Antimicrobial Stewardship in Skilled Nursing Facilities – Challenges and Metrics

Hali Yang, PharmD, BCPS
Antimicrobial Stewardship Pharmacist
Cedars-Sinai Medical Center
Objectives

1. Describe the implementation process and role of key stakeholders in starting an antimicrobial stewardship collaboration between an acute care facility (ACF) and skilled nursing facilities (SNF)

2. Discuss opportunities and challenges with implementing a large, multi-facility antimicrobial stewardship program (ASP)

3. Identify strategies for developing measurable metrics to track antibiotic prescribing and appropriate ordering of labs

4. Discuss findings of the current program and our recommendations
Background

• We know that ASP works in hospitals and tertiary care settings

• Literature began looking at ASP in outpatient settings and prescriber practice patterns

• ASP in nursing facilities is vital to the overall health of the community – there is opportunity!
  
  ▪ Patients shared across the healthcare continuum

  ▪ SNF patients are partly in the healthcare setting and partly in the community setting

  ▪ Transmission of MDRO in colonized patients

http://www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html
Antibiotic Use in Nursing Homes a Requirement

http://www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html
Challenges of Antibiotic Prescribing in Nursing Homes

• How do prescribers make decisions on antibiotic orders?
  o Rely on assessment made by someone else
  o 67% of orders occur over the phone
• Limited documentation of assessments
  o 43% of nursing home–initiated antibiotic courses had no documentation of infection
• Data/Labs
  o Difficulty obtaining and interpreting laboratory and diagnostic data to inform prescribing
• Other pressures
  o Influence of resident, family, other professional peers to start antibiotics

Bottom line:
Right Patient, Right Antibiotic, Right Time, Right Dose, Right Duration
Overview of SNF Antimicrobial Stewardship Program Collaborative

- Started as the Enhanced Care Program with 8 neighboring SNF facilities, resulted in 25% reduction in 30-day readmission
- Established structure for ASP Collaborative
- Program Goals
  - Raise awareness of antimicrobial stewardship
  - Focus on UTIs
  - Implement SBAR to facilitate communication and assessment, serve as guidance for management
  - Establish monitoring process for outcome measures
SNF ASP UTI Project Goals: 2016

• Raise awareness regarding AS among staff and prescribers

• *Develop and utilize facility-specific nursing SBAR format* to facilitate assessment and communication of possible UTIs

• Implement *guidance* for management of ASB and UTI by appropriately using the antibiogram and antibiotic choice (provide SNF specific treatment guidelines)

• Establish and *monitor process and outcome* measures for each facility
## Step by Step Guide on Implementation – It Is SLOW!

### 1. Foundation and Leadership Engagement
- Survey availability of current resources
- What are the gaps?
- Key stakeholders (medical directors, DON, DSD, Admin) buy-in and accountability
- Relationship with local health departments, consulting RX and Lab, clarify roles and expectations

### 2. Material Development, Implementation, and Education
- Develop site-specific education materials
- DON and DSD: set up in-service schedules
- Develop benchmark and metrics, keeping in mind nuances of each facility
- DOT, # of abx orders for UTI, volume of urine cultures using “reflex”, # of patients appropriately treated according to guidelines (McGeer’s criteria)

### 3. Sustainment and Measurement
- Monitor utility of education materials, identify barriers, address, and re-evaluate
- Adjust benchmark metrics as needed
- Anticipate staff turn-over, incorporate education into new staff orientation
- Reporting of metrics to QI committees
CDC Core Elements Checklist

http://www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html
**What Is the Start an Antimicrobial Stewardship Program Toolkit?**

This toolkit is designed to help a nursing home select, plan for, introduce, and implement an antimicrobial stewardship program. The toolkit includes the following tools:

- Suggestions for how to **Gather a Team** to oversee the antimicrobial stewardship program (tool 1) *(PDF | Word)*
- **Roles and Responsibilities** to track team membership, roles, and responsibilities (tool 2) *(PDF | Word)*
- **A Readiness Assessment** to help determine what the nursing home is prepared to undertake (tool 3) *(PDF | Word)*
- **An Implementation Planning Sample Agenda** for the team to plan for the program (tool 4) *(PDF | Word)*
- **Draft Policies and Procedures for the Antimicrobial Stewardship Program**, including a sample policy letter and sample procedure letter (tool 5) *(PDF | Word)*

https://www.ahrq.gov/nhguide/index.html
AHRQ Readiness Assessment – What is the status quo?

- Can use for internal assessment vs sharing with ACF
- Resource oriented
- Identify gaps where ACF staff may assist
- What is the anticipated time commitment
- If SNF is involved in a regional/corporate company, can assistance be provided for headquarters?
Survey Conducted Based on Core Elements and Identified Opportunities

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<tr>
<th>ASP Core Element</th>
<th>Present (n)</th>
<th>Present (%)</th>
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<tbody>
<tr>
<td>Track rates of <em>C. difficile</em> infection</td>
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<td>Access to Lab consultant</td>
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<td>Access to Pharmacy consultant</td>
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<td>Access to an antibiogram</td>
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<td>Use standard infection surveillance criteria (e.g. McGeer criteria)</td>
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<td>87.5</td>
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<td>Document antibiotic usage (dose, duration, indication)</td>
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<td>Provide antibiotic stewardship education to staff</td>
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<td>Formal antibiotic stewardship policy</td>
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<td>Review and feed back to prescriber of antibiotic appropriateness</td>
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<td>12.5</td>
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<td>Use standard clinical criteria (e.g. Loeb Minimum criteria)</td>
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<td>Prescribers have access to treatment recommendations for common infections (Facility-specific)</td>
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<td>Monitoring and reporting of inappropriate tests (e.g. urine cultures)</td>
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<td>Programs for reducing antibiotics (e.g. asymptomatic bacteriuria)</td>
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<td>Clinician (MD or pharmacist) oversees antibiotic use</td>
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- In addition to survey...
- Conducted SNF site visits and interviews with key leadership for assessment of infrastructure
- Provided education of new regulations to SNF leadership
- Obtain baseline data from lab and pharmacy
  - Baseline antibiotic use
  - Antibiogram
  - Urine cultures
Baseline Data Results

Antibiogram: *E. coli* susceptibility
- 36% Levofloxacin
- 97% Nitrofurantoin
- 97% Cefazolin
Baseline Data Results

Days of therapy per 1000 patient days: Jan-Nov 2015

Urine Cultures: Jan-Dec 2015

* Goal > 90%
Step 1 Challenges and Considerations

• Pitching project to leadership of an acute care facility (ACF)
  o Why does it benefit both parties?
  o Anticipate time commitment of consultants from ACF: use residents and fellows

• Commitment from SNF leadership: Medical Director, DON, DSD Admin
  o What is each person’s role? Team collaborative – everyone has responsibilities
  o What is the chain of command for front line staff?
  o How will miscommunication be addressed?

• Where are there resource gaps at the SNF?
  o Use ACF consultants as expertise to train SNF staff
  o Knowledge of available resources
  o Assign designated personnel for new role and make sure they are supported
Step by Step Guide on Implementation – It Is SLOW!

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   - Reporting of metrics to QI committees
## SBAR Tool – Assessment and Recommendations for UTI Management

### ASSESSMENT

(Complete appropriate box and check all criteria that apply)

<table>
<thead>
<tr>
<th>Resident WITHOUT Indwelling Catheter</th>
<th>Resident WITH Indwelling Catheter</th>
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<tr>
<td><strong>EITHER</strong> □ Acute dysuria alone</td>
<td>ANY ONE or more of the following Criteria:</td>
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<td>□ Single temp of 100°F (38°C) or repeated temps of 99°F (37°C) AND at least ONE of the following:</td>
<td>□ Fever of 100°F (38°C) or repeated temps of 99°F (37°C)</td>
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<td>○ Urgency</td>
<td>□ New costovertebral angle tenderness</td>
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<td>○ Frequency</td>
<td>□ Rigors</td>
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<td>○ Suprapubic pain</td>
<td>□ Delirium (rule out other causes, see page 2)</td>
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<td>○ Urinary incontinence (new or worsening)</td>
<td>□ Hypotension</td>
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<td>○ Costovertebral angle tenderness</td>
<td>□ Gross Hematuria</td>
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<td>□ None of the above</td>
<td>□ None of the above</td>
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</table>

**UTI Criteria Met?:** □ YES □ NO

### Urinary Studies

- *Collect clean voided specimen if possible; may use in-out catheter if needed.*
- Residents with indwelling catheter > 2 weeks, change catheter and collect urine from new catheter.

- **(Preferred) Urinalysis, with culture and sensitivity (C&S) if indicated** Date:______
- **Urine C&S only Date:______**
- **Urinealysis only without C&S Date:______**
- **Call provider with results of above, to reassess antibiotic selection**

### Other Orders

- **Review for alternate diagnosis (e.g. DELIRIUMS)**
- □ If indicated, increase fluid consumption (consider addition of cranberry juice)
- □ Monitor vital signs/symptoms Q __ hrs
- □ Record Ins/Outs
- □ Re-evaluate if criteria for symptomatic UTI develop

### Antibiotic Therapy (if indicated)

Please see below for empiric antibiotic initiation recommendations

- □ Antibiotic therapy ordered
- **Antibiotic Name/Dose ________________ Route _PO _IV**
- **Date Started ___________ Duration of Therapy __________**

**Ordering Provider ___________**
## Antibiotic Treatment Recommendations**:

**No indwelling catheter:**
1. Cephalexin 500 mg po TID for 3 days
2. Trimethoprim-Sulfamethoxazole (Bactrim) 160/800 mg (1 DS tablet) BID for 3 days (if CrCl<30, may call Rx for dose)
3. Nitrofurantoin (Macrolid) 50-100 mg po QID for 5 days (avoid if CrCl <40)

**Catheter-Associated UTI Suspected:**
For clinically stable patients:
1. Cephalexin 500 mg po TID pending culture results, or
2. Ceftriaxone 1 gm IV Q24 hrs pending culture results
3. Ertapenem** 1 gm IV Q24 hrs pending culture results

Duration of treatment: 7 days if prompt resolution of symptoms; 10-14 days if delayed response
**Clinically ill patients with pyelonephritis or sepsis will need assessment for potential transfer to hospital

*These are empiric treatment recommendations. Cell results should be reviewed to provide directed therapy
*This facility has high levels of fluoroquinolone resistance - DO NOT use Fluoroquinolones for routine empiric therapy
**This facility has a number of ESBL E. coli isolates, please promptly follow up on culture results and monitor clinical status

Patients on warfarin (Coumadin) may have drug-drug interactions (Ciprofloxacin, tetracyclines, metronidazole, TMP/SMX may increase warfarin effect)

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**Provide Applicable Education**

- Knowledge is power!
- Priority is patient safety

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<tr>
<th><em>Twelve Month Antibiogram</em></th>
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**E coli susceptibility**
- 36% Levofloxacin
- 97% Nitrofurantoin
- 97% Cefazolin

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<th>Providencia stuartii</th>
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Optimal Management of Suspected Urinary Tract Infection (UTI)

**Definitions**
- **Bacteriuria**: Bacteria in the urine (i.e., positive urine culture)
- **UTI**: Bacteriuria + symptoms of a UTI (symptomatic UTI)
- **Asymptomatic bacteriuria (ASB)**: Bacteriuria in a patient without symptoms of a UTI

**When to Suspect UTI in Patients**

<table>
<thead>
<tr>
<th>Without Urinary Catheter</th>
<th>With Urinary Catheter</th>
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<tbody>
<tr>
<td><strong>Without Catheter</strong></td>
<td><strong>With Catheter</strong></td>
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<tr>
<td><em>Preferred urine studies</em>: Urineysis (UA), then Culture and Sensitivity if indicated</td>
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<tr>
<td><em>Symptoms</em>: Without Catheter: Urgency, Frequency, Suprapubic Pain, Urinary Incontinence, Controversial single signs or symptoms (CVAD, Goss Hematuria)</td>
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<tr>
<td>With Catheter: Fever, DVT, Rigors, Delirium, Hypotension, Gross Hematuria</td>
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**Choosing Wisely**
- Not all positive urine cultures need to be treated
- Do not treat ASB with antibiotics
- Do not get urine cultures when patients do not have urinary tract signs and symptoms

**Empiric Antibiotic Treatment (when indicated)**
- **No indwelling urinary catheter**:
  1. Cephalexin 500 mg po TID for 3 days
  2. Bactrim DS 1 tab BID for 3 days (if CrCl<50, may call pharmacy for dosage)
  3. Nitrofurantoin (Macrodantin) 100 mg po BID for 5 days (avoid if CrCl <40)
- **With indwelling urinary catheter (stable)**:
  1. Cephalexin 500 mg po TID
  2. Ceftriaxone 1 gm IV Q24h
  3. Ertapenem* 1gm IV Q24h (if ESBL suspected)

Duration of treatment: 7 days if prompt resolution of symptoms; 10-14 if delayed response

*Clinically ill patients (pyelonephritis or un responded), Assess for transfer to hospital if necessary

**Fluoroquinolones: Just Say No!!**
- **FDA Warning**: Fluoroquinolone antibiotics should NOT be used for treating uncomplicated UTI
- **Examples**: Levofloxacin and Ciprofloxacin
- Fluoroquinolones are common drugs used for UTI, but not always the best drugs
- Common UTI causing bacteria have HIGH rates of RESISTANCE to fluoroquinolones
- Side effects: tendon rupture, delirium, arrhythmia

**Facts**
- 40% of all antibiotics prescribed in SNFs are for suspected UTI
- 70% of these prescriptions are not needed
Developing Metrics

• What is currently tracked and what is the pharmacy/lab reporting capabilities?
  o DOT: standard ASP metric in hospitals, accounts for census, may take time & expertise
  o # of antibiotic orders: can get from pharmacy, does not track indication (unless indicated on order) or duration, does not account for census
  o Number of urine cultures (proportion of reflex)
  o Utilization of SBARs, treatment according to recommended agents
Step 2 Challenges and Considerations

• Prescriber practices vary widely (abx utilization, ordering unnecessary labs, etc), and individual physicians have no formal accountability. Identify outlier individuals and provide education
  o Chain of command and **accountability** model of leadership becomes very important (use Medical Director/QI committee role)
  o Provide feedback in the form of clinical case scenarios to individual prescribers and/or QI

• Pressure from residents and family
  o Provide education (RN and provider should be on same page, provide the SAME education)
  o CDC Get Smart educational materials can be printed ([https://www.cdc.gov/getsmart/community/materials-references/print-materials/index.html](https://www.cdc.gov/getsmart/community/materials-references/print-materials/index.html))
  o Hang “**commitment posters**” in patient rooms, nurses stations, and provide in patient admission packets for all residents, regardless of current infection status
Step 2 Challenges and Considerations

- SNF staff burden and high staff turn over
  - Incorporate stewardship education and any clinical educational materials into new staff orientation
  - Incorporate new materials into work flow to minimize project fatigue

- Nursing staff confidence
  - Keep staff engaged by providing progress/metrics
  - DON and DSD attends QI meetings, convey to staff the support they have from QD committee
  - Highlight importance of education

- Who is ultimately accountable?
  - Incorporate stewardship program into QI and recommendations and issues should be addressed from a quality and safety standpoint
Step by Step Guide on Implementation – It Is SLOW!

1. Foundation and Leadership Engagement
   - Survey availability of current resources
   - What are the gaps?
   - Key stakeholders (medical directors, DON, DSD, Admin) buy-in and accountability
   - Relationship with local health departments, consulting RX and Lab, clarify roles and expectations

2. Material Development, Implementation, and Education
   - Develop site-specific education materials
   - DON and DSD: set up in-service schedules
   - Develop benchmark and metrics, keeping in mind nuances of each facility
   - DOT, # of abx orders for UTI, volume of urine cultures using “reflex”, # of patients appropriately treated according to guidelines (McGeer’s criteria)

3. Sustainment and Measurement
   - Monitor utility of education materials, identify barriers, address, and re-evaluate
   - Adjust benchmark metrics as needed
   - Anticipate staff turn-over, incorporate education into new staff orientation
   - Reporting of metrics to QI committees
Recent Results

Average Monthly Total Antibiotic DOT

- Baseline: 181 DOT/1000 Patient Days
- Intervention: 155 DOT/1000 Patient Days

14% Reduction, p=0.09
Recent Results

**Average Monthly FQ DOT**

- Baseline: 37
- Intervention: 22
- 39% Reduction, p=0.0001

**Initiation of Fluoroquinolone Orders**

- Baseline: 17
- Intervention: 10
- 41% Reduction, p=0.02
Recent Results

- One SNF kept internal logs, which allowed for more detailed documentation of antibiotics and their indications, thus allowing a different metric.

- Total of 209 SBARs completed at 3 SNFs, 77% had an antibiotic ordered for UTI indication.

- Out of the 161 residents with an antibiotic order:
  - 84% were assessed per SBAR as not having met McGeer’s criteria.
  - 49% had an agent consistent with recommendations (may not be completely accurate).

<table>
<thead>
<tr>
<th>Initiation of antibiotics at SNF 1 for UTIs (orders / month)</th>
<th>Pre-Intervention</th>
<th>Post-Intervention</th>
<th>% Reduction</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiation of FQ at SNF 1 for UTIs (orders / month)</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Pre-Intervention</td>
<td>75</td>
<td>53</td>
<td>29</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>Post-Intervention</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Reduction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-value</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Intervention</td>
<td>11</td>
<td>5</td>
<td>55%</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>Post-Intervention</td>
<td>5</td>
<td></td>
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</tr>
</tbody>
</table>

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Step 3 Challenges and Considerations

• Sustaining commitment challenging with leadership turnover (DON, DSD)
  ○ Reinitiating the process, re-engage leadership

• Streamlining data collection and timeliness
  ○ Developed tracking sheet for each facility and designate someone to fill out monthly
  ○ Variability in utilization of tracking sheet
  ○ Technical challenges (slow computers, unable to find files, multiple emails or attachments) impede efficient data collection and result reporting
Thank you

- For continued support from facility administrators, medical directors, directors of nursing, directors of staff education at each facility

- Front line staff at each facility

- Extended Care Program educators and coordinators

- LACDPH team

- Cedars-Sinai team
<table>
<thead>
<tr>
<th>Organization</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Joint Commission (TJC)</td>
<td><a href="https://www.jointcommission.org/assets/1/6/New_Antimicrobial_Stewardship_Standard.pdf">https://www.jointcommission.org/assets/1/6/New_Antimicrobial_Stewardship_Standard.pdf</a></td>
</tr>
<tr>
<td>• Standards</td>
<td></td>
</tr>
<tr>
<td>Center for Disease Control and Prevention (CDC)</td>
<td></td>
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<tr>
<td>• Infographics and education materials for</td>
<td><a href="https://www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html">https://www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html</a></td>
</tr>
<tr>
<td>healthcare providers, and patients/family</td>
<td></td>
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<tr>
<td>Agency for Healthcare Research and Quality (AHRQ)</td>
<td></td>
</tr>
<tr>
<td>• Online nursing training courses (can earn nursing CE)</td>
<td><a href="https://www.ahrq.gov/nhguide/toolkits.html">https://www.ahrq.gov/nhguide/toolkits.html</a></td>
</tr>
<tr>
<td>communication, sample policies and procedures,</td>
<td><a href="https://www.ahrq.gov/nhguide/toolkits/help-clinicians-choose-the-right-antibiotic/index.html">https://www.ahrq.gov/nhguide/toolkits/help-clinicians-choose-the-right-antibiotic/index.html</a></td>
</tr>
<tr>
<td>tracking sheets</td>
<td></td>
</tr>
<tr>
<td>• Clinical toolkits for various infections</td>
<td></td>
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<tr>
<td>• Education on antibiograms for prescribers</td>
<td><a href="https://www.ahrq.gov/nhguide/toolkits/educate-and-engage/index.html">https://www.ahrq.gov/nhguide/toolkits/educate-and-engage/index.html</a></td>
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</tbody>
</table>
## Available Resources

<table>
<thead>
<tr>
<th>Organization</th>
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<tbody>
<tr>
<td>American Nurses Association (ANA)</td>
<td><a href="http://nursingworld.org/">http://nursingworld.org/</a></td>
</tr>
<tr>
<td>• ANA/CDC White paper on role of Nurses in Stewardship</td>
<td><a href="http://www.nursingworld.org/ANA-CDC-AntibioticStewardship-WhitePaper">www.nursingworld.org/ANA-CDC-AntibioticStewardship-WhitePaper</a></td>
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<tr>
<td></td>
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<tr>
<td>• Six-part webinar series</td>
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<tr>
<td>• Sample communication letter to prescribers</td>
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<tr>
<td>• Sample policy and procedure document, suspected infection assessment forms, flowcharts for clinical criteria of various infections</td>
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</tr>
<tr>
<td>Minnesota (MDH)</td>
<td><a href="http://www.health.state.mn.us/divs/idepc/dtopics/antibioticresistance/asp/ltc/">http://www.health.state.mn.us/divs/idepc/dtopics/antibioticresistance/asp/ltc/</a></td>
</tr>
<tr>
<td>• Nursing communication tools, infection surveillance tools, educational modules</td>
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<tr>
<td>Society of Infectious Disease Pharmacists (SIDP)/American Society of Consultant Pharmacists (ASCP)</td>
<td><a href="https://www.sidp.org/LTCStewardship">https://www.sidp.org/LTCStewardship</a></td>
</tr>
<tr>
<td>• Certificate Program (3-phase)</td>
<td></td>
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<tr>
<td>• $850 for CE and content (discount available for trainees and multiple participants of the same institution)</td>
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