Results of an Educational Intervention and Barriers to Antimicrobial Stewardship in a Skilled Nursing Facility

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Introduction – Challenge of Skilled Nursing Facilities (SNF)

- ~1.4 million live in SNFs in the U.S.
- ~1 in 10 receive an Abx on any given day
- Abx – most commonly prescribed medication
- 40-70% chance of receiving an Abx within 6 months of admission
- Nearly half of Abx prescriptions are likely not necessary
- Abx account for 20% of Adverse Drug Reactions (ADR)
- Risk for CDI, resistant organisms, ADR

Source: Crnich et al, 2015
Definition of Antimicrobial Stewardship

- Antimicrobials = important **community** resources
  - Misuse = environmental patient safety issue
  - Easy transmissibility of resistant organisms places local and global community at high risk

- Antimicrobial stewardship = set of activities and commitments by a community to
  - To protect the use of antimicrobials in order
  - To ensure appropriate and optimal treatment of infections
  - To reduce the chance of resistant organisms
  - To reduce other adverse drug reactions
Problem Statement

- Unique Challenges in SNFs
  - Residents – atypical sxs of infection or disease
  - RNs do not utilize their potential
  - Incomplete resident assessments
  - Unstructured communications from staff
  - Inconsistent staffing due to rapid nurse turnover
- Off-site providers and diagnostic services
  - Few guidelines for initiating, de-escalating, or determining the duration of antimicrobials
  - Blurry x-rays and delayed lab reports

Source: Corazzini, et al., 2015; Crnich, et al., 2015; Dyar, Pagani, & Pulcini, 2015
Purpose of the DNP Project

- Prepare facility for SB 361 enactment – Jan 2017
- Assist in implementing facility AS program
- Improve quality of care
- Effect of an educational intervention directed at licensed staff nurses
  - Determine impact of infection criteria on antimicrobial prescriptions
  - Provide a guideline (McGeer-Stone Criteria) for initiating antimicrobials

See All Facilities Letter 15-30, 2015
Theoretical Framework

NHs – Complex social and environmental culture
LTCF culture and milieu – Environment
  Affect decision to prescribe antimicrobials
  Off-site prescribers and diagnostic services

Theoretical Frameworks

F. Nightingale: *Environmental Theory of Nursing* – SNF milieu

E. Roger: *Theory of Diffusion of Innovation* – social milieu and communication channels

See Crnich, et al., 2015; Hegge, 2014; Rogers, 2003; Sahin, 2006; Selanders, 1993; Smith, et al., 2008.
Review of the literature

- **Stuart, et al., 2012 – Point Prevalence Study**
  - 5 RACFs in Australia – Sep 2011
  - 27.95% to 43.4% of Abx did not fulfill criteria

- **Zimmerman, et al., 2014 – QI to reduce Abx use**
  - 12 NHs in North Carolina – June 2011 to Feb 2012
  - Attributes success to prescriber commitment

- **Fleet, et al., 2014 – Prospective cluster RCT**
  - 30 NHs in London – Jan 2010 to May 2011
  - RAMP increased compliance with criteria and decreased Abx use
Scales, et al., 2017 – Cross Sectional Study

- Only study of licensed nurses and AS
- 31 NHs in North Carolina
  - 6 nurse leaders from each facility
  - 3 MDs, 3 NPs/PAs with high caseloads
- Purpose – attitudes & perspectives prior to AS program establishment
- Prescribers > Nurses supported reduction
  - Subspecialty MDs – most supportive
- **Suggest** – MDs strong role in encouraging system change and supporting nurse
Study Participants - Licensed Nurses

- Licensed Nurses
  - Educational Intervention – facility required
  - Confidential Post-Educational Intervention Survey – not mandatory
- Residents were *not* participants
  - Retrospective chart review – pre & post Educational Intervention
- IRB obtained from CSU Fresno
  - Facility did not require IRB
Methods

1. **Educational Intervention** *(Oct 2016)*
   - In-services to licensed nurses
   - Orientation of newly hired licensed nurses

2. **Nurse Survey** *(Nov to Dec 2016)*

3. **Chart Audits**
   - Pre *(Sep 2016)* and
   - Post *(Nov 2016)* Educational Intervention
Profile of LN Survey Responders

**RNs - Highest Level of Education**

- AA: 4.30%
- Baccalaureate: 32.00%
- Master: 60.00%

**LVNs - Highest Level of Education**

- AA: 10.81%
- Baccalaureate: 54.05%
- Vocational School: 35.14%

**Country of Original Licensure / Education**

- PI: 19%
- Ukraine: 13%
- USA: 37%
- Tajikistan: 23%

**Ethnic Background of Licensed Nurses**

- Asian: 25%
- Black: 21%
- Hispanic: 1%
- Native American: 1%
- Pacific Island: 1%
- White: 2%
- Other: 0%
Pre and Post Adherence to Criteria

- Dramatic change in adherence to Criteria
- Higher adherence in LTC / LVN unit than in STU / RN unit

Pre-Education Adherence to Criteria

- Short Term Unit
  - Did NOT Fit Either Criteria: 37%
  - Fit Loeb Criteria: 43%
  - Fit McGeer-Stone Criteria: 2%

Post-Education Adherence to Criteria

- Short Term Unit
  - Did NOT Fit Either Criteria: 41%
  - Fit Loeb Criteria: 17%
  - Fit McGeer-Stone Criteria: 10%

- Long Term Unit
  - Did NOT Fit Either Criteria: 3%
  - Fit Loeb Criteria: 17%
  - Fit McGeer-Stone Criteria: 28%
Barriers & Limitations

- Small sample – Only one facility
- Facility characteristics may be very different from other facilities – not applicable to other LTCFs
- High nurse turnover
- Educational intervention to new hires and annually to staff continues
- Requires follow-up to determine sustainability of program
Discussion

- Need more studies of SNF licensed nurses
  - LVN – Some activities outside scope of practice
  - RN potential not realized – what is RN’s role in SNFs?
- NPs – Possible key to change & applicability of AS
- Buy-in of nurse leaders and prescribers needed to support and sustain change, including AS
- AS education should begin in nursing school

See Corazzini et al., 2015; McGilton et al., 2016
Recommendations

- More studies of licensed nurses in SNFs
  - Should differentiate RNs and LVNs
  - To help resolve SNF staffing issues
  - To determine nurse competencies for this setting
- Use of written nurse surveys may be inadequate in this setting
- NPs be engaged in stewardship activities in NHs
- Antibiotic stewardship training be included in nursing school curriculums e.g. the clinical area
Thank you

Questions?


References


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