to AMS ID specialist in near future
Components of AMS

- Pre-authorization
  - Permission required to utilize certain drugs, e.g. carbapenems
  - Requires local ID expertise
- Formulary restriction
- Order-sets and pre-op guidelines
- P&T auto-change
  - Cipro->Levo
  - IV->PO
  - Dosing optimization
- Automatic 48h time-out
- Required indication on all inpatient abx orders
- Required duration of therapy on all orders
- Microbiology susceptibility reporting modifications
- Prospective audit and feedback
The basic “package” of AMS

- Intro to Prospective Audit and Feedback (today)
- Respiratory tract infections (Module 2)
  - CAP, HAP, HCAP, VAP
  - COPD exacerbation
  - Acute bronchitis
  - Aspiration events with and without pneumonia
- Skin and soft tissue infections (Module 3)
  - Purulent vs Non-purulent
  - Necrotizing infections
  - Diabetic foot infection
  - Soft tissue infections complicating IV drug abuse
The basic “package” of AMS

- Urinary tract infections (Module 4)
  - Cystitis
  - Pyelonephritis
  - Catheter-associated urinary tract infection (CAUTI)
  - Asymptomatic bacteriuria

- Intra-abdominal Infection (Module 5)
  - Appendicitis
  - Diverticulitis
  - Biliary infection
  - Peritonitis

- Fever/sepsis, neutropenia, osteoarticular infection, endocarditis (Module 6)
web/teleconferences (~45’ duration)

- Participating sites desiring ID input call in together

- Identifier-free presentations of cases
  - All sites can benefit from hearing about the issues and thought process regarding antibiotic optimization

- Sites rotate cases to allow everyone equal opportunity/access

- Over time, each site will grow more comfortable in their knowledge and recommendations, and gain credibility knowing there is ID “backup/oversight” of basic process
Module #1

Prospective Audit and Feedback: Basic Structure and Approach
Objectives for Module #1

- Patient-specific Data Gathering
  - What information is necessary to optimize antibiotic therapy?
  - How to collect and organize this data? How to present the data?

- A brief review of beta-lactam allergy
  - A critical and often over-looked detail with major impact to optimization of antibiotic therapy

- Communication of recommendations
  - Don’t ask, but don’t tell? Educational component, literature support
  - Progress note in the legal medical record?
Objectives for Module #1: Basic Structure and Approach to Audit/Feedback

- Intervention logging and data collection
  - What data to collect
  - How to categorize interventions
  - How to organize or store interventions
Two “Critical” Moments in Audit and Feedback

1. As soon as possible after antibiotic initiation
   • What is the indication?
   • Is the proposed regimen optimal for presumed diagnosis, renal function, allergies, prior microbiology?
   • Has appropriate culture data been requested?

2. 48 – 72 hours after initiation of antibiotic
   • AKA: “The Antibiotic Time-out”
   • Microbiology reports are returning. The regimen can almost always be narrowed or otherwise improved.
   • Has patient adequately responded? Has diagnosis changed? Perhaps antibiotics are no longer indicated at all!
The “Holy Grail” of Antimicrobial Stewardship

- Administer the FEWEST antibiotics for the SHORTEST duration required to OPTIMIZE outcome utilizing the NARROWEST spectrum and LEAST TOXIC regimen available in the most COST EFFECTIVE manner possible
The “Holy Grail” of Antimicrobial Stewardship
Basic Principles to Live By

- If 1 drug is adequate, don’t use 2!
  - Evidence-based indications for combination therapy are very limited

- If 2 regimens are equally effective, use the cheaper or least toxic (and usually the cheaper IS the least toxic)!

- Don’t treat for 10 or 14 days if 3 or 5 are adequate!

- Except for several notable exceptions, give drugs orally unless there is no functional GI tract.
PAMC Quarterly DOT/1000 Patient Days (Selected Versus Other)

- Selected Antimicrobials
## Ways to identify patients for antibiotic audit

- **Targeted antimicrobials**
  - Broad spectrum
  - Expensive
  - C-diff-o-genic
  - Misused
  - Toxic

- **Unnecessary combinations**
  - Double-anaerobic coverage
  - Overlapping gram-positive or gram-negative activity

- **Disease states**
  - Staphylococcal bacteremia
  - *C. difficile*

- **Duration of therapy**
  - >48h of >1 abx
  - >3 days of macrolide therapy

- **Bug-drug mismatch**

- **IV to PO interchange**

- **Formulary/therapeutic interchange**

- **Pharmacokinetics needs**
  - Vancomycin
  - Aminoglycosides
  - Most beta-lactams
Patient-specific Data Gathering

- **Who is the patient?**
  - Age, medical background, date of admission and why admitted
  - Any prior antibiotics/hospitalizations in last 90 days or recent infections
  - Antibiotic allergies

- **Antibiotic data and response**
  - Antibiotic start date and regimen, indication for abx
  - Clinical course since admission
  - Culture data currently or previously available
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Brief comment on beta-lactam allergy

• ~9% of patients have a stated “allergy” to penicillin
  • However, 90% of these patients can tolerate PCN and are inappropriately labeled as allergic
  • Nausea, headache etc. are NOT allergies and DO NOT preclude use

• Delayed-onset reaction (>1h) after initial dosing is NOT contraindication to use of different beta-lactam class
  • E.g. If rash on day 2 of amoxicillin, it is OK to use cefazolin
  • Do not challenge if IMMEDIATE reaction (presumed IgE mediated) or SEVERE reaction (such as Stevens Johnson Syndrome)

• The medical record rarely documents allergy reaction with required detail. ASK THE PATIENT AND DOCUMENT IT!
Tips for passing recommendations to physicians

- Doctors are busy and think they know everything
  - Trust me, I should know, I’m a doctor!

- Doctors are all different
  - Some use pagers
  - Lots of them like text messages
  - Some prefer sticky notes in the EMR or paper chart

- How we do it at my hospitals?
  - Depends on the doctor!!
  - We keep a spreadsheet with contact info, preferred manner for passing recommendations
  - At PAMC we audited acceptance rate by method of notification! It made a difference!!
Suggestions for discussion with the physician

- Explain your role... not just “the pharmacist” but “the pharmacist for local antibiotic stewardship program”

- Explain the program and what it does

- Confirm/determine preferred method of contact going forward
  - For non-urgent issues and patient not yet seen by MD, a “sticky note” function in EMR can be effective
  - Pager or cell phone call?
  - Text? If using text, options are:
    - Do NOT include HIPAA protected data
    - Use secure texting app (e.g. Tiger text, pMD)

- If you’re at a small hospital- Go find them in person!!
HIPAA COMPLIANT SECURE TEXT MESSAGING

HIPAA-compliant secure text messaging is an essential communication tool for health care providers who deal with the most critical patients each day. HIPAA regulations indicate that it is illegal to use SMS text messaging or unencrypted email to exchange sensitive patient information, adding complexities around provider communication.

pMD HIPAA Compliant Secure Text Messaging Services:

**HIPAA Compliant Text Messaging App**

pMD’s secure text messaging system is HIPAA-compliant and allows you to send and receive sensitive patient information securely and in real-time. The HIPAA compliant text messaging app is easy to use and functions similarly to a traditional text message but is secure and

**Secure Group Messaging**

pMD Messaging supports group conversations among the users on your contact list. You can keep everyone in the loop on patient care with a single HIPAA compliant text message.
Suggestions for discussion with the physician

- Verify pertinent data from review
  - “It looks like so-and-so is being treated for community acquired pneumonia and has GPC chains on his sputum gram stain”

- Suggest your change confidently and know WHY and be able to support it with LITERATURE if desired

- Offer to put the provider in touch with an ID expert if they would like further explanation or guidance

- Recommendations may or may not be accepted
  - In our programs we aim for low-90s% acceptance rate
Intervention logging/data collection

- Most EMR include a mechanism for recording pharmacy interventions
  - Data can be exported to excel to generate reports/tables etc
  - Cost savings calculations may be built into some systems
- Home-built database can be as powerful as the above or perform as an adjunct
- **IT IS ABSOLUTELY CRITICAL TO LOG EACH INTERVENTION PERFORMED, ACCEPTED OR NOT**
PAMC Intervention Data Collection

- Date of intervention
- MRN
- Associated drugs
- Abx indication
- Brief summary
  - Case info, what drug regimen and what changed to
- Method of MD contact
- Name of MD contacted
- Physician service (ICU, hospitalist, Ortho etc)
- Accepted/Declined/Auto substitution
## Intervention Type Codes

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<tr>
<td>IV to PO</td>
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<td>Allergy clarification</td>
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<tr>
<td>Dose per pharmacy</td>
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<tr>
<td>- Aminoglycoside, vancomycin, voriconazole, other</td>
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<td>Drug information given</td>
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<td>Renal dose change</td>
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Open discussion

Round table discussion with each site:

- What program components are in place at your facility?
- How are patients identified for review?
- Who provides recommendations, and how?
- What limitations are greatest at your site?
- Any wishes for assistance that would improve performance?
References

- Doherty/Wilkerson ANMC 2013
- Legendre D. Clinical Infectious Diseases 2014;58:1140–8
- Kula B. Clinical Infectious Diseases 2014;59:1113–22
- Clinical Infectious Diseases 2016; 62: 51-77