Community Issues Concerning Antibiotic Practices

Dr. Elaine Larson
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Hosted by Paul Webber
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A Webber Training Teleclass
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Rationale

- Antibiotic usage usually measured from prescription information; likely to be underreported
- Few household-level surveys, particularly in inner cities

Sample

- 1999: 398 households with 1,662 members
- 2001: 238 households with 1,178 members
- At least 3 in household, including at least one preschool child
- Recruited with posters and brochures, word-of-mouth

Interview

- Home visit and extensive interview of each household (about 1 hour) to assess prevalence of infectious disease symptoms and their treatment in previous 30 days
- Symptoms: vomiting, diarrhea, fever, sore throat, cough, runny nose, skin infection (boils), conjunctivitis

Demographics (n=2,840)

- 43.7% male
- 97.2% Hispanic
- 27.2% age 5 years or younger
- 25.1% age 6-19 years
- 39.5% age 20-45 years
- 8.2% age 46 and older
- 55.2% born outside U.S.

Self-Reported Health Status

- 81.1% good or excellent
- 14.2% had chronic illness (mostly asthma, diabetes, or chronic respiratory disease)
Reliability and Validity

• Verification of first 100 symptom reports by physician visit
  – Sensitivity: 93% (i.e. symptom directly observed and verified)
  – Specificity: 97% (i.e. symptom found when not reported)
• Test-retest reliability: >90%

Self-Report of Antibiotics

• Problems with verification because antibiotics borrowed from friends, brought from outside U.S.
• Participants reluctant to state where obtained
• Specific name of drug was requested (e.g. amoxicillin, doxycycline, etc.)

Results

• One or more household members with one or more symptoms • 51.4%
• Sought medical attention • 50.2%
• Took an antibiotic • 29.7%

Among the 2,840 individuals

923 (32.5%) had 1,162 symptoms
  – 50.5% respiratory
  – 11.3% GI
  – 9.1% fever
  – 2.3% skin and conjunctivitis

Factors associated with seeking medical attention and taking antibiotics

More likely to get medical attention if….

• Fever or skin/conjunctival infections present (p=0.0008)
• Born in U.S. (p=0.002)
• Health poor (p=0.01) or chronic condition present (p=0.00006)
• Age 5 or younger (p=0.02)
• Multiple symptoms (p=0.000)
• Multiple household members ill (p=0.02)
More likely to take antibiotic if….

- Fever or diarrhea present (p=0.002)
- Health poor (p<0.00001) or chronic condition present (p=0.03)
- Multiple symptoms present (p=0.0004)

But NOT if...

- Born in U.S., age 5 and younger, multiple household members ill
- No significant difference in seeing medical attention or taking antibiotics between men and women

Positives

- Children 5 years and younger not more likely to receive antibiotics, even when seen by care provider;
- Those with chronic conditions and poor health more likely to receive antibiotics

Potential Concerns

- Those born outside U.S. less likely to seek medical attention
- About half of symptomatic persons took antibiotics, even though the majority of symptoms were probably of viral origin (e.g. URI)

And…. 

- Reported antibiotic use was even higher in this community than in a periurban Mexican community in 1992 (5% of >8,000 persons reported antibiotic use in previous 2 weeks)

From National Ambulatory Medical Care Survey

- Between 1989-90 and 1999-2000 for those <15 yrs old:
  - Population based antimicrobial prescription rate decreased 40%
  - Visit based rate decreased 29%

JAMA, 2002; 287;3096
Effects of Community-Wide Intervention

- Year-long educational campaign for providers, parents, public
- Prescription rate decreased 19% and 8% among intervention and control counties respectively

JAMA 2002; 287:3103

Conclusions

- Burden of infectious disease symptoms high in this community (>50% 30 day prevalence)
- Antibiotic overuse in this population is likely
- Non-U.S. born persons may have less access to health care

Implications

- We STILL have a problem!!
- Continued interventions to promote judicious use of antibiotics must include both clinicians and the public

Antibiotics without Prescription

- Availability of antibiotics without prescription in New York City
- 42nd Annual Meeting of the Infectious Diseases Society of America (IDSA), Boston, 10/04.

Larson & Figueroa, J Urban Health 2004; 81:498-504

Methods

Survey of all independent pharmacies, grocery stores, delicatessens, bodegas and botanical or health food stores in 30 blocks of the major commercial areas of three neighborhoods were surveyed:

Predominantly Hispanic neighborhood (Washington Heights)
Predominantly Black neighborhood (Central Harlem)
Predominantly Caucasian neighborhood (Upper West Side)

Procedure

- A trained surveyor of same ethnicity as the neighborhood residents entered each store and ascertained whether antibiotics were available on the shelf or upon request to the store attendant.
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<table>
<thead>
<tr>
<th>Neighborhood</th>
<th>Primarily Hispanic</th>
<th>Primarily Black, Non-Hispanic</th>
<th>Primarily White, Non-Hispanic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Available on shelf</td>
<td>7/34 (20.6%)</td>
<td>0/37</td>
<td>0/30</td>
</tr>
<tr>
<td>Available if requested</td>
<td>23/27 (85.2%)</td>
<td>0/37</td>
<td>0/30</td>
</tr>
<tr>
<td>Recommended for sore throat</td>
<td>3/4 (75%)</td>
<td>0/37</td>
<td>0/30</td>
</tr>
<tr>
<td>Total stores in which antibiotic available</td>
<td>34/34 (100%)</td>
<td>0/37</td>
<td>0/30</td>
</tr>
</tbody>
</table>

What Types?
- Antibiotics offered included ampicillin, amoxicillin, tetracycline, erythromycin, combination
- Offered as single doses individually wrapped and in larger quantities

Antibiotic Use Among Hispanic Adults Living in Northern Manhattan

Aim of the Study
- To describe knowledge, attitudes, beliefs, and practices regarding antibiotic use among Hispanic adults living in Northern Manhattan.

Background
- Inappropriate use of antimicrobials is associated with increasing antimicrobial resistance in the community
  [Diekema, 2000; Melander, 2000; Levy, 2002]
- Reasons for inappropriate use
  - public expectations and demand for medication
  - lack of understanding about ineffectiveness of antibiotics against viral illness
  - the ease of access to antibiotics without prescription in many parts of the world
  [McKee, 1999; McKee, 1999]
- Antibiotic misuse and resistance are more common in countries in which antibiotics are available over the counter
- Cultural patterns regarding use and beliefs about medication effectiveness differ
- Hispanics have generally immigrated from countries in which antibiotics are available without prescription

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Study Purpose

- Study findings will be used to develop culturally relevant, effective interventions to improve the judicious use of antibiotics among Hispanic adults living in Northern Manhattan.

Conceptual Framework

Green Precede-Proceed Model [1991]

Factors Assessed

- Predisposing: knowledge and beliefs
- Enabling: insurance, availability of antibiotics
- Reinforcing: peers and support systems, availability of information

Design

- Exploratory, descriptive study.
- Quantitative and qualitative data collection methods.
- Questionnaire to assess knowledge and awareness of antibiotic resistance and appropriate antibiotic use [Trepka, 2001].
- Eight focus groups to identify predisposing, enabling, and reinforcing factors associated with antibiotic use.

Questionnaire

- Adapted from a community intervention study [Trepka, 2001]
- Included questions about
  - obtaining antibiotics & health information,
  - household antibiotic use during past 3 months,
  - knowledge and beliefs about appropriate use & types of antibiotics
- Professionally translated into Spanish
- Back translated to assure accuracy of the meaning of all words and phrases.

Focus Groups

- Conducted in Spanish by trained facilitator
- Three community member focus groups met twice
- Bodega employees met once
- Health care providers met once

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Data Collection Procedures

• Columbia University IRB approval obtained
• Recruitment through community groups, board, flyers, church bulletin boards

Participants

• Community members:
  – Adult living in northern Manhattan
  – Spanish as first language
  – Household with at least one preschool child
  – With or without a primary provider or health insurance
• Employees of neighbourhood bodegas
• Health care providers in the community

Procedure: First Meeting

• Questionnaire to obtain baseline data
• Discussions based on the three concepts of Precede model. Scenarios presented to elicit specific practices
• After discussion of each concept, facilitator provided summary and asked for validation
• Groups discussed current sources of health information, computer literacy, and how health communications could be targeted to them

Procedure: Second Meeting

• Community members met for 1 hour
• The themes and issues that emerged were reviewed with participants to assure that their input had been accurately captured
• Participants clarified, amplified, and/or corrected the summaries and added opinions not expressed in the focus groups but raised in written questionnaires

Data Analysis

• Responses from the questionnaire were summarized using SPSS
• From the audiotapes of focus group discussions, common themes and factors related to attitudes, beliefs, and practices were identified
• Data were examined to assure that saturation had been achieved

Preliminary Findings

• 25 Hispanic women participated in the community focus groups
  – mean age 35.7 years (22-47 years)
  – 92% were born in the Dominican Republic
  – average family size was 4.7 members (3-8 members)
• Twelve informants (44.4%) had taken an antibiotic within the past 3 months
• 13 (48.1%) reported that at least one other person in their household had also taken an antibiotic

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Preliminary Findings  
• Antibiotics included ampicillin, amoxicillin, erythromycin, amoxicillin/clavulanate potassium (Augmentin), and penicillin  
• Taken for a mean of 12 doses (± 28)  
• Most common reasons for taking an antibiotic: sore throat, ear ache, fever  
• One third (5/15) of reasons for taking antibiotics were for other symptoms, including nausea, pain, itching, and allergies  

Preliminary Findings: Knowledge  

<table>
<thead>
<tr>
<th>Item</th>
<th>% (No.) agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treating a cold with antibiotics will help prevent an ear infection</td>
<td>72 (18)</td>
</tr>
<tr>
<td>Antibiotics should be stopped as soon as the person feels better</td>
<td>24 (6)</td>
</tr>
<tr>
<td>Antibiotics are usually needed if there is yellow drainage in the nose</td>
<td>16 (4)</td>
</tr>
<tr>
<td>Antibiotics help cure a cold</td>
<td>56 (14)</td>
</tr>
<tr>
<td>Antibiotics work to kill viruses and bacteria</td>
<td>56 (14)</td>
</tr>
</tbody>
</table>

Preliminary Findings: Knowledge  

<table>
<thead>
<tr>
<th>Item</th>
<th>% (No.) agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>If there is excessive use of antibiotics they will not be as effective in treating infections</td>
<td>56 (14)</td>
</tr>
<tr>
<td>Bacteria can become resistant to antibiotics if they are taken in inadequate doses</td>
<td>60 (15)</td>
</tr>
<tr>
<td>If antibiotics are taken for fewer or more than the days indicated, bacteria can become resistant</td>
<td>48 (12)</td>
</tr>
<tr>
<td>Antibiotics can be harmful to one’s health</td>
<td>36 (9)</td>
</tr>
</tbody>
</table>

What next?  
• Meetings with Bodega Association, local community board, CDC, and NYC Health Department to plan relevant interventions  

Under auspices of  
• NIH-funded Center for Interdisciplinary Research on Antibiotic Resistance (CIRAR)  
• http://www.cumc.columbia.edu/dept/nursing/CIRAR/  

Other Winter 2005 Teleclasses  
For more information, refer to www.webbertraining.com/schedule.cfm  
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• February 11 – Endemic Influenza, Pandemic Influenza, and Avian Flu with Dr. Stephano Lazzari  
• February 17 – Sad Cows and Englishmen, Predicaments and Predictions for Spongiform Encephalopathies with Dr. Corrie Brown  
• February 24 – Sneeze, Coughs and Drips: Respiratory and GI Outbreaks in Long Term Care with Dr. Chesley Richards  
• March 17 – Biocide Use in a Healthcare Environment with Dr. Jean-Yves Mailard  

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