



EPOS 2012

Burden of rhinosinusitis

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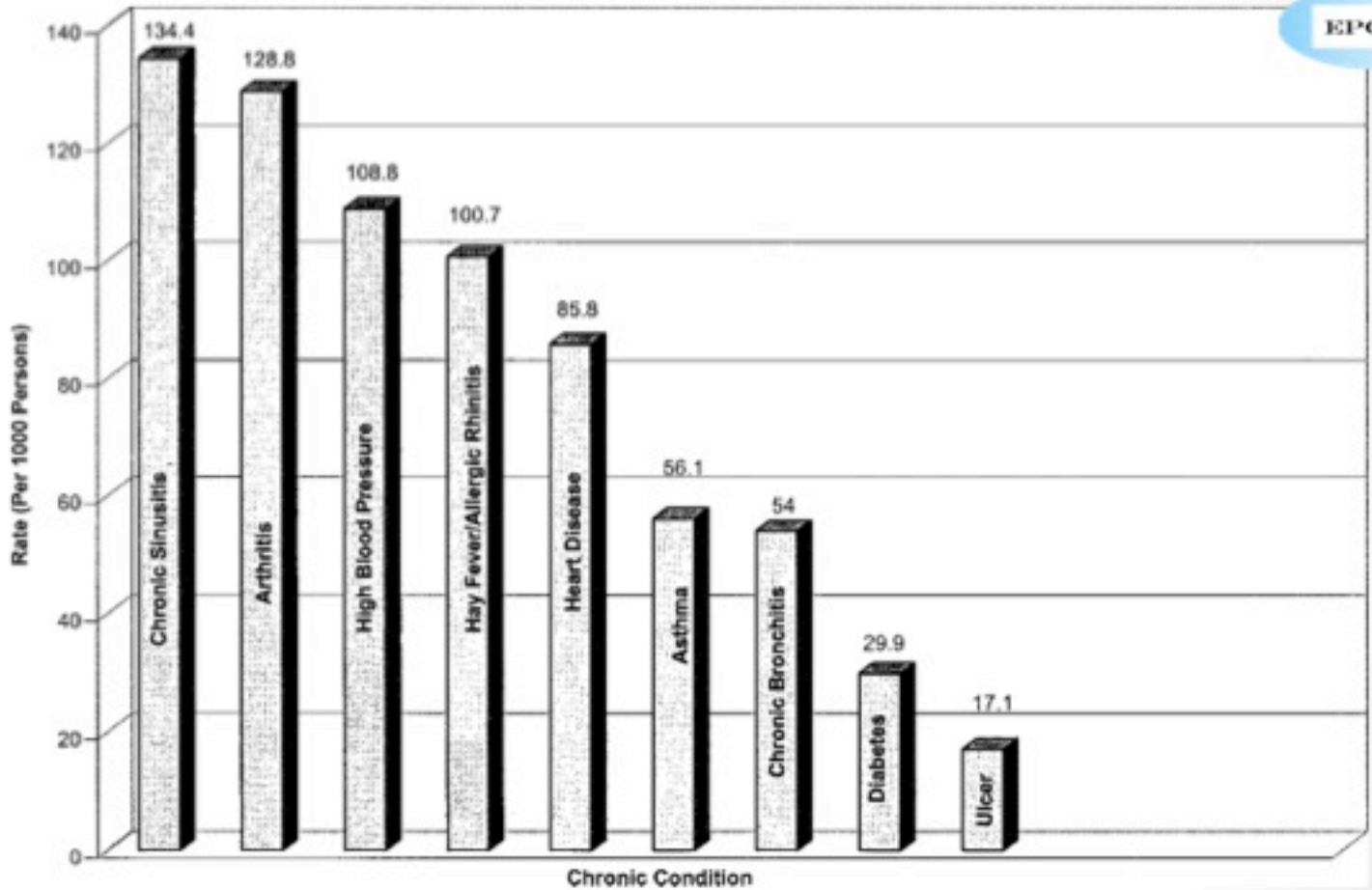
Prevalence CRS: 10.9%



EPOS 2012

Map of prevalence of CRS. Symbols indicate prevalence categories of $\geq 15\%$ (red stars), $\geq 10\%$ and $< 15\%$ (orange diamonds) and $< 10\%$ (green hexagons) HASTAN D et al. 2010

Figure Prevalence rates of selected chronic conditions in the United States in 1994.



Murphy M p et al. Otolaryngology – Head and Neck
Surgery 2002;127:367-376

QUALITY OF LIFE MEASUREMENTS IN THE DIAGNOSIS AND OUTCOME MEASUREMENT OF CRS

A number of disease-specific and global patient-rated outcome measures have been used to demonstrate significant impairment in HRQOL in both ARS and CRS

Tools

- *Health related quality of life can be measured using a large number of disease-specific or global patient-rated outcome measures.*
- Recommended outcome tools based on current literature:

Condition + population	instrument
CRS adult	SNOT-22 / RSOM-31
ARS adult	SNOT-16
CRS pediatric	SN-5
ARS pediatric	S5

Ragab SM et al. Evaluation of the medical and surgical treatment of chronic rhinosinusitis: a prospective, randomised, controlled trial. *The Laryngoscope*. 2004; 114(5): 923-930

Giklick RE, Metson R; The health impact of chronic rhinosinusitis in patients seeking otolaryngologic care.. *Otolaryngol Head Neck Surg*. 1995;113(1): 104-9.

Impact of ARS on quality of life

- **SNOT-16**: Higher scores in ARS than normal population. Scores rapidly declining in first 3 days and return to normal levels after 10 days.
- **SNOT-22**: Mean pre-operative score in >3100 patients with CRS of 42 vs. 7 in healthy volunteers.
- Patients with nasal polyps tend to report better QOL than patients with CRSsNP.

Impact of CRS on quality of life

- **SF-36:** CRS has a negative impact on several aspects of quality of life.
Greater impact on social functioning than chronic heart failure, angina or back pain.
- **SF-36:** Patients with ARS have a reduction in HRQOL (60,8) compared to healthy individuals (51,8), but less reduction than patients with CRS (75,5).
- Moderate to severe effects on quality of life areas:
 - Activities of daily living (71,6% of patients)
 - Leisure (63,1%)
 - Professional/school activities (59,2%)

Garbutt et al. Use of the modified SNOT-16 in primary care patients with clinically diagnosed acute rhinosinusitis. Archives of otolaryngology-head & neck surgery. 2011 Aug; 137(8): 792-7.

Tuel I et al. Quality of life of patients with diseases of sinuses. Journal of physiology and pharmacology: an official journal of the Polish Physiological society.. 2007 Nov; 58 Suppl 5 (Pt2): 691-7.

Klossek JL,M, Mesbah K. Presentation and treatment of acute maxillary sinusitis in general practice: a French observational study. Rhinology. 2011 Mar; 49(1):84-9.

Chester et al. undertook a systematic review of the literature reporting symptomatic outcome following FESS. A meta-analysis of 21 FESS studies (2070 patients) was conducted for each symptom separately with the standardized difference between the preoperative and postoperative severity scores as the effect size (ES) (13.9 months after ESS).

All symptoms demonstrated improvement compared with their respective preoperative severity scores by an overall ES of 1.19 (95% confidence interval, 0.96 to 1.41; $I(2) = 81.7\%$) using the random-effects model.

Nasal obstruction (ES, 1.73) improved the most, with facial pain (ES, 1.13) and postnasal discharge (ES, 1.19) demonstrating moderate improvements. Hyposmia (ES, 0.97) and headache (ES, 0.98) improved the least.

DIRECT COSTS OF ARS

Patients with recurrent acute rhinosinusitis have an average direct health care cost of \$1,091/year in average (US)

Direct costs of ARS

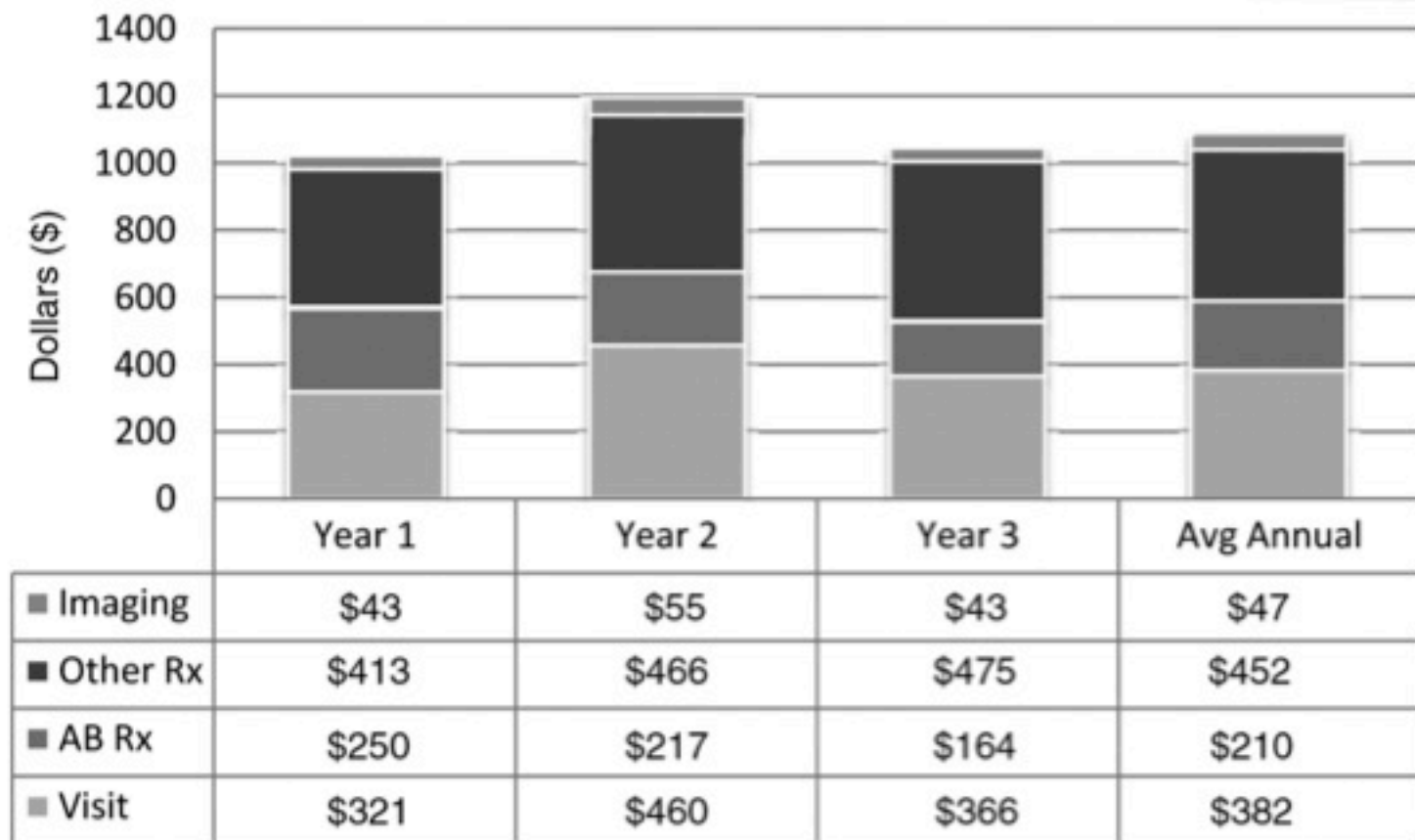
- Acute sinusitis is an important pathology to consider economically:
 - High prevalence (20 million cases of acute bacterial rhinosinusitis yearly in the United states)
 - Risk of recurrence (1/3000 adults with recurrent acute sinusitis)
 - Augmentation of disease burden to chronic conditions as asthma
- Literature does not give an answer to the question how much one episode of acute sinusitis would cost

Direct costs of ARS

Recurrent acute sinusitis

- Average of 5,6 health care visits/year, 9,4 prescriptions filled (40% antibiotic)
- Total direct health care cost of recurrent acute rhinosinusitis: average of \$1091/year:
 - \$210 to antibiotics
 - \$452 to other sinus-related prescriptions (relatively large cost due to leukotriene inhibitors who are not generically available)
 - \$47 to imaging
 - \$382 to other visit costs

Figure . Health care resource utilization cost summary (\$) for recurrent acute rhinosinusitis.



Bhattacharyya N et al. Otolaryngology -- Head and Neck Surgery 2011;146:307-312

DIRECT COSTS OF CRS

In US the total cost of treating a patient with CRS was \$2609 per year; in Europe the direct costs of a patient treated in a university hospital for severe chronic rhinosinusitis was \$1861/year

Health care spending was significantly greater in sinusitis than in other chronic diseases such as ulcer disease, acute asthma and hay fever

Direct costs of CRS

Factors contributing to a high economic impact :

- High disease prevalence (10 to 14% of the population)
- Chronic condition with no universal cure
- Frequent exacerbations of symptoms prompting acute treatments in addition to the chronic ones already in place
- High quality of life-impact
- Generally incomplete symptom control leading patients to seek additional therapies to achieve relief
- Accurate diagnosis needs radiologic procedures

National health care costs in the US (1999) already at an estimated 8.6 billion dollar per year!

Direct costs of CRS

Difference in expenditures for physician's visits and medication costs:

- CRS without nasal polyps (CRSsNP): \$569,6/year
- CRS with nasal polyps (CRSwNP): \$564,5/year
- CRS with recurrent nasal polyps after surgery: 865,5/year
- Group with recurrent nasal polyps:
±3, 5 additional office visits and 5,5 additional prescription fills compared to patients without CRS

Bhattacharyya, N. (2009). "Assessing the additional disease burden of polyps in chronic rhinosinusitis." *The Annals of otology, rhinology, and laryngology* **118**(3): 185-189.

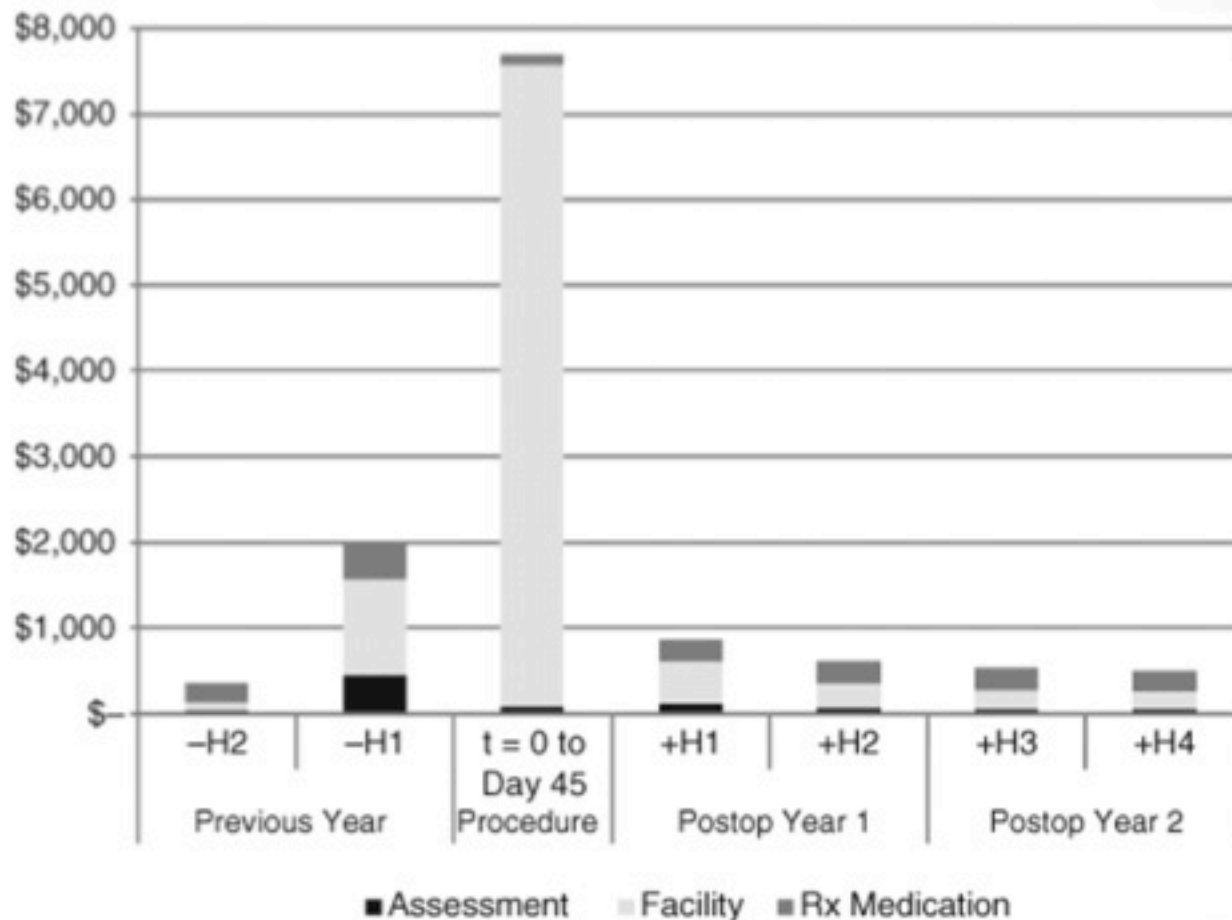
Bhattacharyya, N. (2009). "Assessing the additional disease burden of polyps in chronic rhinosinusitis." *The Annals of otology, rhinology, and laryngology* **118**(3): 185-189.

Direct costs of CRS

Effect of surgery on costs for CRSsNP

- Year prior to ESS :\$2449 (\$2341-\$2556)
 - first semester: \$361
 - last semester \$1965
- FESS-procedure and the 45-day post procedure period: \$7726 (\$7554 – \$7898)
- First year following ESS: \$1564 per year (drop \$885)
- Second year post procedure: \$1118 (additional drop \$446)

Figure . Average health care utilization per patient by category.



Bhattacharyya N et al. Otolaryngology -- Head and Neck Surgery 2011;144:440-445

INDIRECT MEDICAL COSTS

Rhinosinusitis is one of the top ten most costly health conditions to US employers

Indirect costs account for 40% of the total costs of rhinosinusitis

Indirect medical costs of CRS

Economic impact

- 85% of patients with CRS are of working age (18-65y)
- Absenteeism: missed work days: 4,8-5,7/year
- Presenteeism: decreased productivity at work because of symptoms

Prior to Surgery

- 6,5% absenteeism
- 36,2% presenteeism
- → 38% of work productivity loss

Blackwell DL et al. Summary health statistics US adults: National Health Interview Survey, 1997. Vital Health Stat 10. 2002 May(205): 1-109

Stankeiwicz J. Impact of chronic rhinosinusitis on work productivity through one-year follow-up after balloon dilatation of the ethmoid infundibulum+. Int Forum of Allergy and Rhinology. 2011(1):38-45.

Indirect medical costs of common cold

Costs approach \$25 billion in US

- Absenteeism 2,8hours/cold = \$ 8 billion
- Presenteeism 5,9hours/cold = \$ 16,6 billion
- Absenteeism due to caregiving to children with a cold: 1,2hours/cold = \$ 230 million

Health care spending was significantly greater in sinusitis than in other chronic diseases such as ulcer disease, acute asthma and hay fever