Transforming Antibiotic Treatment Through Interprofessional Education in Shared Decision Making

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The goal of this presentation is to describe the use of interprofessional education and collaboration in the implementation of shared decision making to address the appropriate use of antibiotics for respiratory tract infections.
Learning Objectives

By the end of this presentation participants will be able to identify the effectiveness of shared decision making to promote the appropriate use of antibiotics for respiratory tract infections.

By the end of this presentation participants will be able to identify methods for successful implementation of shared decision making using interprofessional education and collaboration.

By the end of this presentation participants will be able to identify lessons learned and needs for further development of shared decision making for interprofessional collaboration.
Disclosures

- Information provided in this presentation is part of a research study conducted for a DNP Capstone project.

- Primary Author is Master Trainer Certified for the SHARE Approach which is funded by AHRQ (contract HHSA290 2012 000171 Task Order 1) and developed without commercial support.

- No conflicts of interest, relevant financial relationships, or sponsorships relevant to this activity.
According to the World Health Organization (2012) antibiotic resistance is a global health emergency which poses a serious threat to modern medicine; making the inability to treat common illnesses and injuries no longer a fantasy, but a real possibility.

The unnecessary overuse of antimicrobials directly correlates to antibiotic resistance within a population. (World Health Organization, 2012)

Viral respiratory tract infections are a major cause of antibiotic use, even though there is no evidence to support their use for these infections (Kenealy & Arroll, 2013; World Health Organization, 2012).
Review of the literature

Patient perceptions and expectations are often the reason unnecessary antibiotics are prescribed (Altiner et al., 2007; Briel et al., 2007).

Shared decision making (with a focus on communication and patient expectations) shows promise for decreasing antibiotic use for respiratory tract infections in the college health setting. (Blyer and Hulton, 2015)

Interventions that support both interprofessional care and SDM (IP-SDM) have the potential to improve health care (Stacey et al., 2014)

IP-SDM is likely to result in health care decisions that are more likely to be carried out by the patient (Stacey et al., 2014)
National Importance

- National Action Plan for Combating Antibiotic-Resistant Bacteria
  - 2020 Goal to reduce inappropriate antibiotic use by 50% in outpatient settings

- Affordable Care Act
  - Calls for the use of Shared Decision Making
    - Considered a “sleeper provision” (Oshima Lee & Emanuel, 2013)
Description of Innovation

Shared Decision Making (SDM) is the interactional exchange of information and deliberation between a provider and a patient (Légaré et al., 2013)

Provider shares knowledge about a condition and treatment options (including risks and benefits)

Patient is an active participant who shares their values and preferences for treatment

Often utilizes decision aids
Description of Innovation

http://vimeo.com/35274883
Who is involved in shared decision making?

- Patient
- Provider (Physician, nurse practitioner, or physician assistant)
- Decision coaches (Nurse, social worker, health educator)
- Managers/support staff
- Family members and care givers
- Specialists
- Pharmacist, dietitian, and more!
Setting for shared decision making

Any health care setting where patient and family members make health care decisions
Problem Statement

Does the use of shared decision making within the college health setting increase student decisional comfort with the appropriate use of antibiotics while maintaining antibiotic prescribing rates for viral respiratory tract infections?
Population and Setting

James Madison University Student Health Center

- 30,000 student visits per year
- 5,000 students seen for Respiratory Tract Infections per year

College Students

- English speaking
- Age 18 or older
- Patients being seen for signs/symptoms of a respiratory tract infection

Medical Providers

- Physicians
- Nurse Practitioners
Design

- No use of decision aid
  - August 31, 2015 through December 18, 2015
  - Patient surveys completed after visits for respiratory tract infections

- Training January 2016
  - SHARE Approach training (AHRQ, 2014)
  - Decision Aid “Taking an Antibiotic or Not” (Labrecque at al., 2010)
  - Electronic tablets for point-of-care patient engagement

- Decision aids available for use
  - January 11, 2016 through May 6, 2016
  - Patient surveys completed after visits for respiratory tract infections
  - Provider Intent Survey immediately following shared decision making training, at study intervention mid-point, and at study conclusion
Implementation

Based on the Knowledge to Action Cycle (McDavid, Huse, and Hawthorn, 2013)

Ottawa 5 step process for the implementation of a decision aid

1) Identify the decision
2) Find patient decision aids
3) Identify barriers and explore ways to overcome them
4) Provide training
5) Monitor use and outcomes
## Implementation Step 1 - Find a Decision

### Viruses or Bacteria
What's got you sick?

Antibiotics only treat bacterial infections. Viral illnesses cannot be treated with antibiotics. When an antibiotic is not prescribed, ask your healthcare professional for tips on how to relieve symptoms and feel better.

<table>
<thead>
<tr>
<th>Illness</th>
<th>Usual Cause</th>
<th></th>
<th>Antibiotic Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cold/Franny Nose</td>
<td></td>
<td>Yes</td>
<td>NO</td>
</tr>
<tr>
<td>Bronchitis/Chest Cold (in otherwise healthy children and adults)</td>
<td></td>
<td>Yes</td>
<td>NO</td>
</tr>
<tr>
<td>Whooping Cough</td>
<td></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Flu</td>
<td></td>
<td>Yes</td>
<td>NO</td>
</tr>
<tr>
<td>Strep Throat</td>
<td></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Sore Throat (except strep)</td>
<td></td>
<td>Yes</td>
<td>NO</td>
</tr>
<tr>
<td>Fluid in the Middle Ear (otitis media with effusion)</td>
<td></td>
<td>Yes</td>
<td>NO</td>
</tr>
<tr>
<td>Urinary Tract Infection</td>
<td></td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Antibiotics Aren’t Always the Answer

www.cdc.gov/gets smart
Implementation Step 2- Find Decision Aid

Decision Aid Library Inventory (DALI)
https://decisionaid.ohri.ca/cochinvent.php

- Publically available
- Evidence-based
- Current
- Meet definition of a patient decision aid
Implementation Step 2- Find Decision Aid

Taking an Antibiotic or Not?

ACUTE RESPIRATORY TRACT INFECTIONS (ARI)

Diagnostic Decision Support Tool

STEPS 1 and 2: Complete the Diagnostic Decision Support Tool according to your patient’s ARI to estimate his/her probability of bacterial infection.

STEP 3: Share your estimate of probability with your patient.

STEP 4: Communicate the therapeutic options regarding the use of antibiotics (taking or not taking) and the benefits and risks associated with each option.

STEP 5: Clarify the values and preferences of your patient regarding each option.

STEP 6: Evaluate the decisional comfort of your patient regarding his/her decision.

ACUTE RHINOSINUSITIS

To differentiate patients with an ACUTE RHINOSINUSITIS due to a bacteria from those whose ACUTE RHINOSINUSITIS is due to a virus

STEP 1

Tick the key symptoms and signs identified in your patient with symptoms of rhinosinusitis

- Initial Question
  - Duration of symptoms
    - < 10 days
    - ≥ 10 days

- Additional Questions
  - Double sickening (worsening after improving)
  - Colored nasal discharge
  - Facial/sinus pain
  - Maxillary tooth pain
  - No response to decongestants

- Additional Signs
  - Purulent discharge in nasal cavity (middle meatus) and/or throat
  - Sinus pain on one side
  - Abnormal transillumination (one side)

STEP 2

Encourage the clinical probability (%) of a bacterial acute rhinosinusitis according to symptoms and signs of patients assuming a prevalence of 15%:

<table>
<thead>
<tr>
<th>Additional symptoms/signs</th>
<th>&lt;10 days</th>
<th>&gt;10 days*</th>
</tr>
</thead>
<tbody>
<tr>
<td>4+</td>
<td>30%</td>
<td>95%</td>
</tr>
<tr>
<td>3</td>
<td>15%</td>
<td>75%</td>
</tr>
<tr>
<td>2</td>
<td>5%</td>
<td>50%</td>
</tr>
<tr>
<td>1</td>
<td>2%</td>
<td>25%</td>
</tr>
<tr>
<td>0</td>
<td>1%</td>
<td>5%</td>
</tr>
</tbody>
</table>

*Adults 7-10 days; children 10-14 days

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Implementation Step 3- Identify Barriers and Overcome Them

The use of shared decision making, education, and decision aids to engage students in the ethical use of antibiotics for respiratory tract infections

Project Proposal
Kristina Blyer
Spring 2015
Implementation Step 3 - Common barriers

“I already do shared decision making”

“I don’t have enough time”

“What if I don’t agree with what the patient is asking for?”

Difficulty finding decision aids that providers agree to use
Implementation Step 3 - Overcoming Barriers

- Include the interprofessional team!

- Allow providers, administration, pharmacists, and other team members to review and select decision aids

- Provide tools for dealing with differences between patient and provider
  - Examples: teach back and conversation starters
  - Health educators and counselor are wonderful at teaching these methods to the team
Implementation Step 4 - Implementation and Training

The SHARE Approach
Essential Steps of Shared Decision Making

Five steps for you and your patients to work together to make the best possible health care decisions.

Step 1: Seek your patient’s participation
Communicate that a choice exists and invite your patient to be involved in decisions.

Step 2: Help your patient explore and compare treatment options
Discuss the benefits and harms of each option.

Step 3: Assess your patient’s values and preferences
Take into account what matters most to your patient.

Step 4: Reach a decision with your patient
Decide together on the best option and arrange for a follow-up appointment.

Step 5: Evaluate your patient’s decision
Plan to revisit decision and monitor its implementation.

www.ahrq.gov/shareddecisionmaking
April 2014 AHRQ Pub. No. 14-0026-2-EF
Physician (Medical Director)

Health Educator

Nurse Practitioner

Physician

Physician

Physician Assistant

Nurse Practitioner

Present not in picture - Pharmacist, 3 more Physicians, and Nurse Administrator
Implementation Step 5 -
Monitor use and outcomes

► Sure Test ©

When making decisions about the treatment of respiratory tract infections:

<table>
<thead>
<tr>
<th></th>
<th>Yes [1]</th>
<th>No [0]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you feel SURE about the best choice for you?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you know the benefits and risks of each option?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are you clear about which benefits and risks matter most to you?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you have enough support and advice to make a choice?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The SURE Test © O’Conner and Légaré, 2008

Sum of answers = Decisional comfort.
A score of ≤ 3 indicates decisional conflict is present
Implementation Step 5-
Monitor use and outcomes

- Other areas for data collection/analysis
  - Antibiotic prescribing rates
  - Visit length

- Provider Feedback
  - Survey based on the Theory of Planned behavior
  - Survey on Decision Aid use
  - Survey on perceived use of Shared Decision Making
  - Qualitative feedback
Case Scenario - Putting Shared Decision Making Into Action

History: 21 year old female senior reports a sore throat starting 4 days ago. Now with nasal congestion and cough. Denies fever. Tried Sudafed yesterday and it “did nothing”.

Exam: Denies facial and/or tooth pain. Clear nasal discharge noted, nasal membranes have a glassy appearance without erythema or edema, throat and ears appear normal, mildly enlarged (non-tender) cervical nodes, and lungs are clear.

Note: Student is applying for graduate school and has to take the GRE exam tomorrow. Student states that she has to feel better because this test will affect the rest of her life! Her mother called the office before the student’s visit and states that her daughter always gets a sinus infection this time of year and that a Z-pack works best for her daughter.
Case Scenario - Putting Shared Decision Making Into Action

ACUTE RHINOSINUSITIS

To differentiate patients with an ACUTE RHINOSINUSITIS due to a bacteria from those whose ACUTE RHINOSINUSITIS is due to a virus

STEP 1

Tick all the key symptoms and signs identified in your patient with symptoms of rhinosinusitis

INITIAL QUESTION
 Duration of symptoms

- ✔ < 10 days
- □ ≥ 10 days

ADDITIONAL QUESTIONS
- □ Double sickening (worsening after improving)
- □ Colored nasal discharge
- □ Facial/sinus pain
- □ Maxillary tooth pain
- ✔ No response to decongestants

ADDITIONAL SIGNS
- □ Purulent discharge in nasal cavity (middle meatus) and/or throat
- □ Sinus pain on one side
- □ Abnormal transillumination (one side)

ALERTS
- ✔ Persistent high fever
- ✔ Severely ill
- - Orbital swelling or erythema
- ✔ Diplopia, proptosis or other neurologic signs

STEP 2

Encircle the clinical probability (%) of a bacterial acute rhinosinusitis according to signs and symptoms of patients assuming a prevalence of 15%

<table>
<thead>
<tr>
<th>Additional symptoms/signs</th>
<th>&lt;10 days</th>
<th>&gt;10 days*</th>
</tr>
</thead>
<tbody>
<tr>
<td>4+</td>
<td>30%</td>
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</tr>
<tr>
<td>1</td>
<td>2%</td>
<td>25%</td>
</tr>
<tr>
<td>0</td>
<td>1%</td>
<td>5%</td>
</tr>
</tbody>
</table>

*A: Adults 7-10 days; children 10-14 days

2% probability that this is a bacterial infection

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**Case Scenario - Putting Shared Decision Making Into Action**

**ACUTE RESPIRATORY TRACT INFECTIONS (ARI)**

**Shared Decision Making Support Tools**

**STEP 3: DIAGNOSTIC PROBABILITY OF BACTERIAL INFECTION**

<table>
<thead>
<tr>
<th>Probability (10%)</th>
<th>Explain the figure adapting to the specific ARI:</th>
</tr>
</thead>
<tbody>
<tr>
<td>10%</td>
<td>• On 100 patients who have complaints similar to yours, X have an infection caused by a bacteria and Y have an infection caused by a virus. I cannot tell you if you are in the X or the Y.</td>
</tr>
<tr>
<td>20%</td>
<td>Offer additional relevant therapeutic or diagnostic options.</td>
</tr>
<tr>
<td>30%</td>
<td>Notice: For acute pharyngitis, options are: 1) culture, rapid test or AB if ≥50%, 2) culture or rapid test if ≥15%, and 3) neither culture nor rapid test if &lt;15%.</td>
</tr>
<tr>
<td>40%</td>
<td></td>
</tr>
<tr>
<td>50%</td>
<td></td>
</tr>
<tr>
<td>60%</td>
<td></td>
</tr>
<tr>
<td>70%</td>
<td></td>
</tr>
<tr>
<td>80%</td>
<td></td>
</tr>
<tr>
<td>90%</td>
<td></td>
</tr>
<tr>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

*Show your patient his/her probability to have a bacterial infection (Specify the ARI)*

*Sinus Infection* by illustrating his/her probability and explicitly share the uncertainty associated to this estimate.

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Case Scenario- Putting Shared Decision Making Into Action

**STEP 4: BENEFITS AND RISKS OF TAKING AN ANTIBIOTIC OR NOT**

**Benefits**
Associated with taking antibiotics to treat an ARI

<table>
<thead>
<tr>
<th>Benefits</th>
<th>No Antibiotics</th>
<th>Antibiotics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute rhinosinusitis</td>
<td>70</td>
<td>80</td>
</tr>
<tr>
<td>Acute bronchitis</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Acute pharyngitis</td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>

**Legend**
- Cured with no antibiotics
- Cured due to antibiotics
- Not cured

**Definition of cured**
- Rhinosinusitis: Better/cured 1 wk
- Bronchitis: No cough 2 wks
- AOM: No pain 2-3 days
- Pharyngitis: No pain 4-5 days

**On average, antibiotics reduce symptoms by a few hours to a day.**

**Explain the figures:**
« You have 2 options: taking an antibiotic or not taking antibiotic. »

**Benefits**
« If 100 patients similar to you don’t take an antibiotic, 70 won’t have... (define the symptom according to the specific ARI) ...after... days/weeks, and 30 will still have...after... days/weeks. If 100 patients similar to you take an antibiotic, 10 more (in green) won’t have...after... days/weeks. These 10 on 100 are the only one who benefit from taking an antibiotic. »

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### Case Scenario: Putting Shared Decision Making Into Action

#### Risks
Associated with taking antibiotics to treat an ARI
Acute rhinosinusitis, acute bronchitis, acute pharyngitis, acute otitis media

#### Legend
- 😊 No problems
- 😞 Problems
- 😞 Problems due to antibiotics

#### Definition of problems
**Health problems**
Such as:
- Diarrhea
- Stomach ache
- Skin rash

#### Table

<table>
<thead>
<tr>
<th></th>
<th>No Antibiotics</th>
<th>Antibiotics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No problems</strong></td>
<td>85</td>
<td>80</td>
</tr>
<tr>
<td><strong>Problems</strong></td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td><strong>Problems due to antibiotics</strong></td>
<td>15</td>
<td>20</td>
</tr>
</tbody>
</table>

« On the other hand, among the 100 patients similar to you who take an antibiotic, 5 (in brown) will have significant side effects caused by the antibiotic such as diarrhea, stomach aches, or allergic reactions. »

« I can’t tell you if you will be in these who will benefit (in green), those who will have side effects (in brown) or, as the majority, those who will take them for nothing. »

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**Case Scenario - Putting Shared Decision Making Into Action**

Use the balance of benefits and risks as a visual decision aid with your patient:

1. Review the most common benefits (reason for taking) and risks (reasons for not taking).
2. Add any other reasons important to your patient.
3. Identify how much each listed benefit and risk is important to your patient. Encircle one star (*) if an item is not very important to them and up to five stars (*****). If an item is very important to them, do not encircle any star if an item is not at all important to them.

<table>
<thead>
<tr>
<th>Benefits (reasons for taking)</th>
<th>Risks (reasons for not taking)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taking an antibiotic</td>
<td></td>
</tr>
<tr>
<td>• Having symptoms for a little less longer…</td>
<td>• Taking pills for many days</td>
</tr>
<tr>
<td></td>
<td>• Having side effects such as diarrhea, stomach ache, nausea, allergic reactions</td>
</tr>
<tr>
<td>Rhinosinusitis: ∼1 day on 1 week</td>
<td>Time waiting for Rx to be filled</td>
</tr>
<tr>
<td>Bronchitis: ∼½ to 1 day on 2-3 weeks</td>
<td></td>
</tr>
<tr>
<td>AOM: ∼few hours on 2-3 days</td>
<td>I will have to explain to my mom</td>
</tr>
<tr>
<td>Pharyngitis: ∼1 day on 4-5 days</td>
<td></td>
</tr>
</tbody>
</table>

| Not taking an antibiotic |                               |
| • Healing without drugs |                               |
| • Not having side effects |                               |
| • ___________________ |                               |

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**Case Scenario - Putting Shared Decision Making Into Action**

**STEP 6: DECISIONAL COMFORT**

<table>
<thead>
<tr>
<th>Step</th>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>S.</td>
<td>Do you feel SURE about the best choice for you?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.</td>
<td>Do you know enough about the benefits and risks of taking an antibiotic and of not taking an antibiotic?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R.</td>
<td>Are you clear about which benefits and risks of taking an antibiotic and of not taking an antibiotic matter most to you?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E.</td>
<td>Do you have enough support and advice to make a choice?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Results

Decisional Conflict

- When the decision aid was not used students were **2.2 times more likely** to have decisional conflict than when the decision aid was used \([N=643; p<.001; 95\% \text{ CI (1.55, 3.12)}]\)

Antibiotic prescribing rates

- No Significant difference

Age, gender, and year in college were not significant
Results-

In their own words

- “Everything was explained well and I was given the option to have antibiotics or not (which is good)” - Student

- “It clearly helped many students realize that antibiotics were not always indicated…” “It also was a good way to discuss possible side effect of antibiotics.” - Provider

- “For many patients seeing the low probability of bacterial etiology in print seems to be eye opening for them. It made things easier for me to explain and for them to grasp.” - Provider

- “I was able to explain benefits and risks better using the decision aids.” - Provider
Conclusion/Discussion
Implications

Further work should include:

- Short- and long-term health outcomes of SDM and IP-SDM
- The effectiveness of The SHARE Approach training in various clinical settings
- Development/alteration of respiratory decision aids
- Development of clinical “hands-on” training programs
- Implementation of SDM and IP-SDM in varied clinical settings
- Incorporation of SDM and IP-SDM into curriculum of all health professionals
Implications

IP-SDM Model

questions?
References


