Antimicrobial Use Assessment for Long-term Care Facilities

Overview:
Assessing antimicrobial use is essential for determining antimicrobial use trends. Antimicrobial use assessments should be conducted regularly to measure progress of antimicrobial stewardship activities. After completing the assessment, the facility should be able to describe who is getting antibiotics and why. Additionally, the results are useful to identify gaps in communication, inconsistencies in documentation, and compliance with facility policies and evidence-based recommendations for antimicrobial prescribing.
The term "providers" includes all licensed providers in the facility (e.g. MD, DO, NP, PA) regardless of employment status (e.g. full-time, part-time or casual status; on-call; external consultant; etc.).

Preparation for the assessment:
- Select a timeframe (e.g. 3 months)
- Gain access to available data sources
  - Essential data sources:
    - Antimicrobial orders/prescriptions
    - Clinical documentation (medical records and rounding/daily reports)
  - Supplementary data sources (include any other useful data sources): consider using infection surveillance logs/linelists, microbiology testing, and/or imaging/radiology testing

Assessment:
1. Obtain the list of antimicrobials ordered for your selected timeframe.
2. For the first antimicrobial on the list, note the resident name, date of the order, drug, dose, duration, route, and indication as stated by the provider.
3. Review the additional data source(s) for infection-related documentation. For example, review clinical documentation (medical record progress notes, provider notifications, rounding report, etc.) for documented signs/symptoms of infection for that resident around the time period that the antimicrobial was prescribed.
4. If reviewing only essential data sources, please skip to #6. Determine whether microbiology testing was done; document tests that were done and the results.
5. Review the infection surveillance log: document whether the resident was included on the infection log and the type of infection.
6. When all of the data sources have been reviewed for infection-related information, move on to the next antimicrobial on the list and repeat the process until you reach the end of the list.
7. When the end of the list of antimicrobials is reached, summarize the information in the table. Look for trends in the documentation to identify improvement goals. Consider the following trends:
   - Trends by infectious syndrome
   - Trends by provider
   - Trends by antimicrobial
   - Drug dose, route, frequency (consider engaging consulting pharmacist)
   - Appropriateness of use (consider engaging consulting pharmacist)
   - Other notable prescribing trends
8. Use the results of the assessment to develop a plan to resolve gaps and barriers for optimizing antimicrobial prescribing through:
   - Effective communication among nursing staff and between nurses and providers
   - Thorough documentation of resident signs and symptoms
   - Communicating results to the antimicrobial stewardship committee/workgroup
   - Communicating aggregate and/or individual antimicrobial use results to providers
Additional steps to consider:
Align antimicrobial prescribing data and clinical documentation with published recommendations and
facility policies. For each prescribed antimicrobial, determine whether the criteria were met as described by:

- Antimicrobial prescribing guidelines for long-term care residents
  - Determine whether the resident’s documented signs and symptoms align with the
    recommended minimum criteria for initiating antibiotics (Loeb M, et al. Minimum Criteria for
    Initiation of Antibiotics in Long-term Care Residents. *Infection Control and Hospital
    Loeb checklist available here: [www.minnesotaarc.org/mat/card.pdf](http://www.minnesotaarc.org/mat/card.pdf)
- Infection surveillance definitions for long-term care facilities
  - Determine whether the infection met the Centers for Disease Control and Prevention’s (CDC)
    standard definitions for infection surveillance in long-term care (Stone ND, et al. Surveillance
    definitions of infections in long-term care facilities: revisiting the McGeer criteria. *Infection
    Control and Hospital Epidemiology*. 2012;33:965-77. Available at:
- Facility policies/protocols
  - Determine whether the prescribed antimicrobial aligned with expectations outlined in facility
    policies/protocols. Consider prophylactic and long-term use of antimicrobials.

Example table template:

<table>
<thead>
<tr>
<th>Essential Data</th>
<th>Supplementary Data</th>
<th>Aligning Clinical Documentation with Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident name / date</td>
<td>Antimicrobial (drug, dose, duration)</td>
<td>Indication for antimicrobial</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Summarize the data:

Total number of antibiotics reviewed: ______
Total number of data sources reviewed (in addition to antimicrobial orders): _____________________

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indication documented for antimicrobial*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antimicrobial indication aligned with clinical documentation*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antimicrobial indication aligned with microbiology/imaging data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antimicrobial indication aligned with infection surveillance data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antimicrobial indication aligned with expectations outlined in facility policies/protocols</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antimicrobial indication aligned with Loeb minimum criteria for initiating antibiotics (Loeb, 2001)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antimicrobial indication aligned with CDC standard definitions for HAI surveillance in long-term care (Stone, 2012)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Essential data sources to review

Overall:
Number (%) antimicrobial indication aligned with all data sources ______ (______ %)
Number (%) antimicrobial indication aligned with 3 data sources ______ (______ %)
Number (%) antimicrobial indication aligned with 2 data sources ______ (______ %)
Number (%) antimicrobial indication aligned with no data sources ______ (______ %)

Conclusions:

Goals:
Example Assessment:

Time period: January 1 – March 30, 2013
Location(s) in the facility: Facility-wide
Primary data source used: Antibiotic orders
Additional data sources used: Clinical documentation, infection surveillance, microbiology

<table>
<thead>
<tr>
<th>Resident</th>
<th>Antibiotic order</th>
<th>Antibiotic indication</th>
<th>Clinical documentation</th>
<th>Microbiology testing results</th>
<th>Infection surveillance linelist/log</th>
<th>Loeb minimum criteria for initiating antibiotics in LTC (Loeb, 2001)</th>
<th>CDC infection surveillance criteria (Stone, 2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 1/2/2014</td>
<td>Cipro 250 mg p.o.</td>
<td>UTI</td>
<td>Urgency, history of UTI</td>
<td>UC: $10^5$ CFU/ml E. coli</td>
<td>UTI</td>
<td>Minimum criteria not met</td>
<td>Criteria not met</td>
</tr>
<tr>
<td>B 1/5/2014</td>
<td>Cipro 500 mg p.o. daily x 3 days</td>
<td>UTI</td>
<td>Resident fall</td>
<td>UA: +bacteria UC: not done</td>
<td>UTI</td>
<td>No criteria met</td>
<td>Criteria not met</td>
</tr>
<tr>
<td>A 2/2/2014</td>
<td>Keflex 250 mg p.o. QID x 7 days</td>
<td>UTI</td>
<td>None</td>
<td>UA: +bacteria UC: E. coli</td>
<td>UTI</td>
<td>No criteria met</td>
<td>Criteria not met</td>
</tr>
<tr>
<td>C 2/14/14</td>
<td>Bacotrim DS p.o. Q Monday, Tuesday</td>
<td>Prophylaxis</td>
<td>Urinary catheter</td>
<td>Not done</td>
<td>Not on linelist/log</td>
<td>No criteria met</td>
<td>Criteria not met</td>
</tr>
<tr>
<td>D 2/17/14</td>
<td>Bacotrim DS p.o. BID x 10 days</td>
<td>UTI</td>
<td>Urine catheter in place, cloudy urine</td>
<td>UA: +bacteria UC: $10^5$ CFU/ml E. coli (ESBL)</td>
<td>UTI</td>
<td>No criteria met</td>
<td>Criteria not met</td>
</tr>
<tr>
<td>B 2/24/14</td>
<td>Cipro 250 mg p.o. BID x 10 days</td>
<td>UTI</td>
<td>Foul-smelling urine</td>
<td>UC: Enterococcus</td>
<td>UTI</td>
<td>No criteria met</td>
<td>Criteria not met</td>
</tr>
<tr>
<td>E 3/01/14</td>
<td>Levaquin 250 mg p.o. daily x 3 days</td>
<td>UTI</td>
<td>Temp=101.2 New frequency</td>
<td>UA: +bacteria +nitrites +WBCs UC: $10^5$ CFU/ml K. pneumo</td>
<td>UTI</td>
<td>Minimum criteria met (fever plus new frequency)</td>
<td>Criteria for UTI met in resident without urinary catheter (fever plus new frequency)</td>
</tr>
<tr>
<td>F 3/08/14</td>
<td>Cipro 250 mg p.o. BID x 3 days</td>
<td>UTI</td>
<td>Cloudy, smelly urine</td>
<td>UA: +bacteria UC: $10^5$ CFU/ml E. coli</td>
<td>UTI</td>
<td>No criteria met</td>
<td>Criteria not met</td>
</tr>
<tr>
<td>G 3/18/14</td>
<td>Bacotrim DS p.o. BID x 14 days</td>
<td>UTI</td>
<td>Agitation, no vitals noted</td>
<td>UA: +WBCs</td>
<td>UTI</td>
<td>No criteria met</td>
<td>Criteria not met</td>
</tr>
</tbody>
</table>