EDITORIAL

Intranasal Steroids for Acute Sinusitis?

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Mr Jones, a pleasant 35-year-old software engineer, is my 6th patient today complaining of symptoms of an upper respiratory tract infection (URI). I just finished bragging to my 3rd-year medical student that I had not prescribed an antibiotic for the previous 5 patients with acute viral respiratory tract infections that day. (I encourage my students to call these infections "acute respiratory infections" rather than URI, because most respiratory viruses descend into the bronchi, causing cough.) But Mr Jones' symptoms are different from the others; he has mild cheek pain and complains of a lot of purulent nasal discharge, so he fits the clinical diagnosis of acute bacterial sinusitis. He does not look very ill, however, and randomized clinical trials show marginal benefit of antibiotics for mild sinusitis. What to do? Should I break my perfect record for the day and prescribe amoxicillin or azithromycin if he requests it, as many patients do? Perhaps I should preserve my perfect record by prescribing a nasal steroid instead.

The meta-analysis by Hayward and colleagues[1] in this issue of the *Annals* helped me with this decision. In this meta-analysis of 6 good-quality randomized clinical trials, they conclude that nasal steroids have a small positive treatment effect, with numbers needed to treat (NNT) in the 9 to 13 range depending on the outcome measured. Based on my analysis of their data, however, I would not offer Mr. Jones a nasal steroid. Here is my thinking.

Although 9 or 13 is a decent NNT for many illnesses, numbers needed to treat are not very useful by themselves unless one is comparing definite and important outcomes, such as heart attacks and death. For illnesses that are not serious, one must consider first what statisticians call the "effect size." The important question to ask, therefore, is: What is the minimal important difference[2] that would make it worth using the medication? Even better: What is the sufficiently important difference, as defined by our family physician colleague Bruce Barrett?[3] The sufficiently important difference takes into account the potential benefits, harms, and cost of treatment. For an illness such as acute sinusitis, the benefits are symptom relief and return to normal functioning; the harms are the side effects of the medication.

Based on this meta-analysis, do nasal steroids for acute sinusitis pass the sufficiently important difference test? In my opinion, no. For resolution or improvement in symptoms, the primary outcome of most sinusitis trials, the authors found a statistically significant but small risk difference (0.11) at 21 days (NNT = 9), but a nonstatistically significant difference of 0.05 at 14 days. Most patients want to get better in a few days, not 3 weeks. Furthermore, symptom relief was minimal. The studies by Meltzer and Nyak measured symptom relief during the first 2 weeks of treatment, and the results are displayed nicely in the Hayward et al Supplemental Appendix (http://www.annfammed.org/content/10/3/241/suppl/DC1). Symptom scores for facial pain, nasal congestion, headache, rhinorrhea, and postnasal drip were scored on a 4-point scale from 0 (no symptoms) to 3 (severe symptoms).

To interpret the findings, it is best to think of this as a 30-point scale, measured in tenths. The only 2 symptoms with statistically significant improvements were facial pain and congestion. It is striking, however, that the difference in improvement comparing nasal steroids with placebo is only 0.21 for nasal congestion and 0.25 for facial pain, which is a 7% absolute improvement in nasal congestion and an 8.3% improvement in facial pain. I don't have many patients who want to be 7% or 8% better at a cost of $61 (DrugStore.com) for a bottle of fluticasone propionate nasal spray. Granted, these are average improvements, and some patients may have as much as a 20% symptom improvement, but this dif-

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ference does not seem clinically important when one could take pseudoephedrine and ibuprofen for similar relief at a fraction of the cost. The one exception would be patients with allergic rhinitis. I would not hesitate to prescribe nasal steroids for these patients when they have acute sinusitis.

Five years ago in an editorial in the *Annals*,[4] I noted that, because of the minimal effectiveness of antibiotics for acute sinusitis, I would focus on symptom relief. Nasal steroids are not the answer for most patients.

Mr Jones? He was not satisfied with symptom relief but accepted the $15 prescription for amoxicillin. Five out of 6 is a good day!

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EDITORIALS

What Does It Cost to Change Behavior?

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Dr Wu, in her essay on rewarding healthy behaviors by paying patients for their performance,[1] deserves considerable credit for exploring novel strategies to enhance patients' health. Her strategy of reinforcing patients' health-promoting behaviors is sensible in that it focuses on *behaviors*, and by now it is clear that patient behavior (eating, exercising, smoking) is a major determinate of health. Despite the strengths of this proposal, however, I do have some concerns.

Although contingency management (providing incentives that are dependent upon desired behavior change) can certainly influence behavior, the durability, feasibility, and cost-effectiveness of its effects are unclear. One concern that has implications for both feasibility and cost-effectiveness is the size of incentive needed for meaningful behavior change. There is a strong relation between the size of the incentive and degree of behavior change.[2] For example, Seaverson et al[3] studied program characteristics that predicted employee participation in a health risk assessment (HRA): a single, simple, discrete behavior that did not need to be sustained long-term. She examined the HRA participation rates across 36 employers covering almost 560,000 employees. Among the multiple predictors studied—incentive amount, incentive design (nonfinancial, cash, benefits-integrated), communication strategy (weak vs strong), and work culture (weak vs strong) —by far the best predictor of participation rate (which was 49% across the 36 employers) was incentive amount. Each $20 of incentive produced a 1.58% increase in participation. Importantly, the average incentive offered to employees to complete this discrete, one-time behavior was just over $100. The magnitude of this incentive is consistent with a 2009 survey of 2,900 companies by Mercer, a global human resources organization, which found that for those companies which offered an incentive, the average

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