Retreatment Rates Of Antibiotics In Patients With Acute Otitis Media With Tympanostomy Tubes Within the Louisiana Medicaid Program.

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BACKGROUND

- Acute Otitis Media in tympanostomy tubes (AOMT) patients usually present with otorrhea and is a relatively common condition seen by physicians who care for children.
- Myringotomy with insertion of tympanostomy tubes is the most common type of surgery that children in the U.S undergo.[1]
- It is estimated that approximately 500,000 to 2 million myringotomies with ventilating tube insertion occur annually in the United States.[2]
- The incidence of acute otitis media in tympanostomy tube patients ranges from 15% to 74%.[3]
- Treatment of AOMT is directed at the presumed cause and most cases are treated empirically with either systemic or topical antibiotics . [3]
- AOMT does not always respond satisfactorily to initial antibiotic therapy and retreatment rates can vary substantially among antibiotics.

OBJECTIVES

- To identify drugs used in the treatment of patients with AOMT in the Louisiana Medicaid population.
- To study retreatment rates associated with the drugs used in the treatment of AOMT.
- To study variations in retreatment rates depending upon the length of an episode.

METHODS

- Longitudinal retrospective analysis was conducted using Louisiana Medicaid claims data from January 2000 through June 2002 with an index period of January 1, 2000 through June30, 2000.
- IRB approval was obtained to carry out this study.
- Claims for identified recipients were obtained from the Louisiana Department of Health and Hospitals.
- Original data set contained inpatient, outpatient, physician, rehabilitation, home health, durable medical equipment, early periodic detection screening and treatment, and ambulance, and pharmacy claims.
- Recipients were identified as having tympanostomy tubes if they had a procedure code of '69433' or '69436' during the index period.
- Recipients with tympanostomy tubes were then identified as having AOM if they had a primary or secondary diagnosis of ICD-9-CM 381.xx-382.xx.
- Recipients diagnosed with AOMT and prescribed an antibiotic were followed for 21 days, which is recognized in the literature as an AOMT treatment episode.

INCLUSION CRITERIA

To be included in the study group, recipients must have met the following criteria during the index period of January 1, 2000 through June30, 2000 :

- One or more medical claims with tympanostomy tube placement CPT code of '69433' or '69436'.
- One or more claims with a primary diagnosis or a secondary diagnosis of acute otitis media.
- Classified as continuously eligible for the study period.
- Under 18 years of age throughout the study period.

VARIABLES

- **Index claim:** first AOMT medical claim during the index period with a primary or secondary diagnosis of AOM.
- **Antibiotic therapy:** consisted of only antibiotics (topical and oral) that were associated with AOMT. Antibiotics were sorted into 16 groups depending upon the frequency of use. In case two claims were filled on one day then the therapy was called 'combination'.
- **Treatment episode:** AOMT episode began with identification of inpatient, physician, outpatient, home health,or other medical claim and an associated prescription claim. For a prescription to be associated with a medical claim, it had to occur within one day prior to or within three days after the medical claim. Each episode was defined as the period that started with the first antibiotic claim and ended after 21 days from that claim. A three day window was observed after identifying the first associated prescription claim. If another antibiotic was identified in this window then the antibiotic therapy was classified as a combination/switch.
- **Retreatment:** presence of another antibiotic claim between day 3 to day 21 of a treatment episode.
- **Retreatment rate:** calculated on overall basis and by antibiotic classification:
  - Overall Rate= (total # of retreatments/total # of episodes)*100
  - Antibiotic rate= (total # of retreatments per antibiotic classification/ total # of episodes per antibiotic classification)*100
- **Sensitivity Analysis:** retreatment rates were examined for varying episode lengths, 15 days, 17 days, 19 days, 23 days, 25 days and 27days. A 21-day episode was the standard length of an episode.

TABLE 1. DEMOGRAPHICS

Demographic	N(%)
Age	
<5	1,453 (74)
6-14	491 (25)
15-17	20 (1)
Gender	
Male	1,125 (57)
Female	839 (43)
Race	
White	1,807 (55)
Black	761 (39)
Other	116 (6)

Demographics obtained from index claim. (N=1,964)

TABLE 2. KEY FOR FIGURES 1 & 2

Antibiotic Classification	Key
Amoxicillin	A
Amoxicillin Clavulanate	B
Azithromycin	C
Cefprozil	D
Ofloxacin	E
Cefdinir	F
Sulfamethoxazole/Trimethoprim	G
Clarithromycin	H
Cephalexin	I
Ciprofloxacin Hydrocortisone	J
Other Cephalosporins	K
Other Penicillins	L
Other Antibiotics	M
Other Ear Prep	N
Combination	O
Other Macrolides	P

Figure 1. Most Frequently Prescribed Antibiotics

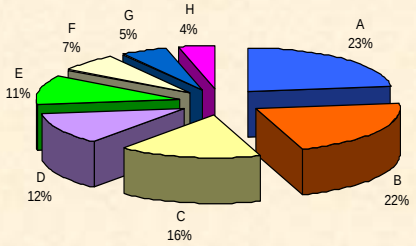


Figure 2. AOMT Antibiotic Retreatment Rate

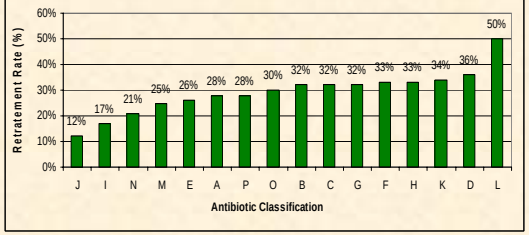
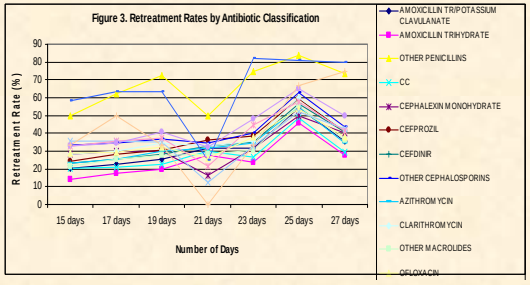


Figure 3. Retreatment Rates by Antibiotic Classification



RESULTS

- Medical and pharmacy claims data review identified 1,964 patients who met the inclusion criteria.
- The study group predominantly consisted of males (57%), whites (55%) with an average age 4.5 years.
- There were 5,934 episodes of AOMT care identified within the dataset of which 1,381 required retreatment resulting in an overall retreatment rate of approximately 23.72%.
- The top ten most frequently prescribed drugs were amoxicillin, amoxicillin clavulanate, azithromycin, cefprozil, ofloxacin, cefdinir, sufamethoxazole, clarithromycin, cefuroxime axetil, ceftriaxone sodium.
- Some of the antibiotics commonly prescribed in the treatment (21 day episode) of AOMT are presented in rank order relative to their retreatment rates:ciprofloxacin and hydrocortisone (12%), cephalexin (17%), ofloxacin (26%), amoxicillin (28%), amoxicillin potassium clavulanate (32%), sulfamethoxazole trimethoprim (32%), azithromycin (32%), clarithromycin (33%), cefdinir (33%), and cefprozil (36%).
- Retreatment rates are highly sensitive to the length of the episode.In general antibiotics had a higher retreatment rate if the the episode was 25 days long.
- Among frequently prescribed drugs, the retreatment rate for all drugs (except cefprozil) increased as the number of days in the episode increased from 15-21 days.

Conclusions:

- The retreatment rate of AOMT in the Louisiana Medicaid population was high with approximately 1 out of 4 episodes requiring retreatment. Retreatment rates also varied considerably between antibiotic therapies. Careful consideration of AOMT antibiotic therapy by clinicians may reduce retreatment rates thereby lowering the cost of AOMT treatment in the Louisiana Medicaid program.

Limitations:

- The results are limited to the operational definitions and the inclusion criteria of the study. The study is also subject to secondary data research limitations.
- The results are specific to this study and hence are not representative of the general AOMT population.
- The study did not control for concomitant diagnoses.

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