Introducing Stewardship to Your Institution

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Objectives

• Identify the rationale for implementing an antimicrobial stewardship program (ASP)
• Describe the "challenges" to implementing an ASP
• Identify approaches that can be used to implement a stewardship program
• Discuss how stewardship programs can be successful with limited resources
• Identify resources available to assist with implementing an ASP

Audience Demographics

Another way to think of implementing stewardship programs in a resource challenged hospital

What Is A Resource Challenged Hospital?

• Stewardship survey
• Conducted in July 2009
• Survey of 97 hospitals nationwide

<table>
<thead>
<tr>
<th>Average Daily Census</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero to 50</td>
<td>31%</td>
</tr>
<tr>
<td>51-100</td>
<td>19%</td>
</tr>
<tr>
<td>101-200</td>
<td>29%</td>
</tr>
<tr>
<td>&gt;201</td>
<td>21%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

Community Hospital Survey

Survey - Hospital Type

- 62% Community based
- 26% Community based with medical training programs
- 5% Teaching or academic medical center
- 3% Behavioral Health, Psychiatric or other mental health
- 2% Rehabilitation or Long Term Care
- 2% Other, please specify
Professionals Dedicated to Program

ID Physician Resources

Which of the following provide an accurate description or the Infectious Disease physician resources available at your hospital?

- We do not have ID physicians at our hospital. 42%
- Our ID physicians are in private practice and round on a consultative basis only. 47%
- Some or all of our ID physicians are employed full time by the hospital. 11%

Barriers to Stewardship

<table>
<thead>
<tr>
<th>What barriers do you perceive or have you experienced related to implementing a successful stewardship program?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack personnel</td>
</tr>
<tr>
<td>Need more training for staff in the area of Infectious Diseases or antibiotics</td>
</tr>
<tr>
<td>Infectious Disease physician support lacking</td>
</tr>
<tr>
<td>Other programs take priority</td>
</tr>
<tr>
<td>Lack defined/identified support in regard to infection control or back outcomes</td>
</tr>
<tr>
<td>Need support materials (e.g., tools) or guidance on how to implement a program</td>
</tr>
<tr>
<td>Hospital Administration support lacking</td>
</tr>
<tr>
<td>Comments</td>
</tr>
<tr>
<td>Microbiology support lacking</td>
</tr>
<tr>
<td>We are not interested in implementing a stewardship program at this time</td>
</tr>
<tr>
<td>None</td>
</tr>
</tbody>
</table>

What is the Definition of Stewardship?

Stewardship is defined as the careful and responsible management of something entrusted to one’s care.


Rationale for Implementing a Program

“The primary goal of antimicrobial stewardship is to optimize clinical outcomes while minimizing unintended consequences of antimicrobial use, including toxicity, the selection of pathogenic organisms (such as *Clostridium difficile*), and the emergence of resistance.”

IDSA/SHEA Stewardship Guidelines

**Definition:** J udicious use of antimicrobials in order to improve patient outcomes, control resistance and decrease healthcare expense. Achieved through:

- Education
- Guidelines
- Order Sets
- **Core Strategies**
  - Pre-authorization
  - Restriction
  - Prospective review
- CAP/HAP/VAP/HCAP/Surg
- **Phosphates**
- Renal dosing, kinetic
- optimization of pharmacodynamics
- Early conversion to PO
- De-escalation of therapy
- Intervention tracking, tool development

Stewardship ≠ Switching

Antibiotic Switching

<table>
<thead>
<tr>
<th>Hospital A</th>
<th>Hospital B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceftriaxone use ≥ 85%</td>
<td>Ceftriaxone use ≥ 85%</td>
</tr>
<tr>
<td>Ceftazidime use ≥ 95%</td>
<td>Ceftazidime use ≥ 95%</td>
</tr>
<tr>
<td>Amp-sulb ≥ 400%</td>
<td>Amp-sulb ≥ 24%</td>
</tr>
<tr>
<td>Quinolone use ≥ 148%</td>
<td>Quinolone use ≥ 207%</td>
</tr>
<tr>
<td>ESCBL ≥ 45% (p &lt; 0.001)</td>
<td>ESCBL ≥ 22% (p &lt; 0.36)</td>
</tr>
<tr>
<td>Amp-sulb resistance ≥ Klaas</td>
<td>Amp-sulb resistance ≥ Klaas</td>
</tr>
</tbody>
</table>

Patients more likely to live in LTCF and have a decubitus ulcer


The Landscape of Stewardship

- Stewardship has come into "vogue" more in the past few years
  - IDSA/SHEA guidelines
  - National Patient Safety Goal 7
    - 07.03.01 - Implement evidence-based practices to prevent health care-associated infections due to multidrug-resistant organisms in acute care organizations.
  - CMS "no pay" for select hospital acquired infections
  - CDC Guidelines for Prevention of MDROs
  - Fiscal challenges facing hospitals
  - State surveys
    - California
  - Consultant recommends as a way to save money

Why Stewardship, Why Now?


Antimicrobial Resistance

<table>
<thead>
<tr>
<th>Gram positive</th>
<th>Gram negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methicillin resistant Staphylococcus aureus (MRSA)</td>
<td>Acinetobacter baumannii (AB)</td>
</tr>
<tr>
<td>Vancomycin resistant Enterococcus (VRE)</td>
<td>Extended spectrum beta lactamases (ESBLs)</td>
</tr>
</tbody>
</table>

Anaerobes

- Bacteroides fragilis
- Klebsiella pneumoniae producing carbapenemases (KPCs)
- Multi-drug resistant Pseudomonas aeruginosa (MDR- PSA) – circa 2010
- Metallo-beta lactamases (MBLs)

Market Influences - Economics

- Antibiotics have a finite use period unlike chronic medications
- Return on investment not as high with antibiotics

Regulatory History

<table>
<thead>
<tr>
<th>Drug name</th>
<th>Company</th>
<th>Description</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iclaprim</td>
<td>Arpida</td>
<td>IV DHP inhibitor for CSSI</td>
<td>Denied 11/08 – sold to Aino Pharma</td>
</tr>
<tr>
<td>Oritavancin</td>
<td>Targanta</td>
<td>IV glycopeptide for CSSI</td>
<td>Denied 11/08 – sold to Medicines company</td>
</tr>
<tr>
<td>Dalbavancin</td>
<td>Pfizer</td>
<td>Once weekly anti-MRSA IV</td>
<td>Pfizer withdrew application</td>
</tr>
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Challenges

- Limited resources
  - Pharmacists
  - Pharmacists with proficiency in ID
  - IT support
  - ID physicians (at all)
  - ID physicians who want to dedicate time to your hospital when they go to 3 or 4 other hospitals
  - No funding to support any additional resources
- False expectations
- Groups do not talk to each other
- Lack of administrative support (C suite)

Real Life Scenario

- Requested to attend an “antibiotic stewardship meeting” at a large community hospital
- Resource wise: 3 ID physicians (private practice), one interested in stewardship, no ID pharmacist but 0.5 FTE clinical pharmacist
- Met in big fancy conference room. Meeting attendees included
  - Nursing: Chief Nursing Officer, Quality, Infection Preventionist
  - Pharmacy: Director of Pharmacy, Clinical Coordinator, clinical pharmacist
  - Medical Staff: ID physician
  - Microbiology: Director of Microbiology

Million Dollar Questions

- What objective (not subjective data) do you have that shows that there is an issue with inappropriate antibiotic use in your institution?
- How will you know (again objectively) if your program is successful?

Ten Steps to Implementing a Stewardship Program in a Resource Challenged Environment

Step 1 – Assess Program Motivations

- Analyze motivations for establishing a program
- What problems exist today that document the need for a stewardship program?
- Quantify the answer using objective data
- Remember – before you know where you are going, you need to know where you have been

The Wrong Answers

- To ONLY save money or because my CFO thought it would be a good idea.
- Because we (Administration) can’t control the physicians prescribing but we think Pharmacy can.
- I enter a lot of orders for antibiotics.
- There just seems to be a lot of antibiotic overuse.
- Antibiotic resistance is bad.
- Remember: If you are willing to accept anecdotal information up front to support your stewardship program, you have to be willing to accept anecdotal info from physicians about why they won’t change.
Program Impact

The Right Answers

- To employ cost effective, quality care in our institution.
- To create a multi-disciplinary program that will encourage appropriate antimicrobial use in our institution.
- Antibiotic utilization has increased by 17% in the last year.
- Our goal is to reduce this number to 5% growth for FY11.
- Based on a review of 100 general medical and surgical patients who received ≥ 3 antibiotics, only 30% of patients had therapy de-escalated after culture and susceptibility reports were returned.
  - Our goal is to improve this number to 60% by year end.

Steps 2 and 3

- Step 2 – Identify which of the defined problems or issues you plan to address with your stewardship program?
  - Rome wasn’t built in a day

- Step 3 - Define how will you measure your progress and measure your success.
  - Defined daily dose per 1000 patient days (DDD/ per 1000 pt days)
  - Days of therapy (DOT)
  - Cost per patient day or cost per adjusted patient day ($/PD or $ per APD)

Current Antibiotic Use Methodology

Measuring Antimicrobial Use

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDD/1000 patient days (grams/DDD per days/1000)</td>
<td>Allows for comparison among multiple facilities; does not require order level data</td>
<td>Discrepancies between DOT and DDD, not useful with pediatric data, can underestimate drugs that are renally dose adjusted, approved DDDs may change which can create confusion</td>
</tr>
<tr>
<td>Days of Therapy</td>
<td>Better measurement for pediatric data, not influenced by changes in recommended DDD or discrepancies between the DDD and the preferred daily dose</td>
<td>Will overestimate use for drugs that are given in multiple doses per day, more difficult to measure without computerized pharmacy records</td>
</tr>
<tr>
<td>Cost based methodologies</td>
<td>Easiest to obtain</td>
<td>Loses accuracy as price changes increase or decrease significantly</td>
</tr>
</tbody>
</table>

Clinical Infectious Diseases 2007; 44 664–70

Step 4 – Define Implementation

- How will the day to day activities of the ASP be set up?
- Who will perform the streamlining functions?
- Which personnel are assigned to the program (based on hours per week)?
- Most hospitals are more successful in implementing the stewardship program in stages vs. all at once.
  - “Culture of the month”
  - Use “culture of the month” principles
  - First month only do bug-drug matching on urine cultures, then blood cultures, etc.
Step 5 – Identify Physician Champion

- If interventions need to occur to change prescribing practices, identify a physician champion or physician groups that will agree to have “peer to peer” discussions with outlying physicians.
- Ideally it is nice if this includes an ID physician but this individual may not always be available or willing to engage in this responsibility. Other advocates may include hospitalists, ER physicians, or Intensivists.

Physician Compensation

- Paying physicians for their services
  - Our own internal survey has shown rates to be much lower and depends on area of the country
  - Some hospitals pay per hour, some give an annual stipend (e.g. $10,000/yr) or % of costs saved

Step 6 – Identify Additional Resources

- Assess resources that are available (personnel and tools)
  - Personnel
    - The most successful programs are inter-disciplinary
    - Don’t forget to include nursing and case management
    - Pharmacy technicians can be helpful
  - Tools perspective
    - Make friends with your hospital IT department
    - Intervention tracking
    - Other systems within the hospital
      - For example, look at Infection Control tools available
    - Maximize technology

Step 6 – Identify Additional Resources

- Pharmacists education
  - Home grown
  - Commercial products
  - MADID
  - Society of Infectious Diseases Pharmacists
  - State pharmacy societies (e.g. New York, Maine, South Carolina)
- Medical education
- Basic bugs and drugs
  - Nursing
  - Microbiology (obviously more drugs than bugs)

Step 7 – Influence of External Factors

- Poor or no specimen obtainment processes
- Poor testing practices in microbiology
- Inappropriate infection control programs
- Look outside the walls of the pharmacy and assess these other areas

Step 8 – Establish Frequency of Monitoring

- Set up a scorecard with key metrics
- Establish the frequency of tracking and reporting this data
- Identify who is collecting antibiotic or infectious disease related information within the facility.
  - Infection preventionists are often meticulous at collecting data related to hospital acquired infections, C. difficile rates, etc.
  - Microbiology may also be monitoring issues such as blood culture contamination rates, which if increased, could affect the utilization of certain antibiotics.
Step 9 – Establish Reporting

• If resources are available, consider developing an antimicrobial stewardship committee to review activities associated with antibiotic use or stewardship.

• If not, the P&T committee or infection control committee can be a second option.

Step 10 – Market the Program

• Advertise the program before it starts and clearly communicate that this is not just a cost issue.

• Continue to advertise or communicate the results in newsletters or unique communiqués.

• Recognize the successes and acknowledge those individuals who contributed to the success of the program.

Real Life Scenario

• What they did right
  – Convened major stakeholders
  – Began dialogue during meeting about potential collateral areas of benefit for looking at antibiotic use

• Areas for improvement
  – Gather data ahead of time
  – Establish goals prior to the meeting so that these stakeholders can review
  – Don’t make changes until you measure the baseline
  – Pull in data from all departments, not just pharmacy

• Avoid using drug costs as the ONLY measurement for stewardship success

Stewardship Resources

On the Web

• Society of Infectious Diseases Pharmacists
  – Stewardship program estimated Fall 2010
  – www.sidip.org

• ASHP Stewardship Initiative
  – http://onlinewebsuite.ashpadvantage.com/stewardship/

• Johns Hopkins Antibiotic Guide
  – http://www.hopkins-atriaguide.org/

• Nebraska Medical Center ASP Homepage

• University of Kentucky – Chandler Medical Center
  – http://www.hop.uky.edu/pharmacy/amr/default.html

• KU Medical Center Antibiotic Homepage
  – http://www2.kumo.edu/pharmacy/AbbUseGuide/Table%20of%20Cont
  ent.htm

In Print

• Antimicrobial stewardship: concepts and strategies in the 21st century (Diagnostic Microbiology and Infectious Disease 61 (2008) 110–128)

• Antimicrobial Stewardship Programs: Interventions and Associated Outcomes (Expert Rev Anti Infect Ther. 2008;6(2):209-222)

Follow Up Actions

Poll: Which of the following actions will you...

Closing Thoughts

- "Don’t let the better get in the way of the good" (Voltaire)
- “Don’t let perfection stand in the way of progress”

Conclusions

- There are multiple rationales for implementing an antimicrobial stewardship program (ASP)
- Challenges to implementing an ASP abound
- There are several strategies that can be used to implement a stewardship program
- With some innovation, programs can be successful with limited resources
- There are an increasing number of resources available to assist with implementing an ASP

Thank You

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