From Resident to Ready: Expanding Clinical Services in a Community Hospital through Antimicrobial Stewardship
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Pharmacist Objectives
- Explain the need for a Pharmacist-Driven Antimicrobial Stewardship in a Community Hospital Setting
- Describe the Process of Position Approval at the Executive Level
- Discuss a New Stewardship Program's Successes and Mishaps

Technician Objective
- Recognize the Ability of a Certified Pharmacy Technician to Impact Antimicrobial Stewardship

I have no disclosures or conflicts of interest

From Resident to Ready
PharmD 2013
PGY-1 SWG
ED Discharge Order Entry
Begin Abx Stewardship Certification
Antimicrobial Stewardship Pharmacist

Explain the need for a Pharmacist-Driven Antimicrobial Stewardship in a Community Hospital Setting
Southwest General

- Non-profit community hospital
- No medical residents
- 350-bed
  - Average census of 250 patients
- 6.1 FTE Clinical Pharmacists
  - (3.0 ICU, 2.1 ED, 1.0 ID)
- 2 PGY-1 Residents
- Decentralized model
- Cerner EHR

Antimicrobial Stewardship

Prior to a dedicated Abx Stewardship Pharmacist,
- Pharmacist responsibilities
  - IV to PO
  - Automatic stop orders
  - Aminoglycoside dosing
  - Vancomycin dosing for non-ID physicians
  - Renal adjustments at point of order entry
  - Restricted antibiotic list (minimally enforced)
- Minimal surveillance of house wide antimicrobials
- Minimal interaction with infection control

Why Do We Need Stewardship?

- Rising antimicrobial resistance and multi-drug resistant organisms (MDRO)
  - Reduced drug therapy options
  - "Bad bugs no drugs"
- Increased health care cost and length of stay
- Risk of adverse drug reactions
- Joint Commission National Patient Safety Goal 7

Why Do We Need Stewardship?

How is your facility promoting antimicrobial stewardship?

- CMS, CDC draft worksheet for accreditation by JC
- Quality measures
  - C.2.a 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.
  - C.2.b 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, evidenced based guidelines and recommendations)
  - C.2.c Antibiotic orders include an indication for use.
  - C.2.d There is a mechanism in place to prompt clinicians to review antibiotic courses of therapy after 72 hours of treatment.
  - C.2.e The facility has a system in place to identify patients currently receiving intravenous antibiotics who might be eligible to receive oral treatment.

We must be proactive!

Barriers to Stewardship

- Physician participation and cooperation
- No formal mechanism of data collection
- Lack of resources
- Insufficient funds
- Not a priority

Pharmacist-Driven

- Stewardship is considered a medical staff function
- Community setting
  - No formal rounds
  - 3 ID groups
    - Pharmacist able to be a part of all ID services which allows for all hospitalized patients to be monitored
    - In a teaching center, may have ID team for patient instead of 1 physician
    - More eyes on the patient!
- Link between infection control, physician, quality
  - Pharmacist satisfies all quality measures of JC accreditation
- Experts in medication therapy and kinetics
  - "Ten by 2020"
Describe the Process of Position Approval at the Executive Level

1. Leadership support
2. Examine your facilities antimicrobial use
3. Business proposal
4. Form the team!
5. Advertise service
6. Expand stewardship scope
7. Incorporate all pharmacists into antimicrobial stewardship
8. Incorporate all health care professionals into antimicrobial stewardship

Research, education, and professional development for ID PharmD

Developing the ASP Pharmacist
- Site visits to local established programs
- Contact CDC program ID pharmacists
  - See Appendix 1
- Time with microbiology lab
- Antimicrobial Stewardship certification
- Subscription to Clinical Infectious Diseases or other pertinent ID journals
  - Electronic "Table of Contents"
- Take on residents and students
- ACCP ID Prn
- Resources
  - See Appendix 2

Stewardship Mission
- Improve patient safety
- Optimize clinical outcomes
- Reduce inappropriate and excessive use of antimicrobials at Southwest General
- Reduce hospital-acquired infections
- Reduce health-care costs

Antimicrobial Use
- Data extrapolated from 3 months of antimicrobial stewardship interventions
  - Found that up to 43% of antimicrobials associated with hospital-acquired infections were inappropriate
  - Length of therapy
  - Missed opportunities for testing
  - Spectrum not narrowed with culture results and/or clinical improvements
  - Multiple antibiotics
  - No indication stated or noninfectious
  - Antibiotics prior to admission not taken into account

The Proposal
- Budgeted replacement request for 1.0 FTE
- Focus on antimicrobial stewardship measures while expanding clinical services
- Promote the appropriate selection, dosing, route, and duration of therapy of antimicrobials in the most effective and cost conscious fashion
- Cost savings
Project Scope

- Review house wide antimicrobial use daily
- Assume responsibility for all automatic stop orders
- Develop/Update criteria for use of all restricted antimicrobials
- Review requests for additions to formulary
- Recommend prescription filling of antimicrobials at SWG Community Pharmacy
- Staff education

Other Responsibilities

- Lead Antimicrobial Stewardship Committee
- Report to P&T Committee
- Monthly review of hospital-acquired infection cases
- Publish annual antibiogram
- ED culture review
- Expand clinic services

Tracking Interventions

- De-escalation
- Discontinue
- Dose optimization
- Formulary substitution
- Monitoring
- Renal dosing
- Rx filled in community pharmacy
- Culture/sensitivity substitution
- Drug therapy initiated
- Drug information provided
- IV to PO conversion
- Drug level ordered
- Contraindication
- Automatic stop order change
- Other metrics
  - Interventions reported as “cost avoidance”
  - Physician acceptance rate
  - Antibiotic purchases cumulative report
  - Days of therapy or total daily dose
  - Restricted antimicrobial usage per physician
  - Revenue to community pharmacy

Stewardship Team

- ID physician
- Clinical pharmacist with ID training
- Clinical microbiologist
- IT specialist
- Infection control professional
- Hospital epidemiologist

Getting the Word Out

- Area of improvement
- Word of mouth
- Column in pharmacy newsletter
- Physician grand rounds
- Start interventions with “I am the Antimicrobial Stewardship Pharmacist” or the “Antimicrobial Stewardship Team”

Expansion

- Education without intervention only marginally effective
  - Developed an “Antimicrobial Stewardship Intervention” electronic power form
- Patient education
- Letter to physicians
- Persistence
Incorporating Pharmacists

- Guidelines and pathways
  - Evidence based treatment guidelines
  - Local resistance patterns
  - Restricted antibiotics and approved indications
  - Renal dosing with specifics for dialysis
  - Alternate recommendations in shortage
  - Spectrum covered by antibiotics
  - Basic ‘bugs and drugs’
  - Surgical prophylaxis
- Alerts/Popups
  - G/Ci
  - Length of therapy
  - Restricted
- Communication
- Feedback

House-wide ASP

- Nurses play an important role in stewardship
  - “Intercept” or question restricted antibiotics ordered by non-ID physician
  - Communicate days of therapy to physician
  - Interpret cultures and sensitivities
  - Evaluate discharge antibiotics
  - Communicate goals of therapy
- Long-term goal
  - ASP pocket guide
  - Antibiogram
  - Antimicrobial classes and spectrum of coverage
  - Clinical guidelines and pathways
  - Renal adjustments

Discuss a New Stewardship Program’s Successes and Mishaps

Daily Tasks and Reports

- Print/Review necessary reports
  - Restricted
  - Automatic Stop Order (ASO)
  - House-wide
  - IV to PO
  - Fast movers
- Duration of therapy
- 3 Antimicrobial agents
- Vancomycin

Expansion Plans

- Retrospective → Prospective
- Reports
  - Renal dosing
  - Sepsis alerts
  - Length of stay
  - Surveillance
  - Prescriber habits
  - ASO to 72 hours
  - IC Nurse/floor
- Order sets
- CDAD
- Endo procedures
- Further advertising position
- Pharmacy newsletter
- Grand rounds
- Develop computer-based training for pharmacists and hospital staff

Daily check in
- Review Infection Control
  - Drug-bug mismatches
- Cultures
  - Urine
  - Blood
  - Wound
  - Sputum
- Vancomycin monitoring and dosing

All interventions are logged daily as Accepted, Modified, Denied, or Other
Incorporating Residents into ASP

- Currently a longitudinal rotation
  - 4 hours/week of antimicrobial stewardship
- Patient discussions weekly
- Topic discussion with case presentation bimonthly
- Interesting cases are sent to residents to review for weekly stewardship discussion

See Appendix 3 for discussion topics

Challenges

- Electronic records
- New program
- Training
- Prescriber resistance
- Baseline for comparison
- Tracking usage
- Discharge antibiotics

Importance of Pharmacy Technicians

- Medication history
- Allergies
- "Front lines" of drug requests, IV room, phone calls
  - Experts of compounding
  - Frequencies
  - Dosage forms
- Purchase data from buyer
  - Shortages
  - Price changes
  - Total expenditure

Recognize the Ability of a Certified Pharmacy Technician to Impact Antimicrobial Stewardship

Potential Problems

- Lack of knowledge with restricted antibiotics
- IV batch for 0900 is made by third shift which allows for restricted doses to be sent to the floor
- "Where is my patient’s IV?"

Possible Solutions

- List restricted antibiotics in easy access area
- Most restricted abx must be activated or opened at SWG
  - Ensure abx are not activated until dose is needed
- Provide a “refrigerated vs unrefrigerated” abx list for CPhT and nurses on the floor

COMMUNICATION!

Closing Thoughts

- Assess hospital needs
- Start small, plan big
- Track all interventions
- Use your resources
Appendix 1 - Questions for ASP

- What are you daily reports?
- How did you advertise your service?
- How many days and where do you round? With who? Do you rotate floors?
- What do you do on weekends?
- Would you classify your program as prospective or retrospective?
- What metrics do you report to P&T, Abx committee?
- What 3 areas should I focus on starting the program?
- How do you train your residents/APPE/IPPE students prior to taking an Infectious Disease rotation? Do you require them to read any specific articles/guidelines? If so, what?
- What conferences are you do think you are beneficial for me to attend as an ASP?
- How long has it taken to develop your program into what it is today?

Appendix 2 - Helpful Websites

CDC Stewardship Program examples
http://www.cdc.gov/getsmart/healthcare/programs.html

Antimicrobial Stewardship Certifications
SIDP: http://www.sidp.org/page-1448628
MAD-ID: http://mad-id.org/antimicrobial/stewardship-programs/

SHEA website
http://www.shea-online.org/news/stewardship.cfm

Appendix 3 - Discussion Topics

Required Topics
- Pneumonia
- Ventilator Associated
- Community Acquired
- Nosocomial
- Appendicitis
- Urinary Tract Infections
- C.difficile-associated Diarrhea
- Cellulitis and Soft Tissue Infections
- Endocarditis
- Resistant Pathogens
- MRSA
- VRE
- CRE
- Pseudomonas
- Acinetobacter
- Sepsis
- Antimicrobial Use during Pregnancy & Lactation

Elective Topics
- HIV Infection
- Human and Animal Bite Wounds
- Septic Neutropenias
- Antibiotics in Specific Populations
- Pneumonia
- Neutropenias
- Osteomyelitis
- Fungal Infections
- Hepatitis B, C
- Seldom-Used Antibiotics
- STIs

Questions?

References