

also virulence potential of *S. aureus* as an important factor that contributes to infection outcome. ■

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Written Asthma Action Plans: The Devil's in the Details

To the Editor:

The report by Sheares and colleagues found no benefit from written action plans provided to patients of subspecialist physicians (1). However, examination of the data presented in that manuscript indicates control of asthma was suboptimal, whether or not the written action plan was provided. Specifically, an average of 4 symptomatic days in the previous

Figure 1. (Continued). pneumonia isolates (here and all other experiments: grown to stationary growth phase in tryptic soy broth). Values corresponding to fatal cases are shown in red. **** $P < 0.0001$ (unpaired t test). (B and C) Comparison of *in vitro* production levels of PSMs (B) and α -toxin (C) to those of USA300 (the USA300 isolate SF8300 was used for all analyses in the present study) and the ST398 endocarditis isolate S0385. **** $P < 0.0001$ (vs. USA300 and S0385, one-way analysis of variance [ANOVA]). (D) RNAlII expression levels by quantitative real-time polymerase chain reaction. * $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$ (one-way ANOVA; black asterisks, vs. USA300; gray asterisks, vs. S0385). (E) Neutrophil lysis. Culture filtrates were measured for their capacity to lyse human neutrophils by release of lactate dehydrogenase. The three bars for each strain represent decreasing dilutions: 1:10; 1:5; and 1:2. (F) Lysis of human erythrocytes. Culture filtrates were used at the given dilutions. (G–I) Mouse pneumonia model. Mice were infected intranasally with 1×10^8 colony-forming units, and disease development was monitored for a total of 72 hours. (G) Comparison of ST398 pneumonia isolates with USA300 and S0385. $n = 25$ mice per group. **** $P < 0.0001$ (log-rank test, vs. data obtained with S0385). (H) Histology. Microscopic images of lung tissue; magnification 40 $\times$. White arrows point to bacterial colonies, black arrows to necrotic vessels. An image of lung tissue of a mouse infected with strain A16 is shown; pathology in the lungs of mice infected with other ST398 strains and USA300 were similar. (I) Comparison of ST398 A19 isolate wild-type versus isogenic *hla* and *psmA* deletion strains. $n = 10$ mice per group. * $P < 0.05$ (log-rank test; vs. data obtained with wild-type strain A19). (A–F) Error bars show $\pm$ SD.

2 weeks were present for the last 9 months of the study (Sheares and colleagues' Figure 1A). Similarly, an average of about 3 symptomatic nights per 2-week period occurred (Sheares and colleagues' Figure 1B). Emergency department visits for asthma averaged about two per 3 months for the year (Sheares and colleagues' Figure 4). Hospitalizations, although infrequent, changed little during the 12 months of the study (Sheares and colleagues' Figure 5). Thus, all one can say about the study is that the treatment plan used that did not result in control of asthma was not benefited by a written asthma action plan.

In fact, these patients required more care to meet current standards for asthma control, including virtual absence of day or night symptoms and absence of need for urgent medical care (2). That would have required more frequent visits to the specialists to assess criteria for control and determine the need for additional measures to attain daily absence of symptoms. An "action plan" can then be limited to management of exacerbations, avoiding the complexity of the action plan described in the manuscript by Sheares and colleagues (1). In a critical examination of action plans, Gibson and Powell found no advantage to complex plans with traffic light cartoon or color illustrations (3). Using the language of the National Asthma Education and Prevention Program, reduction of impairment requires physician evaluation with sufficient frequency to make therapeutic decisions that can eventually result in control (2). Although exacerbations, predominantly from viral respiratory infections (4), will still occur, it is there that a simple written asthma action plan is likely to be a useful reference for the patient or family, as those occur episodically, and verbal instructions alone may be insufficiently retained when the exacerbations actually occur.

Before discarding the use of a written asthma action plan, as suggested by the study of Sheares and colleagues (1), consider the specifics of both the treatment and the action plan, whether verbal or written. The devil is in the details. ■

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Written Action Asthma Plans: Not Such a Simple Issue in Subspecialist Care?

To the Editor:

Our monthly Twitter-based University of Toronto Respiriology and Sleep Journal Club (@respandsleepjc #rjsc) recently discussed the study by Sheares and colleagues on use of written action asthma plans (WAAPs) in subspecialist practice (1).

Although the authors examined asthma symptom frequency, some of the audience felt a more robust assessment of asthma control using other objective measures such as peak flows, FEV₁, or the Asthma Control Questionnaire would have been helpful (2, 3). The broad age range (5–80 yr) and the pooled analysis of adult and pediatric populations raised questions regarding whether benefits of WAAPs might differ among age groups (4).

Many of the patients surveyed were taking systemic steroids, which itself suggests a need for patient education, including the use of a WAAP (5, 6). Sheares and colleagues' Figures 3 and 4 show that many patients did not have good asthma control, raising questions of generalizability (perhaps a WAAP may have greater use in patients whose asthma is usually well controlled) (7). Additionally, the study mainly enrolled female patients, and it has been previously shown that women seek healthcare more often than men (8).

Several factors might have biased toward a finding of no difference, including the high attrition rate and the (appropriate) use of an intention-to-treat analysis. In addition, because of the nature of the 3-month follow-up period capturing both WAAP use and subspecialty care, it is difficult to tease out the contribution from each: the effect of WAAP may have been diluted by the mere act of attending subspecialist care (9). Verbal education was given by subspecialists to both groups and may have been reinforced by the exit interview immediately after and telephone follow-up every 3 months, perhaps leaving little room for the WAAP to exert an effect (10). Caution was expressed not to generalize these findings to primary care or emergency room settings.

Although there was no difference between the groups, both groups did improve on several important clinical outcomes. It may be that subspecialty care itself provided benefit independently. Ultimately, we feel that this study mainly confirms the efficacy of subspecialty care for asthma, and although written asthma action plans may not hurt, a paper handout might not be necessary when seeing subspecialists. ■

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