

# Preventing Asthma Emergencies in Schools

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Asthma is a significant public health issue, impacting quality of life, morbidity, and health care costs nationally. Stock asthma rescue medication policies authorize school districts to maintain unassigned albuterol and enable trained staff members to administer the medication in response to asthma symptoms, exercise premedication, and asthma emergencies. Stock asthma rescue (or reliever) medication laws serve as an important fail-safe measure. Such laws provide districts with the ability to respond if a student has an asthma emergency at school but either lacks a diagnosis or does not have access to their own medication. As of September 2019, 13 states have enacted either a law or regulation authorizing the stocking of asthma rescue medication in schools: Arizona, Colorado, Georgia, Illinois, Missouri, New Hampshire, New Jersey, New Mexico, Oklahoma, Ohio, Texas, Utah, and West Virginia. Three additional states provide stock albuterol asthma guidelines but do not have legislation: Indiana, New York, and Nebraska. Some states have found that these policies reduce the need for 911 calls and emergency medical services transports as a result of asthma exacerbations. Initial data also demonstrate that these policies reach populations in need and improve health outcomes. This case study will describe the current state of asthma in Illinois, an innovative policy solution to address asthma emergencies in schools, and the steps taken to advocate for stock asthma rescue medication in Illinois. Legislation for stock albuterol in Illinois was signed into law in August 2018.

In the United States, >6 million children have asthma, resulting in 545 000 emergency department visits, 90 000 hospitalizations,<sup>1</sup> and >13 million missed school days yearly.<sup>1</sup> Asthma is the leading cause of chronic disease-related school absenteeism and is linked to lower academic performance, particularly in urban, minority children.<sup>2</sup> Identification and guideline-based management of asthma are essential to achieving asthma control.<sup>3</sup> However, underreporting, a lack of asthma management plans,<sup>4</sup> and limited access to reliever medications complicate school-based asthma management.<sup>5-7</sup>

The rate of asthma-related pediatric emergency department visits in Illinois

in 2014 was 92 per 10 000,<sup>8</sup> which was much greater than the Healthy People 2020 goal of 49.6 per 10 000.<sup>9</sup> For non-Hispanic African American children, this figure was 265 per 10 000, which is 5.5 times higher than for non-Hispanic white children.<sup>8</sup> Illinois asthma medical costs are projected to reach \$1.9 billion by 2020, which is among the highest in the country.<sup>10</sup> It is estimated that only 1 in 4 Illinois children with asthma has proper control of the disease.<sup>11</sup>

Ensuring prompt and reliable administration of asthma rescue medication is essential to managing asthma in schools.<sup>12</sup> Children with asthma are allowed to self-carry rescue inhalers<sup>13</sup>; however, barriers such as difficulty obtaining asthma action plans,

## abstract



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Ms O'Rourke completed the initial draft of this manuscript, took part (in her role as director of programs for the Respiratory Health Association) in the preparation of the brief that informed much of the stock asthma rescue medication in school legislation in Illinois, advocated for the legislation, and led efforts in the work with the Stock Asthma Rescue Medication Advisory Group; Ms Zimmerman provided legal expertise and content development, took part (in her previous role as the director of Children and Families Partnerships for the Legal Council for Health Justice) in the preparation of the stock albuterol legislation (the same brief as described above), led efforts in the work with the Stock Asthma Rescue Medication Advisory Group, reviewed and edited drafts of this manuscript, and provided the section highlighting the legal outcomes of the legislation and the conclusions of this manuscript; Ms Platt is an undergraduate student at Northwestern University who interned with the Legal Council for Health Justice, provided assistance and support in child health advocacy initiatives for the Legal Council for Health Justice, and edited and reviewed multiple drafts of this manuscript, particularly focusing on the legal outcomes and references; Dr Pappalardo is an internist-pediatrician and allergist-immunologist who participated in the Stock Albuterol Working Group, provided a clinician's perspective of the benefits of stock albuterol legislation and the possible beneficial ramifications of ease in access to emergency medications, drafted the sections of the clinical impact of the legislation and the conclusions, and reviewed and edited drafts of this manuscript; and all authors approved the final version of the manuscript as submitted.

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limited access to care, forgetting their inhaler, or possessing one that is empty and/or expired complicate management.<sup>14</sup> Access to albuterol in schools may be as low as 14%,<sup>5</sup> and in Chicago Public Schools, only 25% of those with asthma had an action plan on file.<sup>4</sup>

Stock asthma rescue medication policies aim to address these barriers by authorizing schools to maintain unassigned albuterol for administration to students with asthma symptoms by trained staff members. Although stock asthma rescue medication policy does not replace the need for asthma diagnosis and management by a provider, these laws serve as a fail-safe measure for a child with asthma. The goal of stock albuterol medication is to improve access to reliever medications, reduce 911 calls, alleviate daytime asthma symptoms, and allow children with asthma symptoms to return to class. This case study describes an innovative policy solution and outlines advocacy steps to address asthma rescue medication access in schools.

### **Existing Stock Asthma Rescue Medication Policies**

As of September 2019, 13 states have enacted laws authorizing the stocking of asthma rescue medication in schools: Arizona,<sup>15</sup> Colorado,<sup>16</sup> Georgia,<sup>17</sup> Illinois,<sup>18</sup> Missouri,<sup>19</sup> New Hampshire,<sup>20</sup> New Jersey,<sup>21</sup> New Mexico,<sup>22</sup> Oklahoma,<sup>23</sup> Ohio,<sup>24</sup> Texas,<sup>25</sup> Utah,<sup>26</sup> and West Virginia.<sup>27</sup> Three states provide stock albuterol asthma guidelines: Indiana,<sup>28</sup> New York,<sup>29</sup> and Nebraska.<sup>30</sup> Some states report a reduction in emergency calls and transports for asthma exacerbations<sup>31</sup> and that these policies may improve health outcomes.<sup>31,32</sup> Missouri enacted a stock asthma rescue medication law in 2012 and collected data on albuterol usage. During the 2013–2014 school year, stock albuterol was administered 1357 times in 103 schools, with 86%

of students returning to class. A survey of Missouri public-school nurses reported that 981 students received stock albuterol during the 2013–2014 school year, highlighting the impact on school-based asthma care.<sup>33</sup> In the 2016–2017 school year, Missouri expanded the plan to include 217 schools, and 92% of students returned to class after administration.<sup>32</sup> Gerald et al<sup>31</sup> examined the first pilot year of stock albuterol in a low-income, urban district in Arizona and documented 222 usages for 55 children across 22 schools.<sup>31</sup> The district also experienced 20% fewer 911 calls and 40% fewer emergency medical services transports.<sup>31</sup>

### **Asthma Policy in Illinois**

Illinois-based advocacy and public health organizations have led policy efforts to adopt school-based asthma-related legislation. These efforts include legislation surrounding access to medication, accurate diagnosis and documentation of asthma, and procedures for responding to asthma emergencies. Specifically, Public Act 099-0843<sup>34</sup> requires school-based asthma emergency response plans, and Public Act 096-1460 allows for self-carry.<sup>35</sup> Although children are able to carry their medications to school, this does not always occur realistically. Limited access to asthma rescue medication remains an important safety issue for schools.<sup>5</sup> Stock asthma rescue medication in schools is a viable policy solution to improve access to emergency asthma medication.<sup>36</sup>

### **Advocacy Work**

The main purpose of this advocacy work is to increase access to asthma rescue medication in schools to address everyday asthma needs and deescalate asthma emergencies. Because Illinois had existing school-based medication legislation for stock epinephrine, we chose to amend the current epinephrine law enacted in Illinois in 2014.<sup>37,38</sup> We completed

the following steps to reach our main goal.

1. Convene an advisory group of diverse stakeholders that includes school, health, and legal experts.
2. Consider fit and feasibility of stock asthma rescue medication in school policy for Illinois.
3. Develop and disseminate an issue brief on stock asthma rescue medication policy for schools.
4. Draft legislation that reflects recommendations of the advisory group.
5. Educate policy makers and garner organizational support.
6. Identify health care providers to testify in support of the bill.
7. Pass a stock asthma rescue medication for school law in Illinois.

### **METHODS AND PROCESS**

The following actions were taken to increase access to life-saving medication for students with asthma and reduce the severity of asthma emergencies in Illinois schools.

#### **Convene an Advisory Group of School, Health, and Legal Experts**

To ensure that stock asthma rescue medication policy was evidence based and informed by practical field experience, the Respiratory Health Association (RHA) and Legal Council for Health Justice (LCHJ) convened an advisory group of school and health experts to discuss the fit and feasibility of such a policy in Illinois in 2017. Participants included health care providers from academic institutions, representatives from the Illinois chapter of the American Academy of Pediatrics, local and state health departments, the Illinois State Board of Education, school districts, health advocacy organizations, pro bono counsel, and the Illinois Asthma Partnership.<sup>39</sup>

### **Consider Fit and Feasibility of Stock Asthma Rescue Medication in School Policy for Illinois**

The advisory group convened twice for in-person meetings to look at critical questions around the adoption and implementation of stock asthma rescue medication in Illinois. We discussed gaps in asthma management in Illinois schools, lessons learned from other school-based medication policies in Illinois, and analyzed current policies in other states. There was consistency in the current state policies reviewed as to which schools are covered, training requirements, medication prescription, and dispensing authority. However, great variation in the policies existed as far as who can be administered stock asthma medication. The advisory group explored several implementation considerations, most importantly methods of delivery of asthma rescue medication (ie, nebulizer versus metered-dose inhaler with disposable spacer). This group then made recommendations on appropriate staff training to support the recognition of respiratory distress and correct administration of asthma rescue medication.

The advisory group reflected on the experienced challenges with stock epinephrine law in Illinois school districts, including securing a standing order when no health care provider is employed by the school district. Some members supported enhanced reporting after use of stock albuterol, beyond what currently exists for stock epinephrine, to ensure that appropriate case management is provided. Specifically, the health care provider of record and school nurse would be notified to facilitate follow-up care. Some Illinois school districts benefit from a program that provides free or reduced-price stock epinephrine to support maintaining this medication; therefore, this advisory group recommended exploring funding mechanisms (ie,

Medicaid waiver or managed care organization financing) to help offset costs associated with securing stock asthma rescue medication for school districts.

### **Develop and Disseminate an Issue Brief on Stock Asthma Rescue Medication Policy for Schools**

To highlight the key recommendations of the advisory group, the RHA and LCHJ published an issue brief to be used as a tool to educate partners and key stakeholders, including policy makers who were unfamiliar with this topic.<sup>14</sup> The issue brief provided a concise summary of Illinois asthma prevalence, morbidity and mortality data, asthma policies in other states, and a recommended policy solution for Illinois.<sup>14</sup>

### **Draft Legislation That Reflects Recommendations of the Advisory Group**

The RHA and LCHJ drafted stock asthma rescue medication legislation that reflected the advisory group's recommendations. Because Illinois had an existing framework with current stock epinephrine legislation, this allowed for easy adoption. However, this required the policy language to be consistent, which constrained drafting. Policy elements in the stock epinephrine Illinois law that we addressed in a stock asthma rescue medication law included the following: which schools are covered, who may administer the medication, who may receive the medication, parent notification, where the medication can be stored, who may prescribe, school liability, training requirements, and annual reporting. The stock epinephrine Illinois law allows nurses and trained staff to administer epinephrine to anyone whom the trained staff person believes in good faith to be having an anaphylactic reaction. This waives liability for the school and trained staff. Epinephrine can additionally be

administered at school or during a school-sponsored activity while in the supervision of school personnel. Within 24 hours after epinephrine administration, the parent, guardian, or emergency contact of the student must be notified. The introduced stock albuterol law in Illinois adopts these stock epinephrine legislation components to ease implementation and maintain consistency in training requirements for staff. This bill also required that after the administration of asthma rescue medication, the health care provider of record (with parental consent) and school district nurse are notified for appropriate follow-up. The bill was introduced in the Illinois Senate in March 2018.<sup>18</sup>

### **Educate Policy Makers and Garner Organizational Support**

The RHA and LCHJ developed a factsheet that provided an overview of asthma and the benefits of Senate Bill 3015<sup>18</sup> to use as an educational tool when speaking with elected officials and organizational supporters. The LCHJ distributed the factsheet to key stakeholders through e-mail.<sup>14</sup> As a result, the bill secured diverse organizational support from school, health, and legal experts throughout Illinois. The RHA also invited individuals living with asthma, caregivers, and health care providers to attend the annual state Lung Health Advocacy Day. During this event, individuals met with their legislators to discuss the potential impact of this bill.

### **Identify Health Care Providers To Testify in Support of the Bill**

On the basis of preliminary questions from elected officials and key stakeholders, the RHA and LCHJ identified appropriate spokespeople, including a pediatrician and school nurses, who could address policy makers' health-related concerns. The pediatrician spoke to the potential severity of asthma exacerbations and the importance of immediate access

to asthma rescue medication and addressed medication safety and administration concerns. The school nurses illustrated gaps in school-based asthma management related to medication access.

### **Pass a Stock Asthma Rescue Medication Law for Schools in Illinois**

Stock Asthma Rescue Medication in Schools (Senate Bill 3015)<sup>18</sup> unanimously passed all committees. The bill then passed the House of Representatives and Senate unanimously and was sent to the governor's office in June 2018.

### **OUTCOMES**

Stock Asthma Rescue Medication in Schools (now Public Act 100-0726)<sup>18</sup> was signed into law by the governor of Illinois in August 2018. Public Act 100-0726 went into effect on January 1, 2019.<sup>18</sup>

### **Clinical Outcomes**

Children with asthma should have access to asthma rescue medication at school, where they spend most of their day. Having stock asthma rescue medication at school alleviates anxiety and improves access for students with asthma who may have forgotten their medication and for students with previously undiagnosed asthma. Although data on the direct impact of stocking asthma rescue medication are lacking to date, nurses in Illinois schools support stock albuterol legislation.<sup>40</sup> Improvement of processes to coordinate care among all aspects of a child's life to ensure that asthma is properly diagnosed, an asthma action plan is initiated and disseminated, a Section 504 Accommodations Plan is developed, and asthma rescue medication is available in all of the student's environments are necessary. Stock asthma rescue medication policy does not replace the need for proper asthma diagnosis and management, but the policy allows for trained staff to administer

asthma stock rescue medication when necessary.

### **Legal Outcomes**

Legislation supporting stock asthma rescue medication in Illinois schools ensures health benefits for students and protects those administering the medication. Pursuant to the enacted law, stock asthma rescue medication can be prescribed by any physician, physician assistant, or advanced practice registered nurse who has prescriptive authority according to the Physician Assistant Practice Act or the Nurse Practice Act.<sup>41</sup>

Prescriptions may be written in the name of an Illinois school district, public school, charter school, or nonpublic school to be stored and used in emergency situations.<sup>41</sup> Schools are directed to store stock asthma rescue medication in any secure location that is accessible where a student is at most risk.<sup>41</sup> Analogous to stock epinephrine, stock asthma rescue medication may be administered by any school nurse or trained school personnel. Those administering stock asthma rescue medication to students are exempt from liability<sup>41</sup> regarding any injury sustained by a student during the administration of asthma rescue medication except in cases of willful harm. Protection of staff ensures that students can receive stock asthma rescue medication in emergencies without staff fearing legal action.

The implementation of stock asthma rescue medication and who finances it will need to be further evaluated. The Illinois State Board of Education, along with various stakeholders, are working to support implementation. Health services initiatives (HSIs) provide a possible means of supplying schools with asthma rescue medication. Funded by Children's Health Insurance Program administrative funds, HSIs are intended to directly improve the health of low-income children. HSIs

have been used to fund a variety of public health ventures, from school-based vision services (in Delaware) to lead abatement (in multiple states).<sup>42</sup> Although a stock albuterol distribution HSI has not yet been developed, Maryland established an HSI (in 2017) to fund lead and asthma environmental inspections and home-visiting services to mitigate lead and asthma sources for low-income families.<sup>43</sup> The Maryland HSI also provides funds for asthma-related cleaning materials, which are intended to offset the cost of these materials for low-income families.<sup>43</sup> An initiative such as this can provide sustained funding for stock albuterol.

Another possible path to stock albuterol funding is the reinterpretation of the federal Free Care Rule (FCR).<sup>44</sup> The FCR previously limited federal reimbursement for school-based services to only cover services designated in a student's Individualized Education Program, resulting in coverage for only a limited set of children.<sup>44</sup> In 2014, the FCR was reinterpreted, and now schools can seek federal reimbursement for Medicaid-covered services provided to a Medicaid-enrolled student regardless of whether they have an Individualized Education Program.<sup>44</sup> This key reinterpretation provides potential expansion of covered health services in schools. Because of this, Massachusetts added reimbursement of school-based, Medicaid-covered services for children with Section 504 Disability Accommodation Plans.<sup>45</sup> States should explore using the FCR to obtain Medicaid reimbursement of stock asthma rescue medication in schools. Most states will need to submit a Medicaid State Plan Amendment to take advantage of this opportunity. Illinois has yet to take action on the FCR; however, other states can serve as models (FL, LA, MA, and NC).<sup>46</sup>

## LESSONS LEARNED

We believe this legislation passed unanimously because it was a common sense policy that reflected the input of a diverse advisory group. The advisory group's evaluation of successful laws in other states and the analysis of lessons learned from existing Illinois school-based medication policies strengthened the bill and garnered greater support. Although we passed this legislation as an amendment to existing policy, states do not have to have existing school-based medicine legislation. Missouri is an example where this was the case. We suggest using Illinois as a model for legislative efforts. It is anticipated that other states will face similar concerns as Illinois, such as who is allowed to administer albuterol, liability, and financing. Accessing the Illinois issue brief<sup>14</sup> and publicly available implementation toolkits can aid in this process.<sup>47</sup>

Having potentially life-saving medications available for children with asthma makes sense; however, the legal and practical implications often impede the swift uptake of such an ideal concept. The liability of the person administering the medication needs to be specifically written into the state's legislation; otherwise fear may prevent albuterol administration. Implementation work is necessary

to ensure communication after albuterol administration with schools, caregivers, health care providers, districts, and state agencies for proper follow-up. Given the time and administrative struggles many schools face, this process needs to be quick and simple yet ensure that children's health needs are addressed. Also, disseminating funding mechanisms that are available in a given state would also help expand school participation.

Although we initially focused on access to albuterol for emergency situations, we realized that access to albuterol can also help in everyday situations. Children who may otherwise avoid exercise because of asthma symptoms could be provided with pretreatment of albuterol or albuterol in response to symptoms. This helps children complete their exercise routine, which is essential to their maintenance of a healthy lifestyle. Prompt albuterol administration may also reduce asthma symptoms after a child encounters a trigger. Each of these uses of albuterol may positively influence a child's ability to learn.

## CONCLUSIONS

To properly manage asthma in schools, children need access to reliever medications. Often, children lack direct and timely access to

albuterol for multiple reasons at school, and stock albuterol laws provide a simple policy solution that can translate to a safer school environment regarding asthma. We recognize that this law alone will not address all school-based asthma management concerns; yet, advocacy for stock albuterol legislation is a crucial first step. It is important when considering a new policy that key stakeholders work with state agencies to inform policy, implementation, training, and communication methods to ensure successful uptake and follow-up. Ongoing evaluation of stock albuterol administration in schools is necessary to identify opportunities to improve asthma care delivery and inform future asthma-related policy that can influence positive change in school-based asthma management.

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## ABBREVIATIONS

FCR: Free Care Rule  
HSI: health services initiative  
LCHJ: Legal Council for Health  
Justice  
RHA: Respiratory Health  
Association

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