Physician Specialty Is Associated With Differences in the Evaluation and Management of Acute Bacterial Rhinosinusitis

John W. Werning, MD, DMD; Todd W. Preston, MD; Sadik Khuder, PhD

Background: Acute bacterial rhinosinusitis (ABRS) is a common illness that is routinely managed by physicians from several different specialties. However, the actual diagnostic and treatment preferences of physicians from these different specialties are not known.

Objective: To determine whether the radiographic evaluation and management of community-acquired ABRS differs according to medical specialty.

Design, Setting, and Participants: Randomized survey of 450 board-certified physicians in the United States from family medicine, general internal medicine, and otolaryngology.

Main Outcome Measures: Responding physicians’ use of diagnostic radiography as well as choice and duration of antimicrobial and adjunctive treatments of ABRS.

Results: Otolaryngologists were more likely to use supportive diagnostic radiography (P=0.04). They were also more likely to treat patients with adjunctive therapy, such as topical decongestants (P=0.01), guaifenesin (P=0.01), and saline nasal irrigation (P=0.01), in addition to antibiotics. Otolaryngologists prescribed more medications to treat patients with ABRS than primary care physicians (P=0.01). There were no significant differences in diagnosis and management by family physicians and general internists.

Conclusions: Otolaryngologists use more health care resources to diagnose and treat ABRS than primary care physicians despite an absence of evidence that such tests and treatments lead to better outcomes. Otolaryngologists typically treat a patient population with a higher prevalence of ABRS and frequently see referred patients with recurrent acute sinusitis and chronic rhinosinusitis, which may explain their tendency to treat patients more aggressively. Nevertheless, these survey results illustrate a lack of consensus within the medical community regarding the evaluation and management of community-acquired ABRS, suggesting that widely accepted evidence-based practice guidelines need to be developed.


In 1996, the primary diagnosis of rhinosinusitis led to expenditures of approximately $3.39 billion in the United States.1 More than 1 billion cases of viral rhinosinusitis are estimated to occur in the United States annually.2 Acute bacterial rhinosinusitis (ABRS) complicates approximately 0.5%3 to 2%4 of cases of viral rhinosinusitis. Assuming a 2% bacterial complication rate, 20 million cases of viral rhinosinusitis may be complicated by ABRS annually.

Even though ABRS is an illness that is commonly diagnosed by primary care physicians and specialists, no guidelines for the diagnosis and management of ABRS have been established that are universally accepted by the medical community. Because maxillary sinus aspiration and culture (the gold standard for the diagnosis of ABRS) is usually impractical, physicians typically must distinguish between viral rhinosinusitis and ABRS using their “clinical impression.” The role of radiography also remains unclear. Because patients with viral rhinosinusitis also frequently demonstrate radiographic paranasal sinus abnormalities, the ability of diagnostic radiography to differentiate between viral rhinosinusitis and ABRS remains poorly defined.5

Although sinusitis is the fifth most common diagnosis for which an antibiotic is prescribed, according to National Ambulatory Medical Care Survey data,6 a plethora of different antibiotics are used by clinicians to treat community-acquired ABRS. The choice of antibiotic therapy for ABRS has been complicated by the increasing prevalence of drug-resistant Streptococcus pneumoniae and β-lactamase–producing isolates of Haemophilus influenzae and Moraxella cat-

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METHODS

A random sample of physicians from family medicine, general internal medicine, and otolaryngology were selected from The Official ABMS Directory of Board Certified Medical Specialists, 1999. Internists with subspecialty interests listed in the ABMS directory were excluded. The offices of the sampled physicians were contacted by telephone to verify their specialty, and the survey was forwarded to 150 physicians of each specialty by either fax or mail based on the physician's preference. Physicians were randomly selected from all 50 states as well as the District of Columbia. Physicians who did not respond within 1 month were forwarded a second copy of the survey.

All physicians were surveyed using the same instrument, which contained the following clinical scenario:

A 30-year-old man presents to your office with a history and physical examination findings that, you believe, is consistent with acute maxillary sinusitis. His symptoms developed following a recent viral upper respiratory tract infection, and he denies any history of sinusitis. His past medical and surgical history is unremarkable. He is not taking any medication and has no known drug allergies. The patient is a nonsmoker. He denies any known history of environmental allergies.

The survey instrument contained items pertaining to the above scenario regarding the surveyed physician's practice location of the respondents (24%), followed by the West (19%). More family physicians reside in the South (33%), which was also the most common practice location for physicians from these 3 specialties according to the geographic regions defined by the US Bureau of the Census. The greatest number of respondents practiced in the South (33%), which was also the most common practice location for physicians from these 3 specialties according to the ABMS directory (31%).

The Midwest represented the second most common practice location of the respondents (24%), followed by the West (24%) and the Northeast (19%). More family physicians were from rural areas (P = .01). Otherwise, the respondents from each specialty were demographically similar.

The characteristics of the respondents are summarized in Table 1. Of 450 physicians surveyed, 225 returned the survey for an overall response rate of 50%. The geographic distribution of the respondents' practice sites was evaluated according to the geographic regions defined by the US Bureau of the Census. The greatest number of respondents practiced in the South (33%), which was also the most common practice location for physicians from these 3 specialties according to the ABMS directory (31%).

The Midwest represented the second most common practice location of the respondents (24%), followed by the West (24%) and the Northeast (19%). More family physicians were from rural areas (P = .01). Otherwise, the respondents from each specialty were demographically similar.

### Table 1. Characteristics of Respondents*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>FP (%)</th>
<th>IM (%)</th>
<th>ENT (%)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. (%) responding†</td>
<td>80 (53)</td>
<td>71 (47)</td>
<td>74 (49)</td>
<td>225 (50)</td>
</tr>
<tr>
<td>Mean age, y</td>
<td>44.3</td>
<td>44.6</td>
<td>48.0</td>
<td>45.6</td>
</tr>
<tr>
<td>Mean No. of years in practice</td>
<td>15.0</td>
<td>13.8</td>
<td>17.1</td>
<td>15.3</td>
</tr>
<tr>
<td>No. (%) in urban setting‡</td>
<td>34 (43)</td>
<td>54 (76)</td>
<td>55 (74)</td>
<td>143 (64)</td>
</tr>
<tr>
<td>No. (%) in rural setting‡</td>
<td>46 (58)</td>
<td>17 (24)</td>
<td>19 (26)</td>
<td>82 (36)</td>
</tr>
</tbody>
</table>

*FP indicates family practice; IM, internal medicine; and ENT, otolaryngology.
†Number of responses from 150 physicians surveyed in each specialty.
‡Respondents themselves described whether they practiced in an urban or rural setting.
Table 2. Use of Diagnostic Radiographs*

<table>
<thead>
<tr>
<th>Specialty</th>
<th>No. Using Plain Films</th>
<th>No. Using CT Scan</th>
<th>No. (%) Using Radiographs</th>
<th>No. (%) Not Using Radiographs</th>
</tr>
</thead>
<tbody>
<tr>
<td>FP (n = 80)</td>
<td>2</td>
<td>1</td>
<td>3 (4)</td>
<td>77 (96)</td>
</tr>
<tr>
<td>IM (n = 71)</td>
<td>5</td>
<td>2</td>
<td>7 (10)</td>
<td>64 (90)</td>
</tr>
<tr>
<td>PC (n = 151)</td>
<td>7</td>
<td>3</td>
<td>10 (7)</td>
<td>141 (93)</td>
</tr>
<tr>
<td>ENT (n = 74)</td>
<td>7</td>
<td>4</td>
<td>11 (15)</td>
<td>63 (85)</td>
</tr>
<tr>
<td>Total (N = 225)</td>
<td>14</td>
<td>7</td>
<td>21 (9)</td>
<td>204 (91)</td>
</tr>
</tbody>
</table>

*FP indicates family practice; CT, computed tomographic; IM, internal medicine; PC, primary care (FP and IM); and ENT, otolaryngology.

Table 3. First-Line Antibiotic Therapy*

<table>
<thead>
<tr>
<th>Specialty</th>
<th>AMOX</th>
<th>AMOX-CLAV</th>
<th>Other PENs</th>
<th>CEPHs</th>
<th>MACROs</th>
<th>FLUOROs</th>
<th>TMP-SMX</th>
<th>NP†</th>
<th>No ABX</th>
</tr>
</thead>
<tbody>
<tr>
<td>FP (n = 80)</td>
<td>36</td>
<td>8</td>
<td>0</td>
<td>7</td>
<td>5</td>
<td>0</td>
<td>18</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>IM (n = 71)</td>
<td>26</td>
<td>10</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>0</td>
<td>16</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>PC (n = 151)</td>
<td>62</td>
<td>18</td>
<td>2</td>
<td>11</td>
<td>10</td>
<td>0</td>
<td>34</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>ENT (n = 74)</td>
<td>33</td>
<td>22</td>
<td>0</td>
<td>8</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Total (N = 225), No. (%)</td>
<td>95 (42)</td>
<td>40 (18)</td>
<td>2 (1)</td>
<td>19 (8)</td>
<td>12 (5)</td>
<td>1 (&lt;1)</td>
<td>38 (17)</td>
<td>1 (&lt;1)</td>
<td>17 (8)</td>
</tr>
</tbody>
</table>

*Data are number of respondents unless otherwise indicated. FP indicates family practice; AMOX, amoxicillin; AMOX-CLAV, amoxicillin-clavulanate; PENs, penicillins; CEPHs, cephalosporins; MACROs, macrolides; FLUOROs, fluoroquinolones; TMP-SMX, trimethoprim-sulfamethoxazole; NP, no preference for any particular antibiotic; ABX, antibiotic; IM, internal medicine; PC, primary care (FP and IM); and ENT, otolaryngology.
†One respondent did not name his antibiotic preference.

Table 4. Accordance of Antibiotic Therapy Choice With the AHRQ Report and SAHP Guidelines*

<table>
<thead>
<tr>
<th>Specialty</th>
<th>AHRQ†</th>
<th>SAHP‡</th>
</tr>
</thead>
<tbody>
<tr>
<td>FP (n = 74)</td>
<td>54 (73)</td>
<td>46 (62)</td>
</tr>
<tr>
<td>IM (n = 63)</td>
<td>42 (56)</td>
<td>38 (60)</td>
</tr>
<tr>
<td>PC (n = 137)</td>
<td>96 (70)</td>
<td>84 (61)</td>
</tr>
<tr>
<td>ENT (n = 70)</td>
<td>37 (53)</td>
<td>57 (81)</td>
</tr>
<tr>
<td>Total (N = 207)</td>
<td>133 (64)</td>
<td>141 (68)</td>
</tr>
</tbody>
</table>

*Data are number (percentage) of respondents. AHRQ indicates Agency for Healthcare Research and Quality; SAHP, Sinus and Allergy Health Partnership; FP, family practice; IM, internal medicine; PC, primary care (FP and IM); and ENT, otolaryngology.
†Amoxicillin or trimethoprim-sulfamethoxazole therapy.
‡Amoxicillin, amoxicillin-clavulanate, cefpodoxime proxetil, or cefuroxime axetil therapy.

responded, 83% advocated the use of a decongestant. Topical decongestant therapy was recommended by 21% of the physicians, with a mean treatment duration of 4.2 days. Internists were least likely to use topical decongestants, while otolaryngologists were most likely to use them. Together, primary care physicians used topical decongestants less frequently than otolaryngologists (P = .01). Overall, 70% of the physicians advocated the use of oral decongestants, with a mean treatment duration of 10.3 days. There was no significant difference in the frequency or duration of use of oral decongestants among the 3 specialty groups. Twenty-one physicians (9%) advocated using both topical and oral decongestants.

Guaifenesin is an oral expectorant with mucokinetic properties. Otolaryngologists were most likely to use guaifenesin (P = .01). We also evaluated the dosage that was prescribed because the literature only supports the clinical efficacy of guaifenesin at dosages of 2400 mg/d or more.15,16 This dosage was recommended by 40% of otolaryngologists vs only 16% of primary care physicians, which
There was a statistically significant difference ($P = .01$). None of the respondents advocated using more than 2400 mg/d. Table 6 reviews the use of nasal steroid therapy, antihistamines, saline irrigation, and steam-heated mist. Of the respondents, 25% would prescribe nasal steroid therapy, and 12% would use antihistamines. Steam was advocated by 45% of the physicians. There was no significant difference in the use of these treatments by any of the physician groups. However, otolaryngologists recommended saline irrigation more than primary care physicians ($P = .01$). Additional therapeutic recommendations by the respondents included oral steroid therapy ($n = 3$), ascorbic acid supplementation ($n = 2$), warm compresses ($n = 5$), and abstinence from histamine-containing foods ($n = 1$).

Table 7 reviews the number of drugs advocated by the respondents from each specialty for the treatment of community-acquired ABRS. While 13% of primary care physicians prescribed only 1 medication, 4% of the otolaryngologists prescribed only 1. Otolaryngologists, however, tended to prescribe 4 or more medications (31%), whereas only 15% of the primary care physicians prescribed more than 3 medications. Otolaryngologists tended to prescribe more drugs than primary care physicians ($P = .01$), whereas no statistically significant difference was identified between internists and family physicians ($P = .66$).

The clinical scenario used in our survey instrument depicts a commonly encountered situation in the daily practices of the physicians who responded to this survey, but the clinical diagnosis of ABRS continues to present a difficult challenge for the physician. A number of researchers have assessed the value of clinical assessment as a diagnostic tool for ABRS. One prospective study that evaluated the diagnostic use of the recognized signs and symptoms of ABRS in primary care offices found that the overall clinical impression was more accurate than any single clinical finding. Moreover, the patients' reported symptoms were found to conflict with examination findings. Most of these studies used radiography or ultrasonography as the diagnostic criterion standard and cannot be interpreted as "true" estimates of sensitivity and specificity. One study compared clinical criteria with that of sinus puncture with culture (the diagnostic reference standard for ABRS) but no valid conclusions can be made because of methodological problems within the study design. Consequently, there are no reliable data for how well clinical examination compares with sinus puncture as a reference.
on computed tomographic scans of 87% of patients with viral rhinosinusitis, however, further complicates the ability to diagnose ABRS.7 These findings suggest that ABRS would be frequently overdiagnosed by computed tomographic scan findings. Other researchers, however, suggest that plain film radiography is of limited value compared with computed tomographic scans in the evaluation of acute sinusitis.19 Interestingly, plain film radiography has been used as a benchmark for the diagnosis of acute sinusitis in a number of prospective studies.17,20 The role of radiography was also evaluated by a recent meta-analysis of 6 studies that showed a sensitivity of 76% and a specificity of 79% in patients who also underwent sinus aspiration and aspiration.7 These findings led the authors to conclude that performing sinus radiography was not a cost-effective diagnostic strategy at any prevalence level. However, our survey suggests that disagreement over the role of diagnostic radiography in ABRS exists within the medical community. Nearly 10% of the responding physicians used radiography, and otolaryngologists were more likely to recommend radiography than their primary care colleagues (P = .04). These findings highlight the lack of consensus regarding the role of radiography in the diagnosis of ABRS.

A significant number of patients with ABRS clinically improve without treatment. In fact, the spontaneous resolution rate in patients with culture-proven ABRS has been predicted to be 47%8 in adults, while 63%9 to 69%21 of adults with a clinical diagnosis of ABRS would be expected to undergo spontaneous resolution. Therefore, any treatment that is advocated should be cost-effective and increase the rate of cure.

Antibiotic therapy is the most common treatment used for ABRS. A meta-analysis of randomized controlled trials of antibiotic treatment for ABRS performed between 1970 and 1997 showed that antibiotics were significantly more effective than placebo, reducing treatment failures by almost 50%.21 The AHRQ in 1999 published a summary of the published evidence on the diagnosis and treatment of community-acquired ABRS.7 Their meta-analysis of 28 randomized clinical trials on the antibiotic treatment of acute sinusitis did not suggest a clinically meaningful superiority of newer, more expensive antibiotics over amoxicillin or folate inhibitors, such as trimethoprim-sulfamethoxazole. In fact, the AHRQ analysis concluded that a clinician would need to treat 118 patients with newer, more expensive antibiotics instead of amoxicillin to prevent 1 case of clinical failure. However, many of these clinical trials were carried out prior to the development of rapidly rising levels of antibiotic-resistant organisms in community-acquired ABRS. Nearly 37% of the physicians in the present survey chose to use 1 of the newer, more expensive antibiotics for the patient in our clinical scenario.

The SAHP, a not-for-profit organization created through the joint efforts of the American Academy of Otolaryngic Allergy, the American Academy of Otolaryngology–Head and Neck Surgery, and the American Rhinologic Society, published antimicrobial treatment guidelines in July of 2000 in response to the changing profile of antibiotic-resistant organisms in community-acquired ABRS.8 Like the AHRQ report, the SAHP guidelines were developed by contributors with expertise in evidence-based medicine. Antibiotic therapy recommendations were developed using a mathematical model to determine the calculated bacteriologic efficacy of each antibiotic. These evidence-based practice guidelines have not been subjected to clinical evaluation. For initial therapy for adults with mild or moderately severe ABRS, the SAHP recommended amoxicillin-clavulanate, amoxicillin, cefpodoxime proxetil,8 or cefuroxime axetil.

In our study, there were remarkable differences in the choices of antibiotic therapy by each specialty. While amoxicillin was the most common choice by all 3 specialties, trimethoprim-sulfamethoxazole was the second most frequently recommended antibiotic by primary care physicians, whereas amoxicillin-clavulanate was the second most common choice by otolaryngologists. When the prescribing preferences of each specialty were compared with the evidence-based findings of the AHRQ and the SAHP, there were also notable differences. Primary care physicians more frequently chose antibiotics supported by the AHRQ report (P = .01), whereas otolaryngologists’ choices were more closely aligned with the guidelines of the SAHP primarily because of their preference for amoxicillin-clavulanate over trimethoprim-sulfamethoxazole. Because this survey was performed before the SAHP guidelines were published, the antibiotic choices were not influenced by this publication. The SAHP guidelines and the AHRQ report, however, demonstrate that a lack of uniformity exists, which may confuse clinicians regarding appropriate antibiotic management.

Several other adjunctive therapies exist for the treatment of ABRS, but research supporting their use is scant. The AHRQ reviewed 10 randomized controlled trials regarding nonantibiotic treatment of ABRS.7 In most of these studies, the medications were used in conjunction with antibiotics, preventing evaluation of their role in the treatment of ABRS in the absence of antibiotic therapy. In addition, none of these randomized trials compared antibiotic therapy with nonantibiotic therapy.

Topical and systemic decongestant therapies have been recommended to adjunctively treat ABRS. Therapy with decongestants results in vasoconstriction of mucosal capillaries with shrinkage of edematous mucosa and constriction of submucosal capacitance vessels. Decreased mucosal swelling and submucosal engorgement could therefore potentially improve paranasal sinus drainage and mucociliary clearance. However, there are no well-designed studies that demonstrate the efficacy of decongestants in ABRS. Despite the paucity of available data, however, more than 70% of the respondents prescribed oral decongestants, and nearly 21% of the physicians recommended topical decongestants. Of the 158 respondents who prescribed oral decongestants, 41 (26%) used medications containing phenylpropanolamine, which was recently demonstrated to be an independent risk factor for hemorrhagic stroke in women.22 These findings have resulted in a request by the Food and Drug Administration for all drug companies to discontinue marketing products containing phenylpropanolamine. Our survey, however, was conducted prior to the disclosure of these research findings.
Expectorants are mucokinetic agents that are capable of improving mucus quality and enhancing mucociliary clearance. A few studies suggest that guaifenesin, an expectorant, may be effective as a mucokinetic agent in dosages of 2.4 g/d or greater.15-16 The use of guaifenesin in the treatment of paranasal sinusitis is, however, primarily anecdotal. One article has shown some benefit in human immunodeficiency virus–positive patients with chronic rhinosinusitis,18 but to our knowledge no well-controlled studies exist that evaluate the benefits of guaifenesin for ABRS. Nevertheless, nearly 50% of the responding physicians in our survey used guaifenesin to adjunctively treat ABRS, and almost 75% used a subtherapeutic dosage of less than 2.4 g/d.

Nasal corticosteroids may be potentially useful in treating patients with ABRS because of their ability to reduce mucosal inflammation. One recent prospective randomized trial concluded that intranasal flunisolide spray was efficacious as an adjunct to oral antibiotic therapy for sinusitis.23 However, 47% of the patients were diagnosed as having chronic sinusitis, and the patients were recruited from the practices of allergy specialists, preventing assessment of its use in the nonallergic patient. There are no existing well-designed studies that demonstrate an unequivocally beneficial role in the treatment of ABRS. Nevertheless, nearly 25% of the respondents advocated their use for the nonallergic patient in our scenario.

Antihistamines are not typically recommended in the management of ABRS because of their anticholinergic activity, which can result in thicker, desiccated secretions that can impair paranasal sinus drainage. However, to our knowledge no controlled clinical trials exist that assess the value of antihistamines in ABRS. Because nearly 12% of the physicians recommended their use, further research may be indicated to evaluate their role as well as the rationale for prescribing them.

Nasal saline irrigation has been advocated to minimize nasal crusting and clear static secretions, thereby improving mucociliary clearance. A recent study demonstrated improved mucociliary transit times when buffered 3% hypertonic saline was used as a mucokinetic agent vs buffered nasal saline.24 More than 40% of the responding physicians advocated the use of saline irrigation. However, its ability to facilitate the resolution of ABRS has not been rigorously evaluated.

Research on the efficacy of symptom reduction by the nasal inhalation of steam in patients with viral rhinosinusitis has yielded conflicting findings. Tyrrell et al25 reported nearly 50% improvement in cold symptoms after a 20-minute treatment with 43°C humidified air. More recent research, however, found no beneficial effect of steam inhalation therapy on cold symptoms.26 Furthermore, the use of steam does not inhibit rhinovirus replication in patients with viral rhinosinusitis as previously thought.27 The benefits of steam in patients with ABRS have not been rigorously evaluated. Still, nearly 45% of the respondents said they would advocate steam inhalation.

As illustrated in Table 8, the present survey highlights a significant disparity within the medical community regarding the management of community-acquired ABRS. There were significant differences in the diagnosis and management of ABRS between primary care physicians and otolaryngologists in the use of radiographs, topical decongestants, guaifenesin, and saline nasal irrigation. Otolaryngologists were more likely to use each of these treatments. Furthermore, otolaryngologists tended to prescribe more medications for the treatment of ABRS than primary care physicians. In contrast, when responses of family physicians and internists were compared, there was no statistically significant difference in any of these diagnostic or treatment parameters.

### POSSIBLE EXPLANATIONS FOR THE OBSERVED FINDINGS

Although the differences between specialties are pronounced, the reasons for these differences in the clinical approach to sinusitis are unclear. A number of factors may influence the disparity between otolaryngologists and primary care physicians. Otolaryngologists typically treat a patient population with a higher prevalence of ABRS, whereas primary care physicians typically treat a population with a relatively higher prevalence of viral rhinosinusitis. Furthermore, otolaryngologists frequently treat patients referred from primary care physicians for whom initial therapy has failed as well as patients with recurrent acute sinusitis and chronic rhinosinusitis. As a result, otolaryngologists may be more likely to form the “clinical impression” that a particular patient has ABRS and treat the patient more aggressively. Moreover, because otolaryngologists more frequently manage complex patients with rhinosinusitis that has been unresponsive to initial medical therapy, they may have a treatment bias that affects their management of all patients with ABRS. As a consequence, uncomplicated patients with community-acquired ABRS may be more likely to receive therapy from an otolaryngologist that is typically intended for a patient with recurrent acute sinusitis or chronic rhinosinusitis.

Other investigators have concluded that a physician’s specialty training, both formal and informal, plays a key role in his or her treatment decisions.28 Likewise, our findings suggest that educational experiences may...
play a significant role in the clinical decision-making process for the diagnosis and treatment of ABRS. In addition, physicians may be influenced by other factors including the costs of diagnosis and treatment, as well as their personal experiences with patient compliance and treatment outcomes. This physician survey, however, precludes any conclusions regarding the outcome of patients with ABRS based on differences in therapy. Further research is necessary to evaluate the relative influence that these factors have on a physician’s approach toward management of different disease processes.

**REVIEW OF THE LITERATURE**

Differences in health care utilization by generalists and specialists have been previously demonstrated. Cardiologists and endocrinologists have been shown to have higher health care utilization rates than general internists and family physicians after adjusting for differences in patient mix. Other investigations have shown that specialists tend to order more laboratory tests and radiographs and tend to refer more often to other physicians. Findings from research on the impact that differences in health care utilization has on disease-specific outcomes, however, disagree. Care by cardiology has been associated with greater costs and resource use with no difference in survival at 30 days of follow-up for patients hospitalized with congestive heart failure when compared with the outcomes of patients treated by generalists. Two other studies that reviewed the outcome of patients treated for acute myocardial infarction confirmed the increased health care utilization by cardiologists, but only one of these investigations demonstrated a lower adjusted 1-year mortality in those patients treated by cardiologists. Similarly, patients treated for rheumatoid arthritis and children treated in pediatric intensive care units have been shown to benefit from specialty care while patients with chronic obstructive pulmonary disease, hypertension, and type 2 diabetes mellitus have not shown a beneficial effect.

We identified 1 prior publication that evaluated practice variations in the management of acute sinusitis among primary care physicians in Canada. The authors concluded that confusion existed among primary care physicians regarding the recommended management of acute sinusitis. To our knowledge, however, no published research has compared the difference in the diagnosis and management of ABRS between otolaryngologists and primary care physicians. Furthermore, the impact of specialty care on the outcomes of patients with ABRS has not been formally investigated.

**CONCLUSIONS**

There is a lack of consensus between primary care physicians and otolaryngologists regarding radiographic assessment and management of community-acquired ABRS. To standardize the treatment of community-acquired ABRS for the medical community there must be (1) well-designed clinical trials that assess efficacy, (2) outcomes research that assesses the effectiveness of different treatments, and (3) the establishment of widely accepted evidence-based practice guidelines. Furthermore, these evidence-based guidelines will need to be regularly updated for the medical community to account for the evolving changes in antibiotic resistance by the causative agents of ABRS.

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**REFERENCES**


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