MONTANA PUBLIC HEALTH

March, 2013
Vol.8, Issue 3
http://www.dphhs.mt.gov/publichealth

PREVENTION OPPORTUNITIES UNDER THE BIG SKY

Office-Related Antibiotic Prescribing for Montana Medicaid-enrolled Children, 1999 to 2010

The increasing prevalence of antibiotic resistance is a well-established public health threat.[1] The use of antibiotics for treatment of medical conditions contributes to resistance in both the individual patient and the surrounding population through selective pressure. Prudent antibiotic prescribing practices are essential to limiting antibiotic resistance and decreasing the microbial threat to the United States. Unfortunately, a high proportion of antibiotic prescriptions are estimated to be unnecessary or inappropriate, particularly those issued for the treatment of acute respiratory infections (ARIs).[2,3] ARIs are most frequently caused by viral infections and not effectively treated with antibiotics.

The Centers for Disease Control and Prevention (CDC) launched a campaign in 1995 intended to prevent antibiotic resistance in the general population through promoting evidence-based antibiotic prescribing practices among healthcare providers, decreasing demand for antibiotics for viral upper respiratory infections (URIs) among healthy adults and parents of young children, and increasing adherence to prescribed antibiotics for URIs. CDC's campaign was formerly known as the National Campaign for Appropriate Antibiotic Use in the Community but was renamed in 2003 to Get Smart: Know When Antibiotics Work.[4]

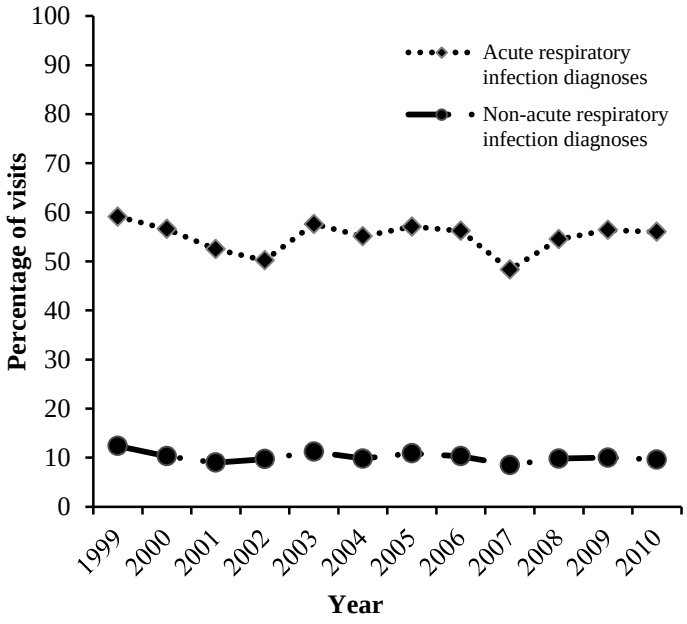
It is important to understand local, state, and regional trends in antibiotic prescribing as geographical variation in antibiotic prescribing practices has been associated, in part, with divergent rates of antibiotic resistance for certain bacterial organisms.[5] We sought to determine the trends in antibiotic prescribing practices over the last decade for healthcare providers of Medicaid-enrolled children aged ≤14 years in Montana.

ANALYSIS

We performed a retrospective analysis of Medicaid billing claims data submitted by Montana healthcare providers who treat Medicaid patients in outpatient clinics. For each year from 1999 to 2010, we included in our analysis those children aged ≤14 years who were continuously enrolled in Montana Medicaid. The primary outcomes were ARI-related (otitis media, bronchitis, pharyngitis, sinusitis, and non-specific upper respiratory infection [common cold]) office visits and filled antibiotic prescriptions within 10 days of the office visit.

Of the 873,244 office visits identified, 116,962 (13%) had an ARI as a primary diagnosis. Otitis media (43%) and common cold (32%) were the most common ARI diagnoses. Nearly 140,000 (15%) office visits were associated with at least one filled antibiotic prescription. Filled antibiotic prescriptions ranged from 336 to 480 prescriptions per 1,000 population per year. Among ARI-related office visits, 64,250 (55%) were associated with an antibiotic prescription. An ARI diagnosis was associated with a higher likelihood of filling an antibiotic prescription compared with a non-ARI diagnosis (relative risk = 6.39, 95% confidence interval = 6.32–6.45). No significant trend occurred from 1999 to 2010 for the percentage of ARI-related office visits associated with an antibiotic prescription (Figure).

Figure. Percentage of office visits associated with an antibiotic prescription for acute respiratory infection diagnoses (ARI) and non-ARI diagnoses,1999 to 2010.



DISCUSSION

In the present study, 48% to 59% of ARI-related outpatient visits annually were associated with a filled antibiotic prescription. The percentage of ARI-related outpatient visits associated with a filled antibiotic prescription in Montana did not decrease significantly from 1999 to 2010 despite the continued CDC campaign, including a change in the campaign's name in 2003.

Healthcare providers were likely to have issued antibiotic prescriptions to children included in this study at an even greater frequency for ARI-related visits than described considering a significant percentage of patients do not fill the prescriptions issued to them by a healthcare provider.

The antibiotic prescribing practices described for Montana, a predominantly rural state, are comparable with previous national survey estimates. While earlier studies suggest antibiotic prescribing practices vary by geographical location within the United States, the impact of rural practice location on antibiotic prescribing practices has been inconsistent among prior studies.

We did not analyze the data by healthcare provider type; therefore, it is unknown what effect, if any, the inclusion of billing data from non-physician clinicians (e.g., physician assistants, nurse practitioners, certified nurse midwives) had on the antibiotic prescribing rates presented in this study.

Antibiotic Prescribing Recommendations

- Healthcare providers should follow recommendations for the treatment of acute respiratory infections established by the Centers for Disease Control and Prevention and American Academy of Pediatrics to promote appropriate antibiotic use in children (http://www.cdc.gov/getsmart)
- Discuss with parents the facts about treating viral infections with antibiotics, including that unnecessary antibiotics can be harmful
- Encourage active management of acute respiratory illness with other therapeutics including analgesics and decongestants,
  as appropriate

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2,275 copies of this public document were published at an estimated cost of $0.67 per copy, for a total cost of $1524.25, which includes $ 518.49 for printing and $1005.76 for distribution.

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