



Caregiver Viewpoints Related to Antibiotic Stewardship with Q-Methodology

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Conflicts of Interest and Disclosures

The presenters have no real or perceived vested interests or conflicts of interest in relation to this presentation

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Session Objectives

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- To define antibiotic stewardship.
- To describe the difficulties of antibiotic prescriptions and caregiver education.
- To discuss outcomes of video educational engagement with caregivers.





Antibiotic Stewardship

Antibiotic stewardship involves a group of coordinated strategies to improve the prescriptive use of antibiotics in the effort to reduce inappropriate antibiotic use, decreasing resistance to antibiotics, improving patient outcomes, and reducing facility and patient costs.





Introduction

- **What is antibiotic or antimicrobial resistance?**
- **“Each year in the U.S., at least 2 million people are infected with antibiotic-resistant bacteria, and at least 23,000 people die as a result” (CDC, 2018).**
- **What are we as healthcare providers doing about it?**
 - **Providing education**
 - **Implementing effective stewardship programs**
 - **Increasing public awareness**





CDC Guidelines

| Common Condition: What's got you sick? | Common Cause Bacteria | Common Cause Bacteria or Virus | Common Cause Virus | Are antibiotics needed? |
|---|-----------------------|--------------------------------|--------------------|-------------------------|
| Strep throat | ✓ | | | Yes |
| Whooping cough | ✓ | | | Yes |
| Urinary tract infection | ✓ | | | Yes |
| Sinus infection | | ✓ | | Maybe |
| Middle ear infection | | ✓ | | Maybe |
| Bronchitis/chest cold (in otherwise healthy children and adults)* | | ✓ | | No |
| Common cold/runny nose | | | ✓ | No |
| Sore throat (except strep) | | | ✓ | No |
| Flu | | | ✓ | No |

https://www.cdc.gov/antibiotic-use/community/about/can-do.html?s_cid=NCEZID-AntibioticUse-043&fbclid=IwAR0dTDNWaEr6I_TTssxtRBX2-1Gucqy52tqHNxrw0ulza4GKTcexbYvK3Y





CDC AMR Challenge

- Year long antimicrobial resistance challenge by CDC
- Launched September 25, 2018
<https://www.youtube.com/watch?v=mwYmGP1iGlc>
- Organizations can submit a written commitment to join the challenge

#GlobalAMRChallenge





Literature Review

- **Multiple providers feel parental pressure to prescribe antibiotics**

(Cabral et al., 2016; Cantarero-Arevalo, Hallas & Kaae, 2017; Gugkaeva, Crago & Yasnogorodsky, 2017; Smith, Kim & M'likantha, 2018; Wiskirchen, Summa, & Perrin, 2016)

- **Caregivers report higher levels of satisfaction when their health care provider educates them about the reasoning antibiotics were not prescribed.**

(Cabral et al., 2016; Coxeter, Mar, & Hoffmann, 2017; Dekker et al, 2017; Gaarslev, Yee, Chan, Fletcher-Lartey & Khan, 2016)

- **U.S citizens are aware of antimicrobial resistance; however, they are not aware of the risk it poses to them and their children**

(Carter, Sun & Jump, 2016; Coxeter, Mar, & Hoffmann, 2017; Gaarslev, Yee, Chan, Fletcher-Lartey & Khan, 2016; Watkins, Sanchez, Albert, Roberts & Hicks, 2015)





Nursing Honors Project Study

- **Understand local caregiver perceptions surrounding antibiotic use and prescription.**
- **Identify caregivers' knowledge gaps in antibiotic education**
- **Develop an educational intervention for caregivers to improve antibiotic understanding to decrease the expectation pressure on providers.**

By increasing antibiotic knowledge in caregivers, frequency of antibiotic prescription could be decreased and the evolution of antibiotic resistance could be slowed.





Methodology

- **Literature review-predominant antibiotic stewardship opinions**
- **Creation of 35 statements related to antibiotic stewardship perceptions listing (Q-set) and forced distribution sheet**
- **Communicate with local pediatrics offices**
- **Communicate with local school systems**
- **Data collection at local pediatrics offices**
- **Data analysis for Q Methodology for caregiver viewpoints**
- **Public Service Announcement-style video created with local television station (WTIU)**
- **Survey creation for pre-video and post-video data collection**
- **Data collection at local pediatrics offices and school meeting**
- **Data analysis for surveys around the educational video**





Q-Methodology

- **With an 80 year history, Q methodology is a complete mixed-method approach for studying subjectivity (Ramlo, 2015)**
- **Q method is specifically designed to be person-centered and find preferences (Simons, 2013)**
- **Q studies use statistical principles and small sample sizes to study subjectivity in the social and behavioral sciences.**
- **Process involves rank ordering levels of agreement/disagreement with a set of statements about a given topic.**





Actual Project Q Methodology

Data Sorting Sheet

| Strongly Disagree | | | | Neutral | | | | Strongly Agree |
|---|---|--|---|---|---|--|---|--|
| -4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 | +4 |
| I request antibiotics due to upcoming life events such as going out of town on vacation. | A course of antibiotics can make a person feel better. | I know when my kid is sick, so I do not want to wait on an antibiotic. | Antibiotics are more expensive, but work on most colds. | Changes in weather is a major part of respiratory infections. | If I do not receive a medication, I am less likely to return to that doctor. | Antibiotics will speed up the recovery time from the common cold which equals less time from work. | Doctors are adequately trained regarding antibiotic resistance. | There is a definite connection in developing antibiotic resistance with taking antibiotics. |
| When the doctor does not prescribe antibiotics, it is an effort to save the government money. | When I receive a viral diagnosis without antibiotic, I believe my doctor was unable to diagnose my problem. | It's okay to give my child a prescription medication without seeing a doctor or getting a proper medical examination due to a booked schedule. | Antibiotics are more successful at treating illness than over-the-counter medications that cost less. | When I take off work in order to take my child in to the doctor, I expect to receive a treatment or medication. | If antibiotic resistance develops there will always be a stronger antibiotic from the drug companies. | Antibiotics have worked before; therefore, I expect antibiotics for the current illness. | If my child has similar symptoms, then I expect similar treatments from my doctor. | I would rather receive delayed antibiotics as the doctor prescribes, so I might not have to return to the doctor's office. |
| | Extra time dealing with complications to my child's illness could be avoided if antibiotics were used. | I request antibiotics for treatment due to my job as a working parent which equals potential loss of time on my paycheck | It is possible that I could build an immunity to certain antibiotics over time. | I will pay for stronger antibiotics after over-the-counter meds, but only if necessary. | Antibiotics resistance is a significant problem with cost associated that should be addressed. | If they use antibiotics on one child, it can prevent the other children from getting the illness. | I would accept an over-the-counter treatment, as a parent I want to walk away with something. | |
| | | If antibiotics are prescribed, it can prevent the cost of follow-up appointments. | Recovery from an illness has less time away from my job when using antibiotics. | Using fewer antibiotics will decrease antibiotic resistance. | I trust my doctor's advice as to whether we need antibiotics or not. | I would like my child to receive some treatment without antibiotics to allow me to return to work. | | |
| | | | I am satisfied with my doctor even when I do not receive antibiotics. | When a doctor does not prescribe antibiotics, it is due to his/her training. | If taken too often, antibiotics are less likely to work in the future. | | | |
| | | | | I expect antibiotics which adds worth to my office visit by the doctor. | | | | |
| | | | | I understand the proper use of antibiotics as my child should not always receive them. | | | | |





Factor Scores Related to Statements

| Factor Scores with Corresponding Ranks for Statements | | | | | | | | | | |
|---|---|-----------|----------|------|----------|------|----------|------|----------|------|
| Statement # | Statement | Statement | Factor 1 | | Factor 2 | | Factor 3 | | Factor 4 | |
| | | | Z-score | Rank | Z-score | Rank | Z-score | Rank | Z-score | Rank |
| 1 | Antibiotics are more successful at treating illness than over-the-counter medications that cost less. | 1 | -1.15 | 32 | 1.14 | 5 | 0.61 | 9 | -0.07 | 19 |
| 2 | When the doctor does not prescribe antibiotics, it is due to his/her training. | 2 | -0.55 | 23 | -1.07 | 31 | 1.4 | 4 | -1.7 | 33 |
| 3 | When the doctor does not prescribe antibiotics, it is an effort to save the government money. | 3 | -0.57 | 24 | -2.64 | 35 | -1.4 | 33 | -0.87 | 28 |
| 4 | If antibiotic resistance develops there will always be a stronger antibiotic from the drug companies. | 4 | -1.34 | 34 | 0.7 | 10 | -0.49 | 23 | -0.01 | 18 |
| 5 | Recovery from an illness has less time away from my job when using antibiotics. | 5 | -0.21 | 18 | 1.38 | 4 | 0.54 | 11 | 0.17 | 13 |
| 6 | Antibiotics have worked before; therefore, I expect antibiotics for the current illness. | 6 | -0.6 | 25 | 0.03 | 18 | 0.34 | 14 | 0.72 | 10 |
| 7 | If my child has similar symptoms, then I expect similar treatments from my doctor. | 7 | -1.02 | 29 | 0.31 | 14 | -0.13 | 20 | -0.94 | 29 |
| 8 | If they use antibiotics on one child, it can prevent the other children from getting the illness. | 8 | -1.27 | 33 | -0.66 | 28 | -0.75 | 27 | -0.77 | 26 |
| 9 | I expect antibiotics which adds worth to my office visit by the doctor. | 9 | -1.08 | 30 | -0.7 | 29 | -0.97 | 28 | 0.01 | 15 |
| 10 | I would accept an over-the-counter treatment as parents I want to walk away with something. | 10 | -0.46 | 22 | -0.16 | 22 | 0.05 | 17 | 0.01 | 16 |
| 11 | When I receive a viral diagnosis without antibiotic, I believe my doctor was unable to diagnose my problem. | 11 | -1.13 | 31 | -1.62 | 33 | -0.57 | 24 | -1.71 | 34 |
| | Extra time dealing with complications to my child's | | | | | | | | | |





Q-Methodology Results

From the thirty-five participants, twenty-six participants loaded on the final four-factor solution which explained 47% of the variance surrounding the caregiver viewpoints. Six Q sorts by participants were found to be confounding and three participant Q sorts did not load. The final four-factor outcomes assisted in the development of the educational intervention for antibiotic stewardship. The results of the pre-test and post-test, created for the initiative, evaluate the effectiveness of the antibiotic stewardship video educational intervention.





Four Focus Areas

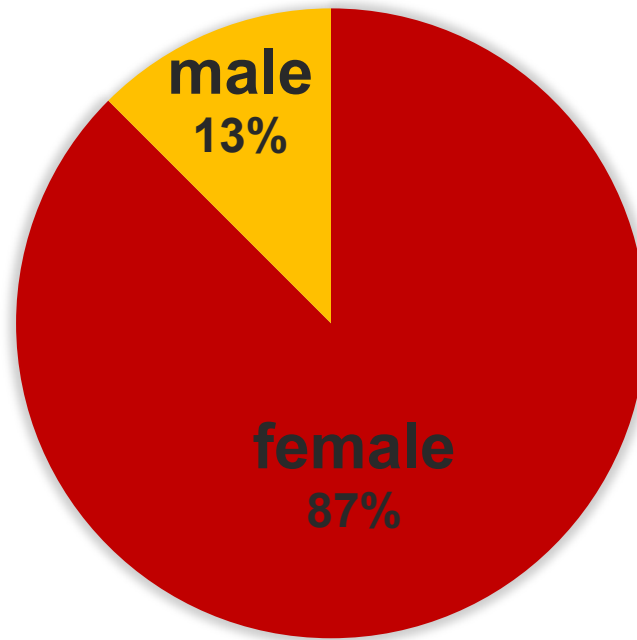
- **Antibiotic Resistance (n=11)**
 - “If taken too often, antibiotics are less likely to work in the future.”
- **Recovery Time (n=5)**
 - “...antibiotics will speed up the recovery time from the common cold which equals less time from work.”
- **Provider Advice (n=7)**
 - “I trust my doctor’s advice as to whether we need antibiotics or not.”
- **Treatment (n=3)**
 - “I would like my child to receive some treatment without antibiotics to allow me to return to work.”





Demographic Data-Gender

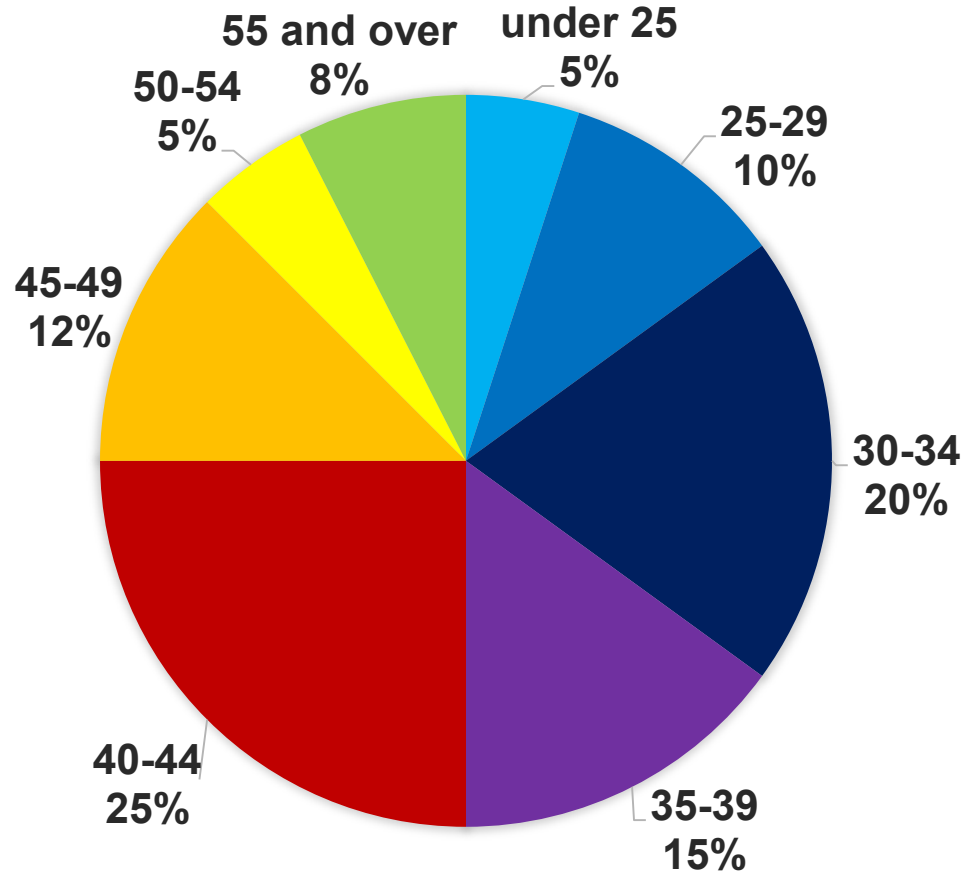
GENDER





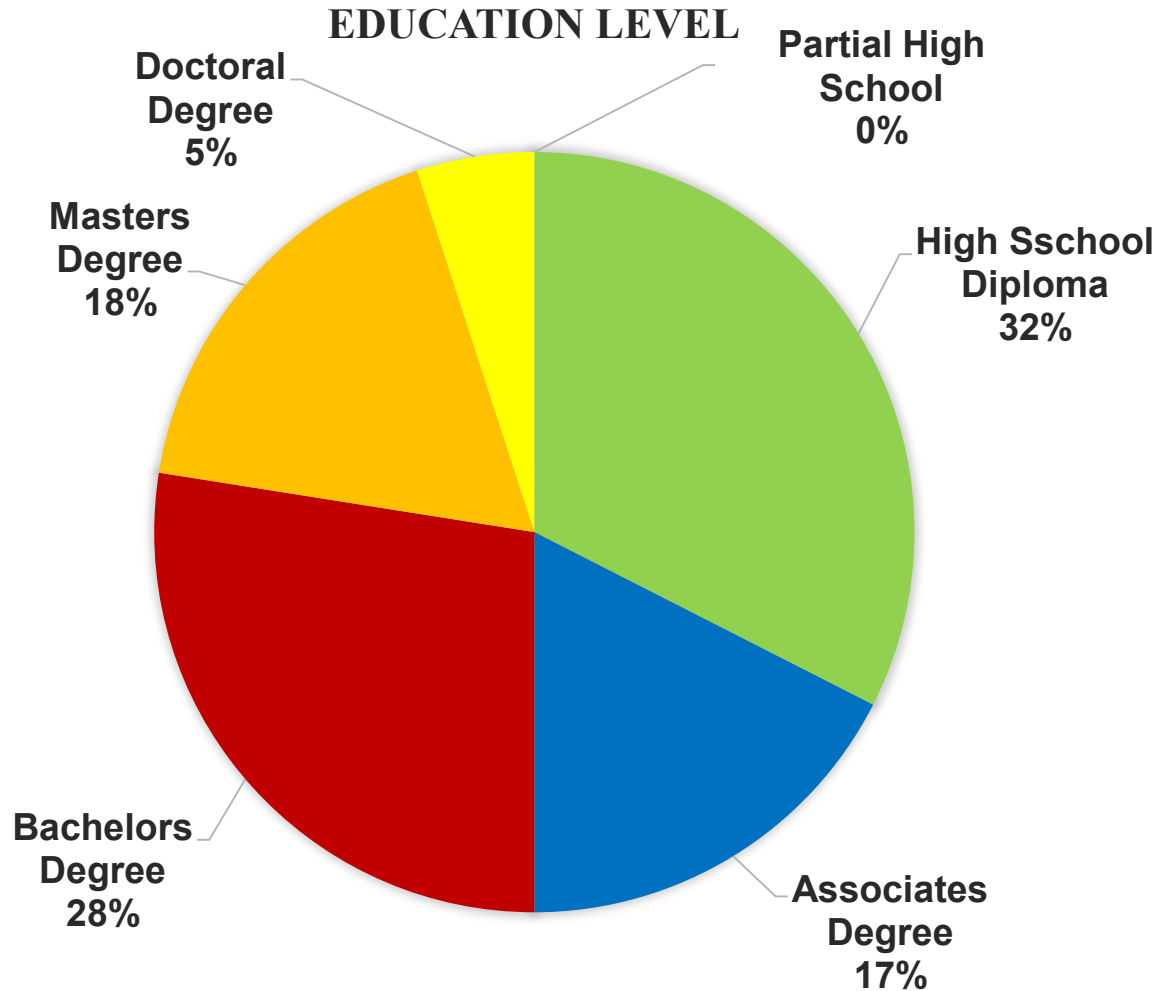
Demographic Data-Age Group

AGE GROUP





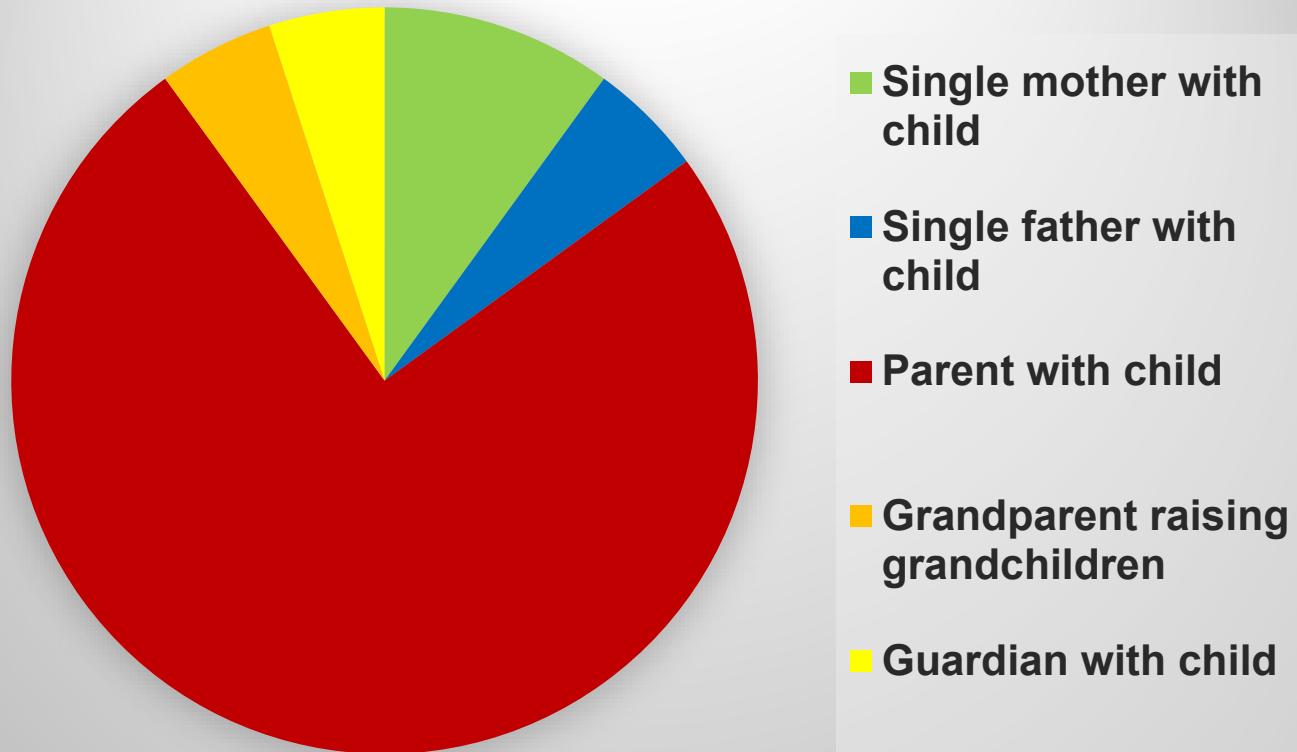
Demographic Data-Education





Demographic Data-Family Unit

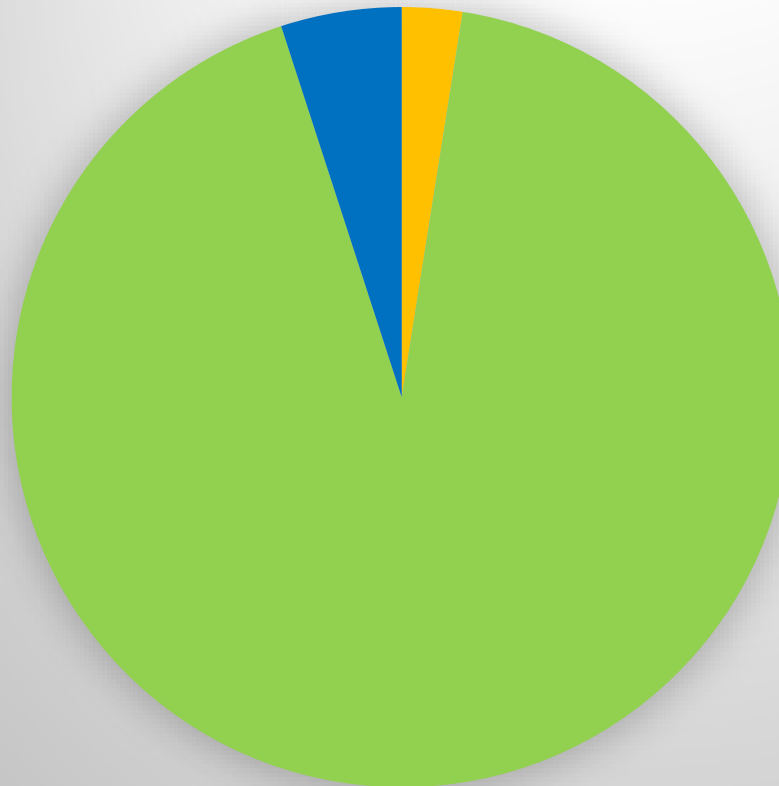
Family Unit





Demographic Data-Ethnicity

Ethnicity



- American Indiana or Alaskan Native
- Asian
- African American
- Hispanic or Latino
- Native Hawaiian or Pacific Islander
- White or caucasian
- Multiple Heritage





Survey Item 1

When my child has a bad cold, I take my child to the doctor to get an antibiotic because this will help my child feel better fast.

A majority of participants answered disagree and/or strongly disagree with 75% initially and increased to 80% after the intervention and was significant ($P < 0.01$).





Survey Item 2

If my child does not receive an antibiotic from the doctor, I believe it is OK to give my child leftover antibiotics from a previous time when they were ill.

Item two also showed significance ($P < 0.01$) with 100% answering disagree or strongly disagree. Participants improved understanding of appropriate utilization of antibiotics from 80% strongly agree answers, to 87.5% strongly agree answers.





Survey Item 3

I should give antibiotics to my child exactly as prescribed by the doctor.

All participants answered correctly with a response of agree or strongly agree on both the pre- and post-test for Item 3. The amount of participants answering strongly agree increased by 12.5% on the post-test, which was significant ($P < 0.01$).





Survey Item 4

Antibiotic Resistance means the body is becoming resistant to antibiotics.

The participant response rate had a positive change of 10% overall, however, the results were not significant. This area has an opportunity for improvement in future studies.





Survey Item 5

Antibiotics kill good bacteria in addition to the bad bacteria.

Item five was significant ($P < 0.01$) with a 27.5% increase with the participant responses answering agree or strongly agree after the educational video.





Survey Item 6

Two ways to help stay healthy overall and avoid using antibiotics are to wash your hands and cover your cough.

Item 6 was not found to be significant, however, almost all participants answered correctly in the initial survey with 39 out of 40 answering in agreement. For the post-test response, 27.5% of participants improved to a strongly agree answer.





Overall Results

This pilot study suggests that video engagement, as a form of education, can improve the understanding of antibiotic use among caregivers of school-age children. We found caregiver perceptions surrounding antibiotic stewardship and treatments were clustered into four groups. If the study had only utilized a survey tool for evaluation, our interpretation might have been based on overall averaged item scores without understanding the significance of the multiple unique views or areas of consensus (Ramlo, 2015).





Nursing/Provider Implications

Based on the results, nurses can help promote antibiotic stewardship policies in outpatient offices by creating and providing educational material to discuss during the visit and send home with patients and caregivers following the writing of prescription by a physician

Education should include items such as: completing the full course of antibiotics, refraining from sharing old prescriptions, effective hand hygiene and understanding why a prescription might not have been written, such as in the case of a viral infection





Nursing/Provider Implications

Promote best evidence-based practice for antibiotic stewardship policies based on Centers for Disease Control and Prevention (CDC) and National Institutes of Health (NIH) guidelines for antibiotic use

Physicians can feel more comfortable with or without prescribing antibiotics for patients based on the caregiver perceptions of antibiotics stewardship

- Commitment**
Demonstrate dedication to and accountability for optimizing antibiotic prescribing and patient safety.
- Action for policy and practice**
Implement at least one policy or practice to improve antibiotic prescribing, assess whether it is working, and modify as needed.
- Tracking and reporting**
Monitor antibiotic prescribing practices and offer regular feedback to clinicians, or have clinicians assess their own antibiotic prescribing practices themselves.
- Education and expertise**
Provide educational resources to clinicians and patients on antibiotic prescribing, and ensure access to needed expertise on optimizing antibiotic prescribing.

<https://www.cdc.gov/antibiotic-use/community/improving-prescribing/core-elements/core-outpatient-stewardship.html>

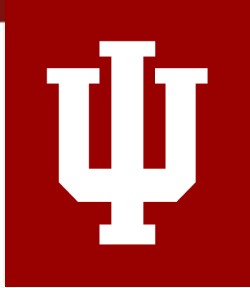




Limitations

- **Timing**
- **Distractions**
- **Communication**
- **Interprofessional Relations**





<https://youtu.be/mNoUHJkuYAk>



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