

Population Health for Children With Asthma: Time to Let Some Fresh Air In

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I must confess that as a primary care pediatrician, treating asthma often feels stale: same old medications, same old conversations about the importance of daily controllers, same old preventable emergency department visits and hospitalizations. But in this issue of *Pediatrics*, Beck et al¹ present a novel ecologic analysis that sheds new light on the topic, linking the asthma medication ratio (AMR; the ratio of asthma controller prescriptions filled to all asthma prescriptions filled) measured at the level of individual community pharmacies with pediatric asthma exacerbations within the census tract in which the pharmacy is located. The magnitude of the association was substantial, with a decrease of nearly 10 asthma exacerbations per 1000 children per year for each 0.1 increase in the pharmacy-level AMR. This central finding suggests that a low community-level AMR highlights a “hot spot” in which untoward asthma events are likely to occur at an increased rate relative to other areas with better community AMRs, even after adjustment for known confounders. Although ecologic analyses such as this one always raise the specter of unappreciated confounding (which may lead to overestimating the correlation), it is likely that the authors are onto something, given the wealth of studies supporting the association between individual patient-level AMR and asthma exacerbations.^{2–4}

What can we take away from this interesting finding? As the authors themselves suggest,¹ the precise association they describe may be less important than the change in thinking

it represents. Asthma is particularly ill-suited to the traditional medical model of the provider waiting for the patient to present for care; often the patient only realizes he or she is ill when already in the midst of a serious exacerbation. Furthermore, when we counsel patients with persistent asthma at checkups or asthma maintenance visits about the need for daily controller medication, we face the same challenges our internal medicine colleagues face with their patients who have “silent diseases” such as hypertension or hyperlipidemia: low adherence rates to daily medication (often only 50%–60%), poor follow-up, and delays in seeking care until a serious event has occurred.⁵ However, the findings of these authors take us out of the realm of the patient–physician visit and into that of population health, wherein providers proactively monitor their patients’ health outside the context of the discrete office visit and intervene before a crisis occurs. I look forward to seeing if the authors can move from describing the association between pharmacy-level AMR and asthma exacerbations to designing an intervention based on this concept, as they suggest they plan to do in their concluding comments. Possible directions such an initiative might take include: engaging community pharmacists more fully in patient asthma education at the time of medication pickup; establishing collaboration between pharmacists and medical providers to proactively identify and intervene early with individual patients who have concerning AMRs; and using the pharmacy-level AMR data to identify

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asthma hot spots and target community asthma initiatives to those areas most in need.⁶⁻⁸

Meanwhile, many of us can use readily available data sources to help our patients with asthma stay healthier right now. We can leverage our existing electronic health records to develop registries of patients with persistent asthma and monitor processes of optimal care. We can make sure each patient with persistent asthma has the following: an annual influenza vaccine, regular asthma maintenance visits, an active prescription for an appropriate controller medication that is refilled on a consistent basis, an updated asthma action plan, and sufficient training to use inhalers and spacers correctly.

But shall we think even bigger? Patient registries and medication fill data from pharmacies represent only the tip of the “big data” iceberg. The “Internet of things” promises myriad personal health devices linked to the Internet and to our medical offices that will allow real-time monitoring of not only medication use but biological measures of health.⁹ Partnered with innovations such as telemedicine and text and telephone reminders, as well as asynchronous patient-physician communication, the outlines of a new model of population health can

readily be seen. It is an exciting new world of possibilities but many hurdles remain to its realization, not the least of which are stagnant payment models that reward episodic care over population health management and privacy rules that, although well intentioned, often hinder meaningful communication. It will take innovative thinkers such as the authors of the current study to help us overcome the hurdles and forge ahead in using novel data sources to optimize population health. If we succeed in doing so for the many children with persistent asthma, it may just make the air a little fresher to breathe for us all.

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