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# Azithromycin Use in Upper Respiratory Infection

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## STATEMENT OF THE PROBLEM

### Background:

- Definition: Upper respiratory tract infection (URI)- an infectious disease affecting the portion of the respiratory tract spanning from the nasal cavity to the larynx; can range in severity from acute to life threatening<sup>1</sup>
- URIs are generally caused by a viral infection<sup>2</sup>
  - 44% viral infection
  - 18% bacterial
  - 38% no detectable pathogen
- Current guidelines for care:<sup>3</sup>
  - Not recommended: Initial regimen of antibiotics, except in immunosuppressed or chronically-infected patients
  - Recommended: Delayed antibiotic prescribing (not prescribing antibiotics until 48-72 hours after initial symptom presentation)
- Definition: Antibiotic resistance- the process by which microorganisms exposed to antibiotic treatment survive and multiply as a resistant population<sup>4</sup>

### Significance of the Problem:

- Prescribing guidelines for antibiotics are not being followed<sup>5</sup>
- It is estimated that in the United States doctors overprescribe antibiotics at a rate of at least 50%.<sup>4</sup>
- Antibiotic overprescribing has been linked to the increasing rate of antibiotic resistance.<sup>4</sup>
- In the past several years, research and educational promotion concerning antibiotic resistance and stewardship has increased. However, the effectiveness of these materials on prescribing rates has not been determined.<sup>4</sup>

## OBJECTIVES

1. To determine adherence to antibiotic prescribing guidelines for upper respiratory infections, specifically regarding azithromycin usage.
2. To determine if published literature about antibiotic resistance is correlated with a change in rates of azithromycin prescriptions for acute bronchitis.
3. To determine if patients diagnosed with an upper respiratory infection and prescribed a course of azithromycin are being prescribed a second round of antibiotics.
4. To determine if education are correlated with a change in rates of second antibiotic after an initial course of azithromycin

## HYPOTHESES

Null Hypotheses	Alternate Hypotheses
H01: The majority of prescribers adhere to antibiotic prescribing guidelines for upper respiratory infections, specifically regarding azithromycin usage.	HA1: The majority of prescribers do not adhere to antibiotic prescribing guidelines for Upper Respiratory Infections, specifically azithromycin.
H02: No correlation exists between published literature about antibiotic resistance and azithromycin prescribing.	HA2: A correlation exists between national antibiotic resistance education and azithromycin prescribing.
H03: The majority of patients prescribed an initial course of azithromycin were not prescribed a second round of antibiotics.	HA3: The majority of patients prescribed an initial course of azithromycin were prescribed a second round of antibiotics
H04: No correlation exists between national antibiotic resistance education and the rate of an additional antibiotic course following azithromycin.	HA4: A correlation exists between national antibiotic resistance education and the rate of an additional antibiotic course following azithromycin.

## PROPOSED METHODS

### Study Design

A two-pronged study design

1. Retrospective observational study to determine the rates of antibiotic prescribing.
2. Literature Review to determine if the increasing body of antibiotic resistance literature is correlated with the prescribing rates.

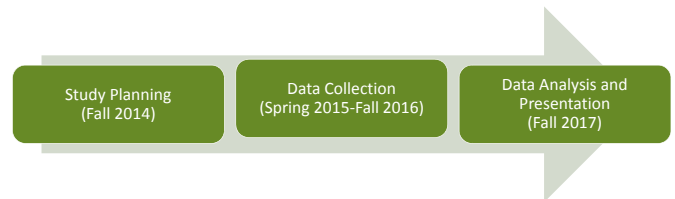
### Data Collection

1. Federally Qualified Health Centers chart review
  - Date of appointment
  - Diagnosis code (ICD-9)
    - Will not include participants who are under age 21 or pregnant
    - Will only include acute respiratory infections, not exacerbations of chronic conditions
  - Antibiotic prescription
2. PubMed
  - Number of articles published per year
    - Based on search criteria (terms, relevant inclusions, etc.)

### Measurement

- Descriptive statistics: Objectives 1 and 3
  - Number of antibiotics prescribed for upper respiratory tract infections, specifically azithromycin
  - Number of patients prescribed a second round of antibiotic after initial azithromycin therapy.
- Inferential Correlation statistics: Objectives 2 and 4
  - Correlation between number of published articles on antibiotic resistance and rate of antibiotic prescribing
  - Correlation between number of published articles on antibiotic resistance and rate of secondary antibiotic prescribing after initial azithromycin therapy.

## PROJECT TIMELINE



## LIMITATIONS

- Statistical power of the project will be determined by the number of second antibiotic prescriptions found in data collection. The generalizability is limited due to the location of the data collection.
- The charts will not indicate whether the prescriptions were filled.
- Patient population will not be randomized

## FUTURE DIRECTIONS

The goal of this study is to define the effectiveness of current education campaigns and to effectively inform the public on antibiotic resistance prevention.

## ACKNOWLEDGEMENTS

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