Basic Antimicrobial Stewardship Education for Nurses

[insert presenter name]
Purpose

The purpose of these slides is to provide hospitals with a slide template for basic antimicrobial stewardship education for frontline nurses.

Select and include slides most relevant to your hospital for antimicrobial stewardship education for nurses.

Hospital should insert institution-specific antimicrobial stewardship gaps, responsibilities and policies applicable to nurses where appropriate.

Contact Phil Chung at pchung@nebraskamed.com for further inquiry regarding this slide set.
Learning Objectives

• Define antimicrobial stewardship

• Provide rationales for antimicrobial stewardship activities in the hospital setting

• Explain commonly performed antimicrobial stewardship activities in the hospital setting

• Outline nurses’ responsibilities in antimicrobial stewardship at [insert hospital name]
What is antimicrobial stewardship?

Official Definition

“...appropriate use of antimicrobial agents by promoting the selection of the optimal antimicrobial drug regimen including dosing, duration of therapy, and route of administration.”

Society for Healthcare Epidemiology of America (SHEA)
Infectious Diseases Society of America (IDSA)
Pediatric Infectious Diseases Society (PIDS)

What is antimicrobial stewardship?

In simple term

• Ensure patients receive
  • The right antimicrobial agent
  • At the right time
  • At the right dose
  • For the right duration

• So that
  • Patient safety and outcomes are maximized
  • The development of antimicrobial resistance is minimized
What is an Antimicrobial Stewardship Program?

• A coordinated effort to direct antimicrobial stewardship activities with the goal to improve antimicrobial use

• At [insert hospital name], the antimicrobial stewardship program is led by
  • [Insert name] – medical director
  • [Insert name] – pharmacist
  • [Insert name] – infection preventionist
  • [Insert name] – lab representative
  • [Insert name] – Quality Committee representative
  • [Insert name] – [insert role in hospital]
Why do we need antimicrobial stewardship?

• For patient safety
  • 1 in 5 people experience side effects from antimicrobials

• For minimizing/reducing antimicrobial resistance
  • Antimicrobial resistance are more likely to develop with overuse
  • Resistant pathogens cause more than 2 million illnesses and 23,000 deaths every year

• By stopping antimicrobials when they are not needed or adjusting antimicrobials based on culture results
  • Reduce the chance patient develop unwanted side effects
  • Reduce the chance of developing resistance
Why do we need antimicrobial stewardship at [insert hospital name]? 

• List any institutional antimicrobial stewardship gaps 
• Provide specific data for the following examples if available 
  • Bridge in infection control practices led to spread of drug-resistant pathogens within the hospital 
  • Need for IV and urinary catheters is not continually evaluated 
  • Antimicrobials are frequently started without obtaining cultures 
  • Blood/urine cultures are frequently contaminated 
  • Allergy to antimicrobial agents are not appropriately assessed 
  • Institution infection treatment guidelines are not being followed 
  • Indication for antimicrobial therapy are not always documented 
  • Patients receiving antimicrobials with broader spectrum of activity or duration of therapy longer than necessary 
  • Clinical conditions or microbiology results are not always promptly communicated with providers 
  • Microbiology results are not always reviewed for needs or opportunities to change therapy 
  • Clinical conditions or laboratory results are not always reviewed for needs or opportunities to adjust dose, route and duration of therapy 
  • Patients receiving antimicrobial prescriptions unnecessarily or with longer than necessary duration at discharge 
  • Patients are not always assessed for the need of and provided influenza and pneumococcal vaccines during hospitalization
Who is responsible for antimicrobial stewardship?

• Those who prescribe antimicrobials such as physicians, nurse practitioners, physician assistants

• Those who review orders for and prepare antimicrobials such as pharmacists

• Those who administer antimicrobials such as nurses

• Those who use antimicrobials such as patients and patients’ families
Examples of Antimicrobial Stewardship Activity

Applying important infection control measures

• Prevent spread of infections by
  • Be aware of institutional infection control policy and procedures
  • Perform proper hand hygiene
  • Apply isolation policy based on hospital policy
  • Don and doff personal protective equipment as needed
Examples of Antimicrobial Stewardship Activity

Taking Careful Drug Allergy History

• Many patients are ‘labeled’ with allergy to antimicrobials but do not have true allergy

• Those with antimicrobial allergy may have
  • Less optimal treatment outcomes
  • Require longer hospital stay
  • Need more toxic therapy

• Proper allergy history should include
  • Inciting drug
  • Type of reaction
  • Differentiating whether reaction is allergy (rash) or intolerance (headache, vomiting)
  • Timing of reaction (to present time, to dose)
  • Accurate documentation
Examples of Antimicrobial Stewardship Activity

Establishing Infection Management Guidelines

• Common infection management guidelines include
  • Urinary tract infection
  • Pneumonia (community and healthcare)
  • Skin and soft-tissue infection
  • *Clostridioides difficile* infection

• Usually based on local antimicrobial susceptibility patterns, formulary agents, and institution workflow

• Reviewed by hospital leadership (Medical Staff, Pharmacy & Therapeutic Committee)

• Adhering to institution treatment guidelines ensure patients receive the best care for infections

• Include both antimicrobial regimen selection AND other management strategies (e.g., labs, cultures, vital checks)
Examples of Antimicrobial Stewardship Activity

*Obtaining cultures before starting therapy*

- Decisions to start antimicrobials are often made based on clinical condition without culture results
- Microbiology cultures (e.g., blood/urine culture) should be collected before starting therapy whenever possible
- Culture results are important to determine if antimicrobial therapy should be
  - Stopped
  - Continued without change
  - Changed to a narrower spectrum agent (antimicrobial de-escalation)
  - Changed to a broader spectrum agent (antimicrobial escalation)?
Examples of Antimicrobial Stewardship Activity

*Using proper specimen collection techniques*

- Always use proper and aseptic collection techniques
  - Use appropriate skin disinfectant prior to collection
  - Allow proper disinfectant contact time before collection
  - Collect specimen from the appropriate collection port

- Collection techniques should be periodically audited to determine need for improvement

- Improper collection technique can lead to
  - Specimen contamination
  - Cultures growing microorganisms that may not be the true pathogen
  - Affect decisions on selection of antimicrobial therapy
Examples of Antimicrobial Stewardship Activity

Performing Antimicrobial Time-Out

• Antimicrobials are often started based on a patient’s vital signs and complaints (empiric therapy)

• More information such as response to therapy, labs, cultures, imaging should become available around 48-72 hours

• It is important to review treatment plan using the additional information at this time

• Antimicrobial time-out is the act of taking a pause to decide if antimicrobial should be continued, changed or stopped based on the additional information
Examples of Antimicrobial Stewardship Activity

Prospective Audit-Feedback

- Similar to antimicrobial time-out

- A dedicated person review (audit) antimicrobial therapy based on specific parameters such as
  - Positive blood cultures
  - Bug-drug mismatch
  - CSF cultures
  - IV therapy that can be changed to PO

- Reviewer contact prescribers and provide recommendations (feedback) based on relevant clinical and laboratory information
Examples of Antimicrobial Stewardship Activity

Therapeutic Drug Monitoring

• Some antimicrobials have “narrow therapeutic windows” which means the difference between effective and toxic blood concentrations is small
  • IV vancomycin
  • Aminoglycosides (gentamicin, tobramycin, amikacin)

• Blood concentrations need to be obtained to determine if a patient is prescribed the right dose

• To interpret if drug concentrations are appropriate and how to adjust doses if they are not, providers and pharmacists need to know
  • Time of antimicrobial administration
  • Timing of the blood draw in relation to administration time

Timing & accurate documentation is key to this process!
Examples of Antimicrobial Stewardship Activity
Changing IV Antimicrobial Therapy to PO

• Certain antimicrobials achieve similar blood concentrations when given IV or PO (e.g., levofloxacin, metronidazole, fluconazole)

• These antimicrobials can be changed to PO when a patient is
  • Tolerate an oral diet
  • Not nauseous or vomiting
  • Able to take other PO medications

• Benefits of IV to PO switch include
  • Reduce infusion site reactions (infiltration)
  • Reduce infusion-related reactions (hypotension)
  • Reduce chance of line-related bloodstream infections
  • Reduce concerns for fluid overload
  • Free patients from IV poles while hospitalized
  • Allow patients to go home sooner
  • Less medication preparation/administration time
  • Reduce the costs of care
Examples of Antimicrobial Stewardship Activity

Patient Education

• Education should be provided to patients on antimicrobials when possible on the following:
  • What medication they are getting
  • Why they are prescribed the medication
  • How long they will be receiving therapy
  • What are some possible side effects
  • What to do if not getting better

• For patients not prescribed antimicrobials, general antimicrobial stewardship education can be provided:
  • Antibiotics are only for infection caused by bacteria
  • Don’t pressure your providers to prescribe antibiotics
  • Antibiotic can have side effects such as rash, diarrhea
Examples of Antimicrobial Stewardship Activity

Medication Reconciliation in Transition of Care

• During admission process, review if patient is on antimicrobial therapy prior to hospitalization
  • Assess if indication for continuation exists (e.g., prophylaxis)
  • Check that drug, dose, and frequency are correct

• For patient discharged on antimicrobial therapy, review if
  • Therapy is necessary
  • Treatment is associated with an indication
  • Duration of therapy is appropriate
  • Appropriate follow-up lab and appointment are arranged
  • Information about treatment has been communicated to the appropriate person/facility
Examples of Antimicrobial Stewardship Activity

*Evaluation of Patient for Preventive Vaccines*

- Administration of influenza vaccines can prevent influenza and associated secondary bacterial pneumonia

- Administration of pneumococcal vaccines can prevent pneumonia caused by *Streptococcus pneumoniae*

- Prevention of these infections through vaccination can directly or indirectly reduce antimicrobial use

- Patient should be evaluated and administered these vaccines when appropriate before discharge
Nurses' Roles in the Clinical Setting

- Play a vital role in patient safety and outcome
- Have most consistent presence as patient caregiver
- Have access to most current patient conditions
- Routinely review orders and administer medications
- Communicate between patient/family and antimicrobial use stakeholders
Nurses and Antimicrobial Stewardship

- Antimicrobial stewardship activities have been the responsibilities of physicians and pharmacists with infectious diseases/antimicrobial stewardship training.

- Frontline nurses have not always been formally engaged to perform antimicrobial stewardship activities.

- However, frontline nurses have already been performing many antimicrobial stewardship activities that went unrecognized.
Nurses’ Antimicrobial Stewardship Responsibilities around Time of Admission at [insert hospital name]

- Evaluate for need for isolation
- Assess allergy history
- Reconcile medication history
- Obtain/send off lab and microbiology cultures using appropriate techniques/procedures
- If antimicrobial therapy is ordered/initiated
  - Timely administer antimicrobial therapy
  - Monitor adverse reactions to antimicrobial therapy
  - Monitor response to antimicrobial therapy closely (especially with first few doses of therapy)
  - Promptly communicate changes in patient condition/response to providers
Nurses’ Antimicrobial Stewardship Responsibilities during Hospitalization at [insert hospital name]

- Continue to evaluate adequacy of infection control measures
- For patients already on antimicrobial therapy
  - Monitor response to therapy
  - Communicate change in patient status promptly to providers
  - Ensure specimens for microbiology cultures have been sent off
  - Review results for all microbiology cultures have resulted
  - Perform antimicrobial time-out; discuss with providers
    - Has an infection been identified or confirmed?
    - Does therapy need to be adjusted based on relevant information?
    - Can therapy be changed from IV to PO?
    - Is there a final therapy plan including duration, monitoring, follow-up?
  - Obtain blood sample for therapeutic drug monitoring at the appropriate time
- For patients not on antimicrobials, monitor for signs and symptoms of infections, communicate with providers if infections suspected
Nurses’ Antimicrobial Stewardship Responsibilities during Hospitalization at [insert hospital name]

• For patients not on antimicrobial therapy,
  • Monitor for signs and symptoms of infections
  • Communicate with providers if infection is suspected

• Continue to assess other infection preventive measures
  • Remove urinary and IV catheters when not needed
  • Ensure bed bound patients receive proper skin care
  • Ensure head of bed at 30 degree to prevent aspiration
  • Perform proper oral hygiene as appropriate

• Prevent the spread of infections by ensuring those (visitors and healthcare professionals) who enter patients’ rooms adhere to the appropriate infection control measures
Nurses’ Antimicrobial Stewardship Responsibilities prior to or at Discharge at [insert hospital name]

• Evaluate patients for influenza and pneumococcal vaccines and administer if indicated

• For patient discharged on antimicrobial therapy
  • Review treatment plan with patients
  • Provide instructions to patients if infections lack improvement or worsen
  • Ensure regimen is appropriate including total duration of therapy
  • Ensure follow-up plans (lab, appointment) are in place
  • Communicate relevant information (regimen, isolation) with healthcare professionals/facilities receiving patients

• For patient not getting discharged on antimicrobial therapy, provide general antimicrobial stewardship education
Conclusions

• Antimicrobial stewardship is a team effort that include those who prescribe, prepare, administer and use antimicrobials.

• Frontline nurses play a central role in the day-to-day care of hospitalized patients.

• Because of this unique position, nurses are an important part in many essential antimicrobial stewardship activities and part of the antimicrobial stewardship team.