

Antibiotic Stewardship: The Role of the Decentralized Pharmacist

Presented by:
Bradley N. Nix, PharmD
Clinical Staff Pharmacist
Ascension St. Vincent's East
Birmingham, AL

Disclosure Statement

Bradley N. Nix, PharmD

*Antibiotic Recommendations:
The Role of the Decentralized Pharmacist*

I have no relevant financial or non-financial relationships to disclose.

Reflection

He's the best physician who knows
the worthlessness of most medicines.

Benjamin Franklin

“ quote fancy

Objectives

- ❖ Summarize core elements of the Antibiotic Stewardship Program
- ❖ Discuss actions and outcomes of the Pharmacist Role in the Antibiotic Stewardship Program
- ❖ Provide workflow examples of Decentralized Pharmacist antibiotic recommendations

Core Elements of an ASP

*Summary*¹

- ❖ Leadership Commitment
- ❖ Accountability and Drug Expertise
- ❖ Action
- ❖ Tracking
- ❖ Reporting
- ❖ Education

Core Elements of an ASP

*Leadership Commitment*¹

❖ Dedicating resources

- Human
- Financial
- Technology

❖ Critical to success

- Formal statements supporting ASP efforts
- Improving onboarding and retention
- Communication tools
- Training and education

Core Elements of an ASP

*Accountability / Drug Expertise*¹

❖ Specific Stewardship Roles

- Program Leader
- Pharmacy Leader
- Key Support

❖ Organized Accountability

- Hospital System Governance
- Facility P&T
- Stewardship Team

Core Elements of an ASP

*Action*¹

- ❖ Implement policies that support optimal antibiotic use
 - Dose, duration, and indication
 - Facility-specific treatment recommendations
- ❖ Utilize specific interventions
 - Broad Intervention
 - Pharmacy Driven
 - Infection / Syndrome Specific
- ❖ Avoid over-implementation

Core Elements of an ASP

*Tracking and Reporting*¹

- ❖ Monitor antibiotic prescribing
- ❖ Assess antibiotic utilization
 - Appropriate documented indication
 - Duration of therapy
 - Culture support
- ❖ Antibiotic use measure
 - Days of Therapy (DOT)
 - Defined Daily Dose (DDD)
- ❖ Outcomes
 - Opportunistic infection
 - Antibiotic Resistance

Core Elements of an ASP

*Education*¹

- ❖ Provide regular updates addressed nationally and locally
 - Antibiotic prescribing
 - Antibiotic resistance
 - Infectious disease management
- ❖ Share facility-specific information
 - Motivational tool for other facilities within a system
 - Successes and failures
- ❖ Include a variety of educational options
 - Formal versus informal settings
 - Messaging
 - Case studies / reviews

Decentralized Pharmacist Role

Background^{1,2}

- ❖ 30% to 50% of the antibiotics used in hospitals are inappropriate or unnecessary
 - Risk for adverse events
 - Potential for opportunistic infection
 - Threat of bacterial resistance
 - Increased hospital stay
 - Increased cost of therapy

Decentralized Pharmacist Role

Background^{1, 3-6}

- ❖ Antibiotic Stewardship Programs (ASP) are designed to optimize the use of antibiotics
- ❖ Antibiotic Stewardship Programs have demonstrated judicious use of antimicrobials in the hospital setting:
 - Reduced overall antibiotic use
 - Increased appropriate drug choice and duration
 - Reduced adverse events and emergence of resistance
- ❖ Regulatory bodies (JCAHO) either approved or proposed regulations that require all hospitals have Antibiotic Stewardship Programs

Decentralized Pharmacist Role

Action / Outcomes^{1,7}

❖ Broad Interventions

- Antibiotic Assessment / Re-assessment
- Prior authorization and restriction processes
- Prospective audit and feedback

❖ Infection / Syndrome Specific Interventions

- | | |
|------------------------------|--------|
| • CAP | • MRSA |
| • UTI | • CDI |
| • Skin/Soft Tissue Infection | • BSI |

Decentralized Pharmacist Role

Action / Outcomes^{1,7}

❖ Pharmacy Driven Interventions

- Antibiotic Selection
- Dose Adjustment / Optimization
- Limited Duration of Therapy
- Therapeutic Duplication
- IV to PO Interchange
- Drug Interaction

❖ Pharmacy / ID Relationship

Decentralized Pharmacist Role

Action / Outcomes^{1,7}

❖ Pharmacy / ID Relationship

- Review of restricted antibiotics
- Facility Specific Consults
- Recommendations
 - MDRO
 - Support for escalation

Decentralized Pharmacist Role

Action / Outcomes ¹⁻¹⁰

- ❖ Optimized antibiotic utilization
 - Reduction in use of overall antibiotics
 - Reduction in use of broad spectrum antibiotics
 - Reduction in use of “restricted” antibiotics
- ❖ Centralized ASP resource shared with affiliated smaller hospitals to achieve similar results
- ❖ Positive impact on prescriber engagement
 - Direct pharmacist/prescriber communication
 - Embedded prescribing technology
 - Governance approved protocols
 - Collaborative practice contracts

Decentralized Pharmacist Workflow

Case Review #1

Day 1:

68yF admitted via E.R for respiratory distress due to multifocal PNA s/p bronchoscopy. PMH COPD, Lung CA. Bronch wash stain positive for *Candida*.

H&P

Acute respiratory distress 2/2 multifocal PNA in setting of lung CA; Vanc, cefepime, IV steroids, fluids, nebs; + *Candida glabrata* on culture – add fluconazole; Consult ID and Pulmonology

Decentralized Pharmacist Workflow

Case Review #1

Day 2:

Pharmacist Review

PNA caused by *Candida glabrata* managed by Hospitalist with Cefepime 2gm IV Q8h, Vancomycin 1gm IV Q12h, and Fluconazole 200mg IV Q24h for immunocompromised patient (Lung CA)

What opportunities for intervention are available for the decentralized pharmacist?

Decentralized Pharmacist Workflow

Case Review #2

Day 1:

73yM admitted via E.D. for AMS due to suspected UTI.

BP 105/65, HR 103, RR 26, SpO2 93% on NC, Temp 37.1c,

WBC 14.6, UA: +WBC, +RBC, +2 Leuk Est, +Nit. Blood and Urine Cultures ordered. NKDA.

Piperacillin/Tazobactam and Vancomycin given.

H&P

Sepsis with AMS due to UTI/Cystitis. PMH recurrent UTI. SNF resident.

Piperacillin/Tazobactam 4.5gm IV Q8h

Vancomycin 1500mg IV Q12h

Decentralized Pharmacist Workflow

Case Review #2

Day 2:

Pharmacist Review

Sepsis due to UTI caused by no identified isolates managed by Hospital Medicine with Piperacillin/Tazobactam 4.5gm IV Q8h and Vancomycin 1500mg IV Q12h

BUN 16, SCr 2.1, Est CrCl 31.6 ml/min

What opportunities for intervention are available for the decentralized pharmacist?

Decentralized Pharmacist Workflow

Case Review #2

Day 4:

Cultures resulted – GNR in Blood, ESBL *Klebsiella* in Urine

Pharmacist Review

Sepsis due to UTI caused by ESBL *Klebsiella* and BSI caused by GNR managed by Hospital Medicine with Piperacillin/Tazobactam 4.5gm IV Q8h and Vancomycin 1 gram IV Q24h (dose renally adjusted)

What opportunities for intervention are available for the decentralized pharmacist?

Decentralized Pharmacist Workflow

Case Review #3

Day 1:

36yM admitted via E.D. for wound infection of right foot s/p injury during hunting trip. BP 145/84, HR 96, RR 22, SpO2 99% on RA, Temp 36.8c, WBC 17.2, BS 285. Right foot is swollen and warm. Blood and Wound Cultures ordered. NKDA. Piperacillin/Tazobactam and Vancomycin given.

H&P

Sepsis 2/2 wound to right extremity. PMH diabetes and hypertension controlled with home meds. Consult wound care. Piperacillin/Tazobactam 4.5gm IV Q8h
Vancomycin 1gm IV Q12h

Decentralized Pharmacist Workflow

Case Review #3

Day 4:

Cultures resulted – NGTD in Blood, MSSA in Wound

Pharmacist Review

Sepsis due diabetic foot wound with cellulitis caused by MSSA managed by Hospitalist with Pip/Tazo and Vanc (dosed per protocol).

What opportunities for intervention are available for the decentralized pharmacist?

Decentralized Pharmacist Workflow

Case Review #4

Day 1:

91yF admitted to E.R. via ambulance c/o weakness and abdominal pain due to injury s/p fall at home. BP 121/70, HR 105, RR 24, SpO2 95% on NC, Temp 38.4c, WBC 14.0. No apparent fractures. Blood and Urine Cultures ordered. Allergy to PCN. Ciprofloxacin IV and Metronidazole IV given.

H&P

Sepsis 2/2 abdominal infection. No SS of abdominal bleeding. PMH. Noted several bouts of diarrhea in last two days. Stool for Cdiff. GI Consult. Continue Ciprofloxacin 200mg IV Q12h + Metronidazole 500mg IV Q12h.

Decentralized Pharmacist Workflow

Case Review #4

Day 2:

C. diff Ag+Toxin: Positive

Pharmacist Review

Sepsis due abdominal infection caused by C. diff managed by Hospitalist with ciprofloxacin and metronidazole.

What opportunities for intervention are available for the decentralized pharmacist?

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