PHARMACISTS AT THE TRANSITIONS OF CARE & OPPORTUNITIES FOR ANTIMICROBIAL STEWARDSHIP

Lisa Dumkow, PharmD, BCPS
Clinical Specialist, Antimicrobial Stewardship
Mercy Health St. Mary’s, Grand Rapids, MI
Objectives

1. Define transitions of care and describe the current problems facing health care providers at the transitions of care

2. Describe potential roles for pharmacists and pharmacy technicians at the transitions of care

3. Discuss the role of Antimicrobial Stewardship interventions at the Transition of Care in various clinical settings
Transitions of Care

- The movement of patients between health care practitioners and settings as their care needs change

- Examples:
  - Intensive Care Unit (ICU) to General Practice Unit (GPU)
  - GPU to nursing facility
  - Emergency Department (ED) to home
Patient Case

- LD is 43 y/o female who presents to the ED
- CC: Dysuria, urgency, and increased frequency x4 days
- Dx: UTI and discharged home with a prescription for Bactrim DS PO BID x3 days.
- Her culture grows E. coli which is resistant to Bactrim. The patient receives no follow up phone call regarding her culture. She continues to be symptomatic and is readmitted to the hospital 5 days later with suspected pyelonephritis.
- What transition of care breakdowns may have affected LD’s care?
What transition of care breakdowns may have affected LD’s care?

a. Communication breakdowns
b. Patient education breakdowns
c. Accountability breakdowns
d. All of the above
Problems with TOC

- Ineffective TOC
  - Communication breakdowns
    - Expectations differ between sender and receiver
    - Inadequate hand-off
      - Lack of standardization, time, teamwork
  - Patient education breakdowns
    - Receive conflicting information from care providers
    - Health literacy
    - Excluded from the planning process
  - Accountability breakdowns
    - Multiple providers involved in care
      - Failure to coordinate care
      - Limited discharge planning

Patient Case: LD

- Ineffective TOC

  - Communication breakdowns
    - LD was seen by the night shift PGY2 resident and attending physician
    - Culture results posted the next afternoon well after the night shift
      - No handoff to daytime resident/staff
      - No communication of follow-up plan between resident and attending

  - Patient education breakdowns
    - LD was not told how soon to come back to the ER if symptoms persisted

  - Accountability breakdowns
    - Multiple providers involved in care
      - Resident unaware of responsibility for culture follow up
      - Attending under the assumption that the resident will follow up
TOC Breakdowns

- Lead to
  - Adverse events
  - Increased readmission
  - Increased costs
Patient Case: LD

- TOC breakdown led to:
  - Adverse events
    - Continued UTI symptoms and progression to worsening infection
  - Increased readmission
    - Patient not only readmitted to the ED but also to the hospital
  - Increased costs
    - Cost of readmission
      - Drug cost
      - Nursing
      - Length of stay
How can Pharmacists and Pharmacy Technicians Improve Transitions of Care?
Focus on Improving TOC

- **March 2010 – Affordable Care Act**
  - **Partnership for Patients: Better Care, Lower Costs**
    - Initiative to improve quality of healthcare in the United States
    - Goal: reduce readmissions by 20% and adverse drug events (ADEs) by 50% by 2013

- **Centers for Medicare & Medicaid Services (CMS)**
  - Community-Based Care Transitions grant program
    - To assist in reaching the goals of the Affordable Care Act
Focus on Improving TOC

- In 2012 the Joint Commission published “The need for a more effective approach to continuing patient care”

- Goals:
  - Define methods to improve effectiveness of TOC between healthcare settings and organizations
    - Set of standards, national patient safety goals, survey activities, and educational services
  - Improve patient safety and quality of care in all settings

- Gives examples of TOC models which are currently being investigated by the Joint Commission
Expanding Pharmacists Roles at the TOC

- Pharmacists have specialized drug knowledge and are poised to assist in multiple facets of the TOC.

- Pharmacists have shown to benefit TOC at multiple levels of patient care:
  - Medication reconciliation
    - Up to 85% error rate in physician-obtained medication histories
    - More accurate and complete histories of older, more medically complex patients
  - Discharge to home
    - Decreased rate of preventable adverse drug events (ADEs) and medication-related ED revisits or hospital admissions

J Gen Int Med 2010;25:441-7
Hosp Pharm 2008;43:643-9
Arch Intern Med 2006;166:565-71
Utilizing Pharmacy Technicians at the TOC

- Quality Improvement Initiatives
  - Pharmacy Technician conducted medication reconciliation
    - Shown positive impact in special patient populations
      - Emergency Department (ED)
      - Human Immunodeficiency Virus (HIV)
  - Surgical Infection Prophylaxis monitoring and intervention
  - Others?

J Pharm Pract. 2013 Jan 22. [Epub ahead of print]
Medication Reconciliation: Pharmacists or Pharmacy Technicians?

- Pharmacists shortages and time constraints may make it impractical for all patients to have medication reconciliation done by a pharmacist.
- Is there a difference between a pharmacist and a trained pharmacy technician performing medication reconciliation?
Medication Reconciliation: Utilizing Pharmacy Technicians

- Emergency Department Medication reconciliation
  - Pharmacists and Pharmacy technicians each interviewed 59 patients

Table 2. Discrepancies for Prescription and Over-the-Counter Drugs

<table>
<thead>
<tr>
<th>Product Type</th>
<th>No. of Patients with Discrepancies*</th>
<th>Statistic</th>
<th>p value</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Pharmacist Performing Reconciliation</td>
<td>Technician Performing Reconciliation</td>
<td>χ² = 0.52, df = 1</td>
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<tr>
<td>Prescription drugs</td>
<td>47</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>No discrepancies</td>
<td>12</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>At least 1 discrepancy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over-the-counter products</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No discrepancies</td>
<td>52</td>
<td>53</td>
<td></td>
</tr>
<tr>
<td>At least 1 discrepancy</td>
<td>7</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Discrepancies per patient</td>
<td>Prescription drugs</td>
<td>Over-the-counter products</td>
<td>t = 0.15, df = 58</td>
</tr>
<tr>
<td>(mean ± SD)</td>
<td>0.25 ± 0.54</td>
<td>0.24 ± 0.68</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Over-the-counter products</td>
<td>Prescription drugs</td>
<td>t = -0.22, df = 58</td>
</tr>
<tr>
<td></td>
<td>0.14 ± 0.39</td>
<td>0.15 ± 0.48</td>
<td></td>
</tr>
</tbody>
</table>

SD = standard deviation.
*Except where indicated otherwise.
Expanding Pharmacists Roles at the TOC

- Unfortunately pharmacists are currently underused during care transitions
  - 5% of hospitals reported pharmacist-provided admission medication histories
  - 49% of hospitals reported pharmacist-provided medication discharge counseling

- What are some ways that pharmacists can be more involved in care transitions?
Expanding Pharmacists Roles at the TOC

- Medication Reconciliation
- Patient care rounds
  - Adequate handoff between pharmacists, multi-disciplinary collaboration
- Patient/caregiver medication and disease state counseling
  - Should occur throughout the stay; standardized educational materials
- Patient follow-up
- Standardized training
  - Incorporating TOC training into ACPE curriculum and residency training programs
- Quality Improvement
  - Evaluating TOC models/measure and providing feedback and suggestions for improvement

Pharmacotherapy 2012;32(11):e326-37
The Joint Commission Hot Topics in Health Care: Transitions of Care 2012
Identifying At-Risk Populations

- All patients are at risk for experiencing ADEs at care transitions

- Highest risk:
  - Extremes of age
  - Patients who take > 5 medications/day, multiple co-morbidities
  - Decreased Health Literacy
  - Cognitive/Behavioral impairment
  - Low socioeconomic status
  - Homeless

- Allows for comprehensive planning and risk assessment throughout hospital stay
ANTIMICROBIAL STEWARDSHIP AT THE TRANSITIONS OF CARE
What is Antimicrobial Stewardship?

A comprehensive system to optimize anti-infective utilization and patient care

May consist of:

- Multi-disciplinary health-care team collaboration:
  - Pharmacists, physicians, mid-level practitioners, microbiology staff, infection control, hospital administration
- Guidelines and care pathways
- Order sets
- Decision-support software
- Prospective audit and feedback
- Formulary management and restriction

Goals of Antimicrobial Stewardship Programs

- Improved Clinical Outcomes
- Improved Patient Safety
- Decreased Cost
- Decreased Emergence of Resistance

When you think of Antimicrobial Stewardship what comes to mind?

- Likely inpatient antimicrobial management and patient care
  - Guidelines and policies typically limited to patients admitted for care
Expanding Antimicrobial Stewardship Programs to the TOC

- What are we missing?
  - Aiding effective TOC in at-risk populations/care settings
    - HIV/AIDS
    - Outpatient parenteral antimicrobial therapy (OPAT)
    - Emergency Department (ED)
    - And many others!
Enhancing Transitions of Care in the HIV Population
HIV care in the Inpatient Setting

- How many people feel comfortable evaluating the appropriateness of antiretroviral
  - Full regimens?
    - Drug-drug or drug-food interactions?
    - Renal dose adjustments?
HIV Therapy at the Transitions of Care

- Commonly encountered TOC included:
  - Inpatient to outpatient
  - Correctional institution to community-based care
  - Pediatric to adult care clinics

- HIV-infected patients are at increased risk of medication errors when transitioning between care settings
  - Complex medication regimens
  - Multiple comorbidities
  - Providers may lack experience with HIV and antiretroviral therapy (ART) regimens
    - Medication errors occur in 5 – 30% of hospitalized patients with HIV

Yehia BR. AIDS 2013; 27 [epub ahead of print]
Dynamic Behavioral Model of HIV

- **Patient Factors**
  - Transitions in:
    - Socioeconomic Status
    - Development
    - Access to Care
    - Health Information
    - Delivery of Care

- **Environment Factors**

- **Transitions in**:
  - Subsequent Setting

- **Health Behavior**
  - ART and Care Adherence
  - Transmission Risk Acts

- **Biologic Outcomes**
  - CD4 Reconstitution
  - Viral Load Suppression
  - Opportunistic Infections
  - Mortality

- **Public Health Outcomes**
  - Transmission of HIV

Yehia BR, AIDS 2013; 27 [epub ahead of print]
Successful transitions require ALL stakeholders to participate
- Patients, providers, and caregivers

Important to ensure that antiretroviral therapy (ART) regimen is correct at admission and prior to discharge
- Dose, renal and hepatic adjustments, interactions

Coordination of care – making sure that patients can obtain their medications

Yehia BR, AIDS 2013; 27 [epub ahead of print]
HIV-Related Medication Errors and Associated Risk Factors in Hospitalized Patients

- **Objective:** Evaluate ART inpatient prescribing errors and associated risk factors
  - All pharmacists had at least 6 months of HIV training

- **Study Design:** Prospective medical record review and patient interview

- **Inclusion:** All HIV-infected patients who received care and continued on ART between January and April 2006
  - Patients received outpatient care in hospital’s HIV clinic

HIV Medication Errors at the TOC: Prescribers and Pharmacists Share Responsibility

- 68 patients enrolled, 119 regimen errors
  - 84% error rate (n = 57)
  - 49 (72%) had at least one error in their initial regimen
    - 56% had a Class 2 or 3 error
    - Majority drug-drug interactions
    - PPI related errors with Atazanavir

Antiretroviral Errors in Initial Regimen

Risk Factors for ART-related Medication Errors

- Use of Atazanavir was the only statistically significant predictor of drug error during hospitalization (RR 1.69, 95% CI 1.03 – 2.78, p = 0.02)

- More errors occurred in the initial regimen when
  - Patients were taking > 3 agents (70% vs. 49%)
  - PI-based regimen vs. NNRTI regimen (75% vs. 25%)

- Multiple ART errors occurred in 37 patients
  - Only statistically significant risk factor was conversion from outpatient regimen to the hospital’s formulary-equivalent agents (RR 1.95, 95% CI 1.25 – 3.04, p = 0.02)
All pharmacists should be responsible for evaluating HIV regimen appropriateness

- Admission and discharge medication reconciliation
- Order verification
- Daily profile review for audit and feedback
  - Dosing appropriateness, frequency, and administration times
  - Drug-drug interactions

Pharmacists must be aware of formulary restrictions for HIV-antiretrovirals
Outpatient Parenteral Antimicrobial Therapy (OPAT)
Utilizing OPAT

- Safe, effective, and cost-effective way to treat a variety of infections outpatient
- Antimicrobials delivered at infusion centers, nursing facilities, or through home therapy
  - Allows for early discharge of patients to home
    - Increased savings to the health system and patient
    - Improved patient satisfaction
Key Elements of Successful OPAT

- Careful selection of patients
  - Patient stability and home situation
- Adequate patient surveillance
  - Clinical monitoring for efficacy and safety
- Communication between team members and patient
- Assessment of reimbursement
OPAT Team Key Members

- ID physician
- ID pharmacist
  - Antimicrobial stewardship trained pharmacist
  - Staff pharmacist
  - Trainees
- Case manager
- Mid-level practitioners
OPAT Pharmacists at the TOC

- OPAT pharmacists:
  - Assist in patient selection for OPAT
  - Assist in regimen selection for OPAT
  - Ensure that the regimen will be safe, practical, and effective
  - Suggest and implement monitoring plans and parameters
  - Document the OPAT regimen and necessary follow-up information
  - Handoff to outpatient providers
Objective: Evaluate the impact of an OPAT team on regimen safety, efficacy, complexity, and economic benefits

- OPAT team: ID physician, ID pharmacist, Social worker

Study Design: Single center, observational

- July 2009 – June 2010

Inclusion: All patients referred to the OPAT team

OPAT Team Interventions Improve Outcomes

- 569 referrals met inclusion criteria resulting in 494 OPAT courses
  - Avoided in 75 referrals (13.2%)
    - Prevented insertion of central venous catheter
    - $58,000 annual cost savings

- Discharge delay was avoided for 35 (6.2%) of referrals
  - 228 hospital days saved (average 6.5 per patient)
  - $366,000 in hospital bed cost savings

- Total cost savings of approximately $658/referral!
The pharmacist made interventions for:
- Safety (56%)
- Regimen complexity (41%)
- Efficacy (29%)

An average of 27 minutes per patient of the pharmacists’ time was required

Post-discharge pharmacist interventions were required in 26 (5.3%) patients
OPAT can offer significant increase in patient satisfaction as well as health-system cost savings.

All pharmacists should be responsible for evaluating patients for OPAT therapy during admission:
- Regimen appropriateness at the time of discharge.
Antimicrobial Stewardship at the Emergency Department TOC
A Call to Action for ED Antimicrobial Stewardship

- Estimated rates of inappropriate or unnecessary antibiotic use among outpatient practitioners range from 25 – 63%!
  - Important preventable cause of antimicrobial resistance in both the hospital and community settings
  - TOC and Patient safety
    - Many ED revisits are medication related
    - Choice of antimicrobial in the ED influences decision for inpatient therapy
      - Host factors and prior antimicrobial exposure must be taken into account

ED Antimicrobial Stewardship?

- Unfortunately many traditional programs do not include the ED in their initiatives.
  - Antimicrobials are the second most common therapeutic drug class prescribed during ED visits.
    - 15.7% of patients.

- High volume and quick throughput.
  - Practice site is not amenable to many of the more traditional stewardship activities.
Steps to Emergency Department Antimicrobial Stewardship

- Even with limited resources steps can be put into place to educate and guide prescribers at this important TOC junction

- Should involve ED pharmacists, Antimicrobial Stewardship pharmacists, trainees
## Steps to Emergency Department Antimicrobial Stewardship

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescriber Education</td>
<td>Essential element of all ASPs; combined with active interventions to produce results</td>
</tr>
<tr>
<td>Antimicrobial order forms or electronic order sets</td>
<td>Actively engages physicians by requiring completion of an antimicrobial form including justification for each agent</td>
</tr>
<tr>
<td>ED Antibiogram</td>
<td>ED-specific pathogen susceptibility</td>
</tr>
<tr>
<td>Guidelines and clinical pathways</td>
<td>Facilitates selection of appropriate empiric antimicrobial therapy</td>
</tr>
<tr>
<td>ED pharmacists</td>
<td>Facilitate selection of appropriate antimicrobial therapy and education of prescribers at the point of care</td>
</tr>
<tr>
<td>Clinical decision support software</td>
<td>Can provide real-time feedback related to individual patients including choice of agent and adverse events</td>
</tr>
</tbody>
</table>

**Others?**
## Improving TOC in the ED through Pharmacist- Initiated Culture Follow-up

<table>
<thead>
<tr>
<th>Program</th>
<th>Study Site</th>
<th>Population</th>
<th>Pharmacy Interventions</th>
<th>Outcomes</th>
</tr>
</thead>
</table>
| Robert Wood Johnson UH         | Urban hospital                   | Adults discharged home from the ED with positive culture results          | • Compliance teaching  
• Start or change Abx  
• Pharmacists made calls to patients                                                  | • Pharmacist intervened on approximately 20% of patients                           |
| Carolinas Medical Center       | Urban tertiary care teaching hospital | Adult patients discharged home from the ED with positive culture results | • Culture review  
• Start or change Abx  
• Physician education                                                                  | Decreased:  
• Physician workload  
• ADRs  
• Readmission at 96 hours  
• Treatment failure  
• Non-compliance                                                        |
| University of Rochester Medical Center/UK | University teaching hospital  
-Not 24/7                      | Adult patients discharged home from the ED with positive culture results | • Culture review  
• Start or change Abx                                                                  | Decreased:  
• Physician workload  
• Readmission at 96 hours  
• Improved time to follow-up                                                   |
Antimicrobial stewardship in the emergency department is an important and evolving role for pharmacists.

Steps for implementation can be taken even with limited resources.

Antimicrobial Stewardship pharmacy interventions can target patients at the TOC focusing on adequate, active therapy and patient safety.

Reduction in ED revisits and hospital admissions.
Improving TOC through Antimicrobial Stewardship at Henry Ford Hospital and Saint Mary’s:

What We’ve Learned thus Far
Improving HIV TOC

- ID consult required for all patients admitted with a diagnosis of HIV
- All clinical pharmacists responsible for identifying patients who are HIV positive and verifying regimen appropriateness
  - Antimicrobial Stewardship pharmacist, HIV pharmacy specialist, PGY2 residents available if needed
- HIV pharmacy specialist prints a list of all patients taking antiretrovirals each day
  - Looks for regimen appropriateness and drug-drug interactions
    - PPIs and H2-antagonists
Improving HIV TOC

- **Formulary Management**
  - All oral antiretroviral single-drug and combination tablets available on formulary
    - Decreased prescribing errors at discharge when reconciling medications
Improving TOC Through OPAT

- New Antimicrobial Stewardship consult team formed in July, 2012
  - ID physician, physicians’ assistant, ID pharmacist or trainee
    - See all consults for OPAT
Expanding ED Stewardship Services

- Existing full-time ED pharmacy coverage
  - Already responsible for multiple stewardship initiatives

- Stewardship opportunity identified to target improve transitions of care
  - Goal of reducing ED revisits and hospital admissions
Results – Pharmacists Involvement at the TOC

- Over 400 cultures reviewed over four months; 197 cultures met inclusion criteria
- Antimicrobial Stewardship Program (ASP) pharmacists recommended changes in therapy in 50 (25%) patients

<table>
<thead>
<tr>
<th>ASP Follow-up in 196 Patients</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No intervention, initial therapy adequate</td>
<td>147 (75%)</td>
</tr>
<tr>
<td>Change antibiotic:</td>
<td></td>
</tr>
<tr>
<td>Organism not susceptible to prescribed drug</td>
<td>38 (19%)</td>
</tr>
<tr>
<td>Dose not appropriate</td>
<td>5 (3%)</td>
</tr>
<tr>
<td>Increase duration of therapy</td>
<td>4 (2%)</td>
</tr>
<tr>
<td>Start new antibiotic</td>
<td>3 (2%)</td>
</tr>
</tbody>
</table>
Results – ASP Improving TOC

- Emergency department revisits and hospital admissions were numerically reduced in the ASP phase.
- The NNT in the ASP phase to prevent one revisit or readmission would be 15.

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The chart shows the comparison between Standard of Care (SOC) and ASP in terms of various endpoints:

- **Combined Endpoint:**
  - SOC: 16.9%
  - ASP: 10.2%

- **ED Revisit (72 hours):**
  - SOC: 9.7%
  - ASP: 6.1%

- **Hospital Admission (30 days):**
  - SOC: 10.5%
  - ASP: 7.1%
Results – ASP Improving TOC
High-risk patient population

- Uninsured population

<table>
<thead>
<tr>
<th>Outcome in Uninsured Patients</th>
<th>SOC (n=59)</th>
<th>ASP (n=41)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combined Endpoint</td>
<td>12 (20.3)</td>
<td>4 (9.8)</td>
<td>0.156</td>
</tr>
<tr>
<td>ED revisit within 72 hours</td>
<td>9 (15.3)</td>
<td>1 (2.4)</td>
<td>0.044</td>
</tr>
<tr>
<td>Hospital admission within 30 days</td>
<td>6 (10.2)</td>
<td>3 (7.3)</td>
<td>0.624</td>
</tr>
</tbody>
</table>
Patient Case: LD

- Preventing breakdowns in TOC
- Pharmacy involvement in ED Antimicrobial Stewardship and culture follow-up
  - Pharmacist sees resistant culture at approximately 24-48 hours post-discharge
  - Collaborates with physician to discuss follow-up plan and counseling
  - Patient is called by physician who assesses severity of symptoms, discusses follow-up/counseling, and phones in new prescription

- Results?
  - Potentially preventing readmission, decreasing healthcare costs, improving patient safety and satisfaction
Final Thoughts…

- Quality improvements in processes occurring at TOC are needed to improve patient care, reduce readmissions, and reduce healthcare costs.

- Pharmacists play a central role in ensuring continuity of care at the TOC.
  - Technician involvement

- Opportunities exist for all pharmacists and health systems to target unique populations with Antimicrobial Stewardship TOC needs.
Transitions of Care Resources

- Joint Commission

- National Transitions of Care Coalition (NTOCC)
  - http://www.ntocc.org/

- ASHP

- ACCP
  - http://www.accp.com/

- ISMP (November 2012)
  - http://ismp.org/
PHARMACISTS AT THE TRANSITIONS OF CARE & OPPORTUNITIES FOR ANTIMICROBIAL STEWARDSHIP

Lisa Dumkow, PharmD, BCPS
PGY2 Infectious Diseases Resident
Henry Ford Hospital, Detroit, MI
Pharmacist CE Question #1

- LD is 43 y/o female who presents to the ED with complaints of dysuria, urgency, and increased frequency x4 days. She is diagnosed with a UTI and discharged home with a prescription for Bactrim DS PO BID x3 days. Her culture grows E. coli which is resistant to Bactrim. The patient receives no follow up phone call regarding her culture. She continues to be symptomatic and is readmitted to the hospital 5 days later and diagnosed with suspected pyelonephritis.

- What transition of care breakdowns may have affected LD’s care?

  - Communication breakdowns
  - Patient education breakdowns
  - Accountability breakdowns
  - All of the above
Patient GG is a 29 y/o male admitted to your hospital with severe SOB, cough, and a fever of 39°C. He is HIV + with a last CD4 count of 162 six months ago. The patient admits to only partial compliance with his 4-drug antiretroviral therapy regimen. The patient has been living in shelters throughout the city and has not been able to schedule follow-up due to lack of health insurance. GG’s other medications include Bactrim D.S once daily for PCP prophylaxis and Vitamin D 50,000 units once per month.

GG is considered high-risk for TOC breakdowns because:

- He takes > 5 medications/day
- Low socioeconomic status
- He is only 29 years old
- A & B
- All of the above
Remember...

- Highest risk:
  - Extremes of age
  - Patients who take > 5 medications/day
  - Decreased Health Literacy
  - Cognitive/Behavioral impairment
  - Low socioeconomic status
  - Homeless
Pharmacist CE Question #3

- Al is a 67 y/o female admitted to your medical center for treatment of osteomyelitis of the fourth and fifth metatarsal. She is high-functioning but has multiple comorbidities including diabetes, hypertension, and hyperlipidemia. She states compliance with her medications and her last A1c was 7.1% two weeks ago.

- The team decides to discharge the AI home with 5 additional weeks of OPAT. As the pharmacist you can assist this patient’s TOC and promote antimicrobial stewardship through:
  - Counseling the patient on her disease states, ADEs of her discharge medications, and importance of finishing antimicrobial therapy
  - Ensuring that the patient will be able to obtain medications at home
  - Ensuring that the drug and dose of medication is appropriate for the patient’s renal function/underlying conditions
  - A & C
  - All of the above
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