Appropriate antibiotic use for treatment of respiratory tract infections

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Objectives

- To outline current concerns related to antibiotic resistance in respiratory tract infections
- To discuss antibiotic prescribing for respiratory tract infections is linked to antibiotic resistance
- To explore practical approach of treating respiratory tract infections in context of appropriate antibiotic use
Acute respiratory tract infections are one of the most common diagnoses in ambulatory practice.

**Upper respiratory tract infection (37 million visits).**

- It is one of the most frequent reasons for seeking ambulatory care.
- Rates of antibiotic prescription for uncomplicated upper respiratory tract infection are 52%, and it accounts for 10% of all antibiotics prescribed annually in ambulatory practice.
Acute rhinosinusitis (25 million visits).

- It is frequently caused by viral infection.
- In 85% to 98% of cases, physicians prescribe an antibiotic.
- Fifth most common diagnosis for which an antibiotic is prescribed.
Acute Pharyngitis (1% - 2% of all outpatient visits).

- Most commonly caused by viruses.
- Self-limited.
- Antibiotics are prescribed to approximately 75% of adult patients.
- 5% to 15% of cases in adults are caused by group A B-hemolytic streptococcus (GABHS).
Uncomplicated acute bronchitis (10 million office visits).

- About 5% of adults self-report an episode of acute bronchitis each year.
- Up to 90% seek medical attention.
Excessive use of antibiotics in ambulatory practice has contributed to the emergence and spread of antibiotic-resistant bacteria in the community.

Spread of resistant bacteria
Overuse of antibiotics Factors

- Unrealistic patient expectations.
- Patient pressure to prescribe antibiotics.
- Insufficient time to educate patients about the ineffectiveness of antibiotics.
- The clinical presentation of patients also appears to affect the decision to prescribe antibiotics.
Predictors for prescribing antibiotics

- Purulent or green nasal discharge (reported or observed).
- Production of green phlegm.
- Presence of tonsillar exudate.
- Current tobacco use.
Outpatient Antibiotic Prescribing Problems

Outpatient Antibiotic Prescriptions by Diagnosis, US

- Otitis media 21%
- URI (non-specific) 16%
- Bronchitis 15%
- Pharyngitis 12%
- Sinusitis 12%
- Other 24%
There is a lack of local data in Bangladesh concerning commonly used antimicrobial sensitivity and or resistance on respiratory tract pathogens.

To become aware of the magnitude of existing problem of antibiotic resistance an observational survey was conducted locally.
Observational Survey on Antimicrobial Sensitivity in Respiratory Tract Pathogens
Protocol overview

Study Objectives

**Primary:**
- To identify commonly used antimicrobials sensitivity and/or resistance in currently circulating respiratory tract pathogens

**Secondary:**
- To determine the proportion of Cefuroxime sensitivity
The registry is an observational, non-comparative, non-interventional survey

- 3 months enrollment
- 4 centres
- 384 patients
Inclusion Criteria

- Clinically suspected outpatients of URTI (upper respiratory tract infection - i.e. tonsillitis, pharyngitis) observed for culture and sensitivity test of throat swab
- Male & female aged 3-50 years
- Symptoms presented with throat pain and fever, with or without cough
Exclusion Criteria

- Nature of examination other than C/S of throat swab- e.g. blood culture, urine culture
- Patients refusing to have his/her data collected in this survey
Throat swabs were collected from four diagnostic centres.
The collected samples were stratified according to the growth of any pathogenic bacteria to evaluate sensitivity and/or resistance of commonly used antimicrobials.
Standard microbiologic procedure was used in isolating and identifying organisms from throat swab cultures.
Antimicrobial susceptibility tests were performed on the isolates using disk diffusion methods.
Proportion of commonly used antimicrobials including cefuroxime sensitivity and resistance was determined.
Age distribution of the patients
Culture has yielded growth/no growth of any pathogenic bacteria

[Out of 383 reports, 101 (26.3%) were growth positive, while 282 (73.4%) did not show any growth of pathogenic bacteria]
Bacterial isolates in culture

Isolated pathogens

- beta hemolytic streptococci
- Klebsiella pneumoniae
- Pseudomonas spp
- Staphylococci
- Pneumococcus
- E. Coli
- Others
Commonly Used Antimicrobial Sensitivity in URTI

Antibiotics
- penicillin
- ampicillin
- amoxycillin
- co-trimoxazole
- erythromycin
- gentamycin
- ciprofloxacin
- Levofloxacin
- cephradine
- cephalexin
- ceftriaxone
- cefuroxime
- azithromycin
- ceftazidime

Graph showing the sensitivity of various antibiotics in URTI.
Of the respondents, about 93.1% cases reported sensitivity to Cefuroxime. Only 6.9% showing resistance to this drug.
Conclusion
Towards appropriate outpatients antibiotic prescribing

- A high level of resistance among the respiratory pathogens against commonly used antimicrobials in URTI in Bangladesh
- Overuse or irrational use of antibiotics in common infections
- There are a number of antibiotics (e.g. Cefuroxime) highly sensitive to the pathogens and supports it’s appropriate use in RTI
- Physicians should consider effective and rational strategies for prescribing any antibiotic in RTI