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A Little Bit of Knowledge Is a Dangerous Thing:

Commentary to “Pediatric Asthma Readmission: Asthma Knowledge is Not Enough?”

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Patient self-management is the final common pathway for the application of many of our advances in asthma management. Even a perfect and detailed asthma action plan, that includes the latest controller medication, with a diagnosis confirmed by state- of-the -art testing, will have little effect if the family cannot correctly self-manage the disease. One potential manifestation of poor disease self-management is hospital asthma readmissions.

This interesting article on asthma readmissions by Auger et al. reports the results of a longitudinal analysis of 601 children hospitalized for asthma. The patients were followed-up over time and at one year, 22% had been readmitted for asthma. Using a Cox proportional hazard model approach, the authors assessed for factors associated with asthma readmission. It is not surprising that decreased asthma medication adherence was associated with an increased risk of readmission (AHR 1.61; 95% CI: 1.10 to 2.36). However, the authors also report that increased parent knowledge about asthma (at the initial hospitalization) was also associated with an *increased* risk of readmission (AHR 1.04; 95% CI: 1.001 to 1.07). The reported adjusted hazard ratio has a confidence interval that just barely reaches statistical significance; however, it is still greater than 1.0 and, as a result, is associated with an increased risk in this analysis.

Why would increased parent knowledge be associated with increased readmissions in this study? In the discussion, the authors note that increased knowledge could be a marker for increased asthma severity. Those parents of children with more severe asthma would be dealing with asthma symptoms more frequently, may have had more interaction with asthma subspecialists, and as a result, may have developed a greater knowledge of asthma. Although the analysis did include previous hospitalization or use of a controller medication as a marker for severity, neither variable is a perfect proxy.

Another issue is that knowledge level can change over time. Families most likely received some asthma education at the time of hospitalization. In this study, the parents were surveyed about their asthma knowledge at the initial hospitalization and the authors reported that ‘caregivers overall demonstrated relatively high levels of asthma knowledge.’ After discharge, the median follow-up period was approximately 18 months (548 days) to determine if re-hospitalizations occurred. The analysis assumes that parent asthma

knowledge is static. It is possible that over an 18 month period, some parents may have forgotten what they had learned about asthma or may have been less confident in their skills. It would have been interesting to measure and analyze the level of parent asthma knowledge at the time of readmission, as opposed to the parent knowledge level at the initial admission. Alternatively, it is possible that parents who scored well on the initial test felt overly confident in their ability to manage their children's asthma and reassured by a demonstration of their own knowledge without being refocused on the importance routine disease self-management.

Asthma is a complex disease to manage, and developing these skills and behaviors requires time and educational reinforcement. Recognizing that asthma education is not a singular event, the National Asthma Education and Prevention Program (NAEPP) guidelines note that asthma education needs to be delivered not only at an initial asthma diagnosis, but consistently at several follow-up visits and through multiple points of care.

Finally, the definition of asthma knowledge and asthma education in this study is somewhat limited and incomplete. The knowledge assessment used in the study focuses on basic facts about asthma and the roles of medications. Although these topics are important, the key educational messages listed by the NAEPP are much broader. These messages (NAEPP, Table 3–12) also focus on patient management skills (e.g., taking medications correctly, demonstrating inhaler technique, self-monitoring symptoms, using an asthma action plan). None of these NAEPP key messages were included in the assessment of parental asthma knowledge in this study. As a result, there are parents in this study who may have been identified as 'knowledgeable' about asthma, but it is not clear that they had received comprehensive education about asthma that could promote effective asthma management.

This study highlights some of the challenges in asthma education. It has to be comprehensive and contain more information than just basic facts about medicines, but also specific management skills. In addition, asthma education is a constant endeavor. Knowledge and understanding about asthma can decline over time and reinforcement is always needed. Most importantly, asthma education must be linked to the goal of improved self-management, which includes medication adherence. The NAEPP Guidelines note (p. 131) that "an important part of patient education is encouraging adherence."

The article abstract concludes by stating that "inpatient efforts to prevent readmission might best target medication adherence rather than continuing to provide primarily asthma education." It is not really possible to pick one or the other. To promote medication adherence, you need comprehensive asthma education. To provide complete asthma education, you need to promote self-management skills that includes medication adherence. In the end, these two actions if done correctly, are not separate, but closely linked efforts.