

Antibiotic Treatment for Acute Upper Respiratory Infection

Introduction

The Centers for Disease Control and Prevention (CDC) does not recommend antibiotic therapy for uncomplicated upper respiratory infections. Despite this recommendation, upper respiratory conditions are often a source of unnecessary antibiotics. In order to share data with prescribers and identify opportunities for improved antibiotic prescribing, the Virginia Department of Health (VDH) analyzed antibiotic prescription claims for acute upper respiratory infections.

Claims data were obtained from the Virginia All-Payer Claims Database (APCD), administered by Virginia Health Information (VHI), which holds data for private insurance, Medicare, and Medicaid. From 2011-2016, this database held claims for roughly 4.5 million individuals, including at least 95% of Medicaid, all Medicare FFS (2015-2016 only) and 45-60% of commercially insured Virginians. All data sets were extracted from the APCD portal and restructured in SAS to ensure each patient claim was only counted once per visit. Repeat visits were counted as separate claims.

Methods

In order to study the proportion of antibiotic prescription claims for upper respiratory infections in outpatients, VDH created queries within VHI's Query Express and CMS Query Express. Each query had two separate populations:

1. Outpatients with a primary diagnosis of acute upper respiratory infection, using ICD-9 and ICD-10 codes (Table 1)
2. Outpatients with a diagnosis of acute upper respiratory infection and an antibiotic prescription claim within 0-3 days of the diagnosis

Table 1. ICD Codes Used to Represent Acute Upper Respiratory Infections

ICD-9 Code	ICD-10 Code	Description
N/A	J209	Acute bronchitis, unspecified
465.9	J069	Acute upper respiratory infection, unspecified
460	J00	Common cold

Antibiotic prescribing proportions were calculated using the following formula:

$$\text{Proportion} = \frac{\text{No. Antibiotic Prescription Claims Within 0-3 Days of an Upper Respiratory Infection Diagnosis}}{\text{No. Outpatient Claims With Primary Diagnosis of Upper Respiratory Infection}}$$

All queries ensured the insurance members were Virginia residents who were diagnosed with the condition during an outpatient visit during 2016.

Results

In 2016, 21.5% of outpatient claims for acute upper respiratory infection led to an antibiotic prescription claim in Virginia. Geographically, there was a disparity in rates across the state with higher rates in Northwest and Southwest Virginia (Figure 1). Additionally, the Southwest region had a lower number of diagnoses in 2016, but still a relatively high amount of antibiotics prescribed (Figure 2). Furthermore, analyzing the data for different payers, the highest proportions of prescriptions occurred within the Medicare population, which could be associated with age (Figures 3 and 4).

Conclusions

Limitations of claims data include misclassification of diagnosis, incomplete inclusion of the Virginia population, and inability to assess appropriateness of individual encounters. Even with these limitations, the data suggest opportunities for improved prescribing. Providers across the state should follow current guidelines. Outpatient prescribers should evaluate their prescribing practices to ensure they are consistent with current recommendations.

Figure 1

Proportion of Antibiotic Prescription Claims for Upper Respiratory Infections, By Region

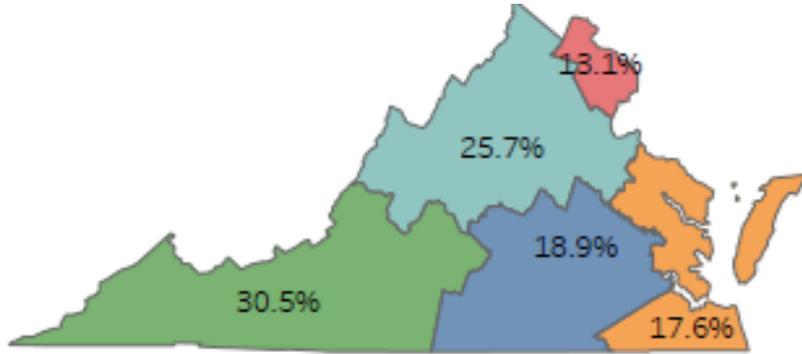


Figure 2

Number of Outpatients Diagnosed with Upper Respiratory Infection, By Region

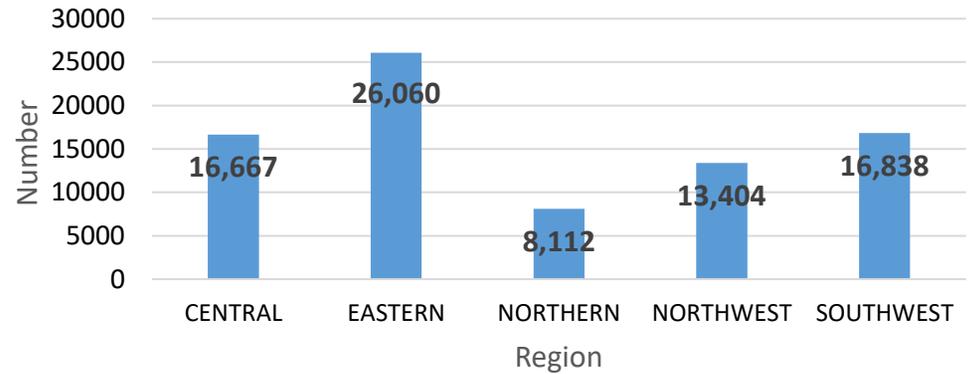


Figure 3

Proportion of Antibiotic Prescription Claims for Upper Respiratory Infections, By Age Group

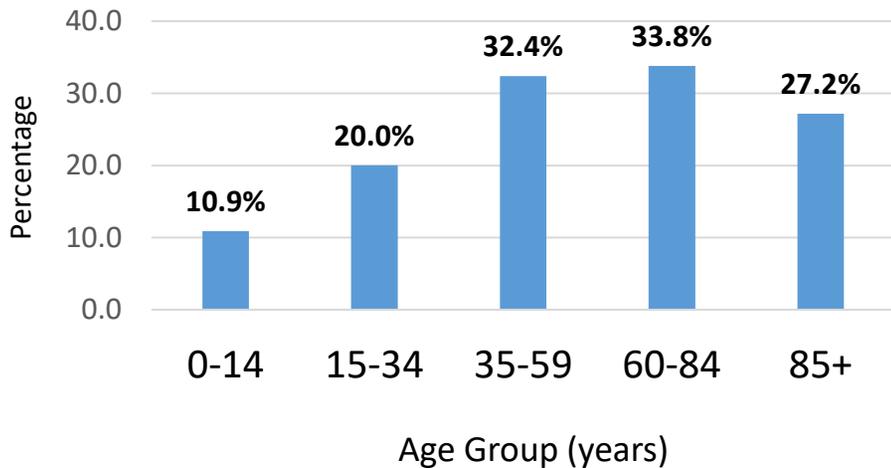


Figure 4

Number of Outpatients Diagnosed with Upper Respiratory Infection, By Payer

