

Emergency Department Recidivism and Asthma: Revisiting an Old Problem



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In 2013, medical expenditures for asthma totaled \$33 billion, making asthma the 24th most costly medical condition in the United States.¹ Although the majority of spending was attributable to prescription medications, \$2 billion was used to manage severe exacerbations in the emergency department (ED). Because many exacerbations are preventable, some of the health and economic burden associated with these visits was potentially avoidable.² Identifying risk factors for return visits (recidivism) among those with prior visits could lead to targeted interventions that cost-effectively improve asthma outcomes.

In this issue of *JACI: In Practice*, To et al use health service claims to identify risk factors for asthma-related ED recidivism among residents of Ontario, Canada.³ They also examined the timeliness of primary care follow-up visits after discharge. Individuals were classified as having asthma if they had ≥ 1 asthma hospitalization or ≥ 2 asthma-related physician claims within a 2-year period. One-year recidivism rates were calculated relative to a first asthma-related ED visit occurring between 2008 and 2014. Notable strengths of this analysis include the use of the Ontario Asthma Surveillance Information System registry of residents with physician-diagnosed asthma, the availability of health service claims from Canada's single payer health system, and the use of the Ontario Marginalization Index, a multidimensional census-based measure of social well-being.

To et al identified 58,366 individuals 5-99 years of age with an initial ED visit. Within a year, 12% returned at least once and the corresponding recidivism rate was 15.7 per 100 person-years. The most commonly cited threshold for frequent ED use is ≥ 4 visits in a year—an initial visit plus 3 return visits.⁴ Only 0.7%

(1 in 152) of Ontario ED users met this criterion, but their use accounted for roughly 8% of all asthma-related ED visits.

Frequent ED use in the United States is more common. A review of single-center studies estimated that 4% to 8% of ED users are frequent users and their use accounted for 21% to 28% of all visits.⁵ A recent population-based analysis of 14 million California ED users revealed that 8% were frequent users and their use accounted for 31% of all ED visits.⁶ Frequent users were more likely to have asthma than nonfrequent users, 20% versus 7%, respectively. Because these data comprise all-cause, not disease-specific recidivism, they overestimate asthma-specific recidivism. Nevertheless, single-center studies suggest that asthma-specific recidivism is higher in the United States too. For example, 1.5% of pediatric asthma ED users in Brooklyn, New York, were frequent users as compared with 0.7% of pediatric users in Ontario.⁷

Previously identified predictors of all-cause recidivism include being uninsured or having public insurance, having mental illness, substance abuse, or other medical comorbidities, being female, being <55 years of age, residing in a rural community, and reporting non-Hispanic black ethnicity/race.⁶ Studies of asthma-specific recidivism consistently implicate having more severe asthma and prior asthma-related ED visits as additional risk factors.^{7,8}

To et al identify similar risk factors in their study: being <50 years of age, residing in a rural community, and residing in a community with lower neighborhood income. Given that public insurance is a proxy for income in the United States, it is not surprising that neighborhood income manifests as a risk factor in Ontario where residents have universal access to health care. Although sex was not an important predictor among Ontario residents in aggregate, stratified analysis demonstrated higher recidivism risk among younger females (5-19 years of age) but lower recidivism risk among adult females (20-99 years of age).

With regard to the timing of return visits, To et al observed that about one-third occurred within the first month, one-third occurred between months 2 and 6, and the remaining one-third occurred between months 7 and 12. Unsurprisingly, recidivism risk was higher in the month after discharge, particularly during the first week. Although evidence is lacking,⁴ the National Asthma Education and Prevention Program guidelines recommend primary care follow-up within 4 weeks of ED discharge.⁹ In this regard, To et al found that recidivism was lower among those who made a primary care visit within 3 days of discharge than those who did not, 10.7% versus 12.4%, respectively ($P < .01$). Although few patients in their study made a follow-up visit within 3 days, almost half made a follow-up visit within 4 weeks.

This follow-up rate is comparable with children experiencing an ED-managed asthma exacerbation in the US Military Health System where 48% made a primary care follow-up visit within 4

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K. R. Denninghoff was supported in part by the Health Resources and Services Administration (HRSA), Emergency Medical Services for Children (EMSC) cooperative agreement #6 U03MC288450303. This information or content and conclusions are those of the author and should not be construed as the official position or policy of, nor should any endorsements be inferred by HRSA, Health & Human Services, or the US Government.

Conflicts of interest: The authors declare that they have no relevant conflicts of interest.

Received for publication June 13, 2018; accepted for publication June 13, 2018.

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J Allergy Clin Immunol Pract 2018;6:1914-5.
2213-2198

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<https://doi.org/10.1016/j.jaip.2018.06.006>

weeks of discharge with a median time of 4 days.¹⁰ Although making a follow-up visit could reasonably be associated with illness severity, making a primary care follow-up visit was associated with fewer ED return visits, adjusted hazard ratio 0.86 (95% confidence interval, 0.79-0.93). A previous analysis among Ontario children observed that 33% made a primary care follow-up visit within 4 weeks of discharge with a median time of 6 days but making a follow-up visit in this study was not associated with fewer ED return visits, adjusted hazard ratio 0.98 (95% confidence interval, 0.93-1.03).¹¹

Although interventions intended to improve care transition between the ED and primary care settings have yielded mixed results,¹² making a primary care follow-up visit soon after ED discharge represents an opportunity to initiate or modify the patients' controller regimen, assess their inhaler technique, and reinforce asthma education. One of the most effective means to increase timely follow-up rates is to ensure that patients have a primary care appointment before ED discharge.¹²

Strengthening care transitions between the ED and primary care would undoubtedly improve care quality. However, other mechanisms that improve controller medication availability and adherence among those with persistent asthma should be considered because children who use controller medication after ED discharge have 45% fewer return visits than nonusers.¹³ Unfortunately, medication adherence among both privately and publicly insured patients with asthma is poor. Mean adherence levels, as measured by medication possession, are typically <50% among those with asthma, and exceedingly few of these patients refill their medication frequently enough to maintain the high levels of adherence needed to optimally control asthma symptoms and reduce exacerbation risk.^{14,15}

Lowering the monetary cost and time inconvenience of obtaining a prescription is one way to increase medication acquisition and subsequently improve adherence after ED discharge.¹⁶ Assuming that ED providers use guideline-based criteria and communicate their treatment plans, many primary care providers support ED physicians prescribing medications for their patients with asthma.¹⁷ Although prescribing controller medication in the ED has been suggested,¹⁸ the 2005-2007 National Hospital Ambulatory Medical Care Survey reports that <5% of asthma-related ED visits result in a controller medication prescription.¹⁹ This problem is compounded by the fact that only approximately one-half of patients who are given a prescription will fill it after discharge.²⁰ Prescribing and dispensing controller medication before discharge could be more a cost-effective alternative, but the health care system is poorly positioned to accommodate such an approach.²¹

As To et al³ demonstrate, asthma-related ED recidivism is an important source of potentially preventable ED visits. Although the problem may be somewhat smaller in Ontario where universal health care access is the norm, strengthening care transitions between the ED and primary care and/or facilitating better access to controller medication could reduce the burden imposed

on both health care systems while simultaneously improving patient outcomes.

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