Evidence-Based Guidelines for Chronic Sinusitis

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Disclosures

- Patent Pending 61/624, 105 - Sinus diagnostics and therapeutics
- Consultant, BioInspire Inc
- Broad topic; non-comprehensive talk

Flashback 2007

2007

Clinical practice guideline: Adult sinusitis

Richard M. Rosenfeld, MD, MFM, David Andes, MD, Neill Bhattacharyya, MD, Dickson Chuang, MD, MBA, MPH-C, Steven Elsenberg, MD, Theodore C. Ganista, MD, Andrea Geiser, MD, MS, Daniel Hamilton, MD, Richard C. Hayden III, MD, Patricia A. Hudgins, MD, Stacie Jones, MPH, Helene J. Krouse, PhD, Lawrence H. Lee, MD, Martin C. Mahoney, MD, PhD, Bradley F. Margol, MD, Col. John P. Mitchell, MC, MD, Robert Nathan, MD, Richard M. Shiffman, MD, MSCP, Theodore L. Smith, MD, MPH, and David L. Witsell, MD, MPH, Brooklyn, NY; Madison, WI; Boston, MA; Baltimore, MD; Edina, MN; San Diego, CA; Hartford, CT; Lexington, KY; Atlanta, GA; Alexandria, VA; Detroit, MI; Buffalo, NY; Dallas, TX; Wright-Patterson AFB, OH; Denver, CO; New Haven, CT; Portland, OR; and Durham, NC
Treatment of Chronic Rhinosinusitis

- Medications
  - Antibiotics
  - Antifungals
  - Steroids
    - Topical
    - Systemic
- Endoscopic Sinus Surgery

Clinical Practice Guidelines: Acute Sinusitis

- Recommend antibiotic treatment for acute bacterial sinusitis
  - Amoxicillin 1st line: based upon efficacy, cost, and low incidence of side effects
  - Sulfa-based antibiotic recommended for Penicillin allergic patients
  - “Evidence Grade” B

Evidence Quality

<table>
<thead>
<tr>
<th>Grade</th>
<th>Evidence quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Well-designed randomized controlled trials or diagnostic studies performed on a population similar to the guideline's target population</td>
</tr>
<tr>
<td>B</td>
<td>Randomized controlled trials or diagnostic studies with minor limitations; overwhelmingly consistent evidence from observational studies</td>
</tr>
<tr>
<td>C</td>
<td>Observational studies (case control and cohort design)</td>
</tr>
<tr>
<td>D</td>
<td>Expert opinion, case reports, reasoning from first principles (bench research or animal studies)</td>
</tr>
<tr>
<td>X</td>
<td>Exceptional situations where validating studies cannot be performed and there is a clear preponderance of benefit over harm</td>
</tr>
</tbody>
</table>

Chronic Sinusitis – Clinical Criteria

TWO OR MORE OF THE FOLLOWING:

- Mucopurulent Drainage
  - Anterior/Posterior
- Nasal Obstruction or Congestion
- Facial Pain/Pressure/Fullness
- Decreased Sense of Smell

Rosenfeld RM et al OHNS 2007
Chronic Sinusitis

- Diagnosis
  - Clinical Criteria
  - Evidence of inflammation on endoscopic examination or CT imaging

Chronic Sinusitis

- Endoscopic Examination

Chronic Sinusitis

- CT Findings

Treatment of Chronic Sinusitis

- 2007 Clinical Practice Guideline – Adult Sinusitis

We Need Better Data ...
“Our vision is that healthcare decision-making throughout the world will be informed by high-quality, timely research evidence.”

The evidence available does not demonstrate that FESS ... is superior to medical treatment with or without sinus irrigation in patients with chronic rhinosinusitis.”
Wait a Minute …

Evidence-Based Medicine

Best External Evidence?
- Best Study Design?
- Most Applicable to Current Patient?

Cochrane Reviews
- Require Randomized Controlled Studies
  - Ignore all other study designs!
- FESS Review (Nunez)
  - 2159 Abstracts Reviewed
  - 2156 Studies Excluded
  - Review of 3 Studies
Fairley ‘93

- Randomized, controlled trial comparing FESS to Intranasal Antrostomy
- Patients with CRS, failed antibiotics, topical steroids, and antral washouts
- Unpublished Data
- Interim Results

“Our vision is that healthcare decision-making throughout the world will be informed by high-quality, timely research evidence.”

Ragab ‘03

- Randomized, Controlled Trial
  - Medical Therapy
    - 12-week course of erythromycin, alkaline nasal douche, intranasal corticosteroid preparations, and oral prednisone for some
    - After 12 weeks medical treatment was tailored to the patient's symptoms
  - FESS followed by less aggressive medical treatment

Laryngoscope. 2004 May;114(5):923-30

Hartog ‘97

- Compared maxillary sinus puncture & irrigation to puncture & irrigation followed by endoscopic maxillary antrostomy
- Symptoms and Radiographic evidence of chronic Maxillary Sinusitis
- EXCLUDED patients with ethmoid, frontal, or sphenoid disease!

Annals Otol Rhinol Laryngol 106: 1997

2013
Medical Treatment

- Corticosteroids
  - Topical
  - Systemic
- Antimicrobials
  - Antibiotics
    - Systemic
    - Topical
    - Macrolides
  - Antifungals
    - Topical
    - Systemic
- Other
  - ASA desensitization
  - Anti-leukotrienes
  - Anti IgE antibody (omalizumab)
  - Anti IL-5 antibody (mepulizamab)
  - Anti IL-4 (dupilumab)

Topical steroids for nasal polyps (Review)

Kalish L, Snidvongs K, Sivasubramaniam R, Cope D, Harvey RJ

- Cochrane review 2012
- 40 studies, >3,600 patients
- Findings
  - Reduction in size of polyps
  - Reduction in nasal obstruction
  - Reduction in polyp recurrence after sinus surgery

Impact of Topical Nasal Steroid Therapy on Symptoms of Nasal Polyposis: A Meta-Analysis

Luko Rudnik, MD; Rodney J. Schlesser, MD; Timothy L. Smith, MD, MPH; Zachary M. Solor, MD, MSc

- Structured literature review and meta-analysis
- Identified & analyzed 12 randomized, placebo-controlled trials
- Demonstrated statistically significant improvement in nasal symptoms
  - Extent of improvement not well-quantified
  - QOL impact unknown
- All steroid formulations demonstrated improvement

Laryngoscope. 2012 Jul;122(7):1431-7

Flonase?
Oral corticosteroids in the management of adult chronic rhinosinusitis with and without nasal polyps: an evidence-based review with recommendations

David M. Poweleit, MD, MSc, Luke A. Jackowski, MD, Onyeaka Elu, MD, Peter H. Hwang, MD, \textsuperscript{1} Em D. Wright, MD, MSc, MD, and Timothy L. Smith, MD, \textsuperscript{2,3,4}

Int Forum Allergy Rhinol. 2013 Feb;3(2):104-20

**Table 7. Summary of recommendations for the use of steroids in CRS**

<table>
<thead>
<tr>
<th>CRS patients</th>
<th>Grade of evidence</th>
<th>Balance of benefit to harms</th>
<th>Recommendation</th>
<th>Steriod protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRS-P</td>
<td>C</td>
<td>Preponderance of benefit to harms</td>
<td>Definite</td>
<td>Oral prednisolone for short term in CRS-P</td>
</tr>
<tr>
<td>CRS-R</td>
<td>A</td>
<td>Preponderance of benefit to harms</td>
<td>Strong recommendation</td>
<td>Oral prednisolone for short term in CRS-R</td>
</tr>
<tr>
<td>A/S</td>
<td>B</td>
<td>Benefits over harms in short term</td>
<td>Recommended</td>
<td>Consider oral prednisolone for patients in A/S</td>
</tr>
<tr>
<td>Postoperative use in CRS-P</td>
<td>B</td>
<td>Benefits over harms, particularly after surgical intervention</td>
<td>Recommended</td>
<td>Consider oral prednisolone postoperatively in CRS-P</td>
</tr>
<tr>
<td>Postoperative use in CRS-R</td>
<td>B</td>
<td>Benefits over harms, particularly after surgical intervention</td>
<td>Recommended</td>
<td>Consider oral prednisolone postoperatively in CRS-R</td>
</tr>
<tr>
<td>Postoperative use in CRS-P \textsuperscript{4}</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>No recommendation</td>
</tr>
<tr>
<td>Postoperative use in CRS-R \textsuperscript{4}</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>No recommendation</td>
</tr>
</tbody>
</table>

A/S = Allergic fungal sinusitis; CRS = chronic rhinosinusitis; CRS-P = chronic rhinosinusitis without nasal polyps; CRS-R = chronic rhinosinusitis with nasal polyps; N/A = not applicable.

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**Oral Corticosteroids**

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**Table 9. Summary of evidence for antibiotic utilization in CRS**

<table>
<thead>
<tr>
<th>Antibiotic strategy</th>
<th>Grade of evidence</th>
<th>Balance of benefit to harms</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral antibiotic (≤ 3 weeks) \textsuperscript{5}</td>
<td>C</td>
<td>Equal</td>
<td>Optimal</td>
</tr>
<tr>
<td>Oral antibiotic (3-12 weeks) \textsuperscript{5} &amp; N/A (single study) &amp; Harm</td>
<td>Recommended against</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N/A antibiotic (C)</td>
<td>C</td>
<td>Harm</td>
<td>Recommended against</td>
</tr>
<tr>
<td>Topical antibiotic</td>
<td>A</td>
<td>Harm</td>
<td>Recommended against</td>
</tr>
<tr>
<td>Oral rifampin</td>
<td>B</td>
<td>Harm</td>
<td>Recommended against</td>
</tr>
<tr>
<td>N/A antibiotic (R) &amp; N/A (in studies) &amp; Harm</td>
<td>Recommended against</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topical antibiotic</td>
<td>A</td>
<td>Harm</td>
<td>Recommended strongly against</td>
</tr>
<tr>
<td>Macrolide class</td>
<td>B</td>
<td>Equal</td>
<td>Optimal</td>
</tr>
</tbody>
</table>

\textsuperscript{5} Includes macrolide class of oral antibiotic antibiotics. CRs = chronic rhinosinusitis; N/A = not available.

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Int Forum Allergy Rhinol. 2012 Jun 26
Surgery?

Medical therapy vs surgery for chronic rhinosinusitis: a prospective, multi-institutional study
Timothy L. Smith, MD, MPH1, Robert C. Kern, MD2, James N. Palmer, MD3, Rodney J. Schlosser, MD4, Rakesh K. Chandra, MD2, Alexander G. Chu, MD3, David Conley, MD2, Jess C. Maze, MPH1, Rongwei F. Fu, PhD5, James A. Stankiewicz, MD7

- Surgery vs. Continued Medical Therapy
- At least 3 weeks antibiotics & topical steroid prior to entering study
- Patient choice – surgery vs. medical treatment
  - Extent of surgery & medical treatment dictated by treating physician and patient

- 180 Patients enrolled
  - 81 medical, 99 surgical
- 130 Patients available for analysis @ 6 months (72%)
  - 55 medical, 75 surgical

- No significant differences in baseline characteristics
- Trend towards more severe disease in surgical group

Surgical Cohort
- Greater QOL improvement in surgical group
- Decreased exposure to systemic antibiotics and steroids
- Fewer missed school/work days
115 patients with 1 year data
- 180 originally enrolled in study – 64% completion rate
- Not Randomized – patients chose surgery or continued medical therapy
- Surgery Cohort – 65 patients
- Medical Treatment Cohort – 50 patients

17 of Patients in Medical treatment cohort requested surgical intervention
- Cross-over Group
- Medical treatment cohort reduced to 33 patients
- Disease Specific QOL outcomes
  - RSQI, Chronic Sinusitis Survey
**Nasal saline irrigations for the symptoms of chronic rhinosinusitis (Review)**

Harvey R, Hannan SA, Badia I, Scadding G

**Systemic antibiotics for chronic rhinosinusitis without nasal polyps in adults (Review)**

Piramchat P, Thanaviratanaanich S, Laopaiboon M

**Functional endoscopic balloon dilation of sinus ostia for chronic rhinosinusitis (Review)**

Ahmed J, Pal S, Hopkins C, Jayaraj S

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**Treatment of Chronic Rhinosinusitis**

- **Medications**
  - Antibiotics
    - Antifungals
  - Steroids
    - Topical
    - Systemic
- **Endoscopic Sinus Surgery**