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MARYLAND STATE EDUCATION ASSOCIATION

140 Main Street
Annapolis, MD 21401
800 448 6782
410 263 6600

marylandeducators.org

Testimony in Support of House Bill 266
Public and Nonpublic Schools - Bronchodilator and Epinephrine Availability and Use – Policies

Senate Committee on Education, Energy, and the Environment
March 22, 2023

Lauren Lamb
Government Relations

The Maryland State Education Association supports House Bill 266 as amended, which would require each county board of education to establish a policy to authorize a school nurse or other designated school staff member to administer in emergency situations a bronchodilator to a student who is experiencing asthma, reactive airway disease, or asthma–related symptoms. Such policies must authorize a school nurse to obtain and store bronchodilators, outline procedures for a school nurse to designate another school staff member to respond to asthma-related situations, and limit the administration of a bronchodilator to students with a diagnosis of asthma or related conditions. It would also require the State Department of Education and the Maryland Department of Health to jointly update asthma guidelines.

MSEA represents 75,000 educators and school employees who work in Maryland's public schools, teaching and preparing our almost 900,000 students so they can pursue their dreams. MSEA also represents 39 local affiliates in every county across the state of Maryland, and our parent affiliate is the 3-million-member National Education Association (NEA).

We had serious concerns with the original version of this bill, which proposed that in cases where a school nurse was not available, non-clinical school personnel could be trained to differentiate between anaphylaxis and asthma or respiratory distress, and from there determine the appropriate treatment. As amended, this legislation instead establishes that only students should only be treated with a bronchodilator if it has been prescribed to them. The updated language better reflects clinical best

practice and no longer places an inordinate burden on non-clinician school personnel. All students and staff should be safe and healthy at school, and the policies required by this bill as amended will help protect students from the dangerous effects of asthma, anaphylaxis, and respiratory distress.

We urge the committee to issue a Favorable Report on House Bill 266 as amended.

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2023 SESSION
POSITION PAPER

BILL: **HB 266 – Public and Nonpublic Schools – Bronchodilator Availability and Use - Policies**
COMMITTEE: **Senate Education, Energy, and the Environment Committee**
POSITION: **Letter of Support As Amended (in House)**
BILL ANALYSIS: **HB 266 would require each county board of education and authorizing non-public schools, before the 2024-2025 school year, to establish a policy for public schools in its jurisdiction to authorize a school nurse and other school personnel designated by the school nurse, to administer a bronchodilator to a student who is experiencing asthma, reactive airway disease, or asthma-related symptoms; require the State Department of Education and Maryland Department of Health to jointly update school health service guidelines for management of students with asthma; and other related activities that pertain to 'other school personnel designated by school nurse'.**

POSITION RATIONALE: The Maryland Association of County Health Officers (MACHO) supports the intent of HB 266 to improve student access to potentially life-saving medication and supports HB 266 *as amended by the House*. Prior to the amendments, MACHO expressed concern about the impact of unfunded mandates on local agencies, additional administrative burdens on already overtaxed school nurses, and scope of practice issues that are further compounded by the critical nursing shortage in Maryland. Except for solving the workforce shortage, MACHO's remaining concerns have been eased by the amendments made and approved by the House.

MACHO is supportive of the State Department of Education (MSDE) and the Maryland Department of Health (MDH) jointly updating the current State school health service guidelines for the management of students with asthma on or before the next school year, providing guidance to school nurses and other school personnel on distinguishing between asthma or reactive airway disease and anaphylaxis, and county boards of education and Baltimore City's Board of School Commissioners working to adopt and implement guidelines in accordance with the State guidelines before the next school year. MACHO notes that the August 1 deadline for the state agencies to roll out updated guidelines could be a challenge for school districts that start as early as August 17 (Frederick). This may not allow all school districts to review, adopt, train, communicate and implement the guidelines in time, unless the school districts are involved in the development process of those guidelines earlier in the process.

The development of policies to address the administration of a bronchodilator to cases where a student has been prescribed a bronchodilator by an authorized, licensed health care provider, storage of bronchodilators, and procedures for designation of other school personnel by the school nurse to respond to a student experiencing asthma, reactive airway disease, or asthma-related symptoms in an emergency setting, addresses scope of practice issues MACHO had identified in the original bill. Health Officers objected to allowing non-clinical school personnel to perform clinical assessments and deliver treatment for a student in respiratory distress and supported reliance on school nurses who are already trained to recognize signs of early respiratory distress and to respond with appropriate emergency interventions. Management of asthma is complex, often requiring the prescription of daily prevention medication and teaching on proper medication usage techniques, which requires resources and expertise not available from school health personnel.

MACHO remains concerned about the school nurse shortage, access to pediatric primary care and access to pediatric primary care in school-based settings. For these reasons, the Maryland Association of County Health Officers *Support HB 266 As Amended by the House*. For more information, please contact Ruth Maiorana, MACHO Executive Director at rmaiora1@jhu.edu or 410-937-1433.

HB266-Boyce Testimony EEE.pdf
Uploaded by: Regina T. Boyce
Position: FAV

Regina T. Boyce
Legislative District 43A
Baltimore City

Chief Deputy Majority Whip

Environment and
Transportation Committee

Subcommittees

Housing and Real Property

Chair
Natural Resources, Agriculture
and Open Space

THE MARYLAND HOUSE OF DELEGATES
ANNAPOLIS, MARYLAND 21401

Annapolis Office
The Maryland House of Delegates
6 Bladen Street, Room 151
Annapolis, Maryland 21401
410-841-3476 · 301-858-3476
800-492-7122 *Ext.* 3476
Fax 410-841-3295 · 301-858-3295
Regina.Boyce@house.state.md.us

March 22, 2023

RE: Testimony HB266, Public and Non-Public Schools – Bronchodilator Availability and Use Policy (Bronchodilator Rescue Inhaler Law)

Good afternoon, Chair Feldman, Vice Chair Kagan, and Members of the Education, Energy, and the Environment Committee.

For the record, I am Delegate Regina T. Boyce testifying today on **HB266 Public and Non-Public Schools – Bronchodilator Availability and Use Policy (Bronchodilator Rescue Inhaler Law).**

For historical reference, this bill was introduced in 2020 as HB773, 2021 as HB609, and 2022 as HB384.

HB266 requires public schools in the state, and authorizes nonpublic schools**, to establish a policy to stock inhalers (albuterol) in schools for emergency purposes (rescue inhaler),** requiring select school personnel to be trained to administer the inhaler in the absence of a school nurse and removes personal liability of nurse and personnel.

According to the Asthma and Allergy Network, **7.6% of Maryland Children,** have been diagnosed with asthma, **56% of children with asthma do not have an asthma plan** on file at their school, and it is reported that **19.2% of parents with asthmatic children** report that their children missed 1-2 days of school because of their asthma. Asthma is one of the leading causes of school absenteeism in the country alone. Add to those stats the number of individuals who haven't been diagnosed with asthma and the growing shortage of school nurses, we have a risk management dilemma. In the U.S., asthma is responsible for 10 deaths a day. Given these stats and risks, states are considering stock albuterol (rescue inhalers) in policy and guidelines. Currently, **15 states** (Arizona, Arkansas, Georgia, Illinois, Indiana, Iowa, Kentucky, Missouri, New Hampshire, New Jersey, New Mexico, Ohio, Oklahoma, Utah, and Virginia) have stock albuterol laws, and **two states** (New York and Nebraska) have stock albuterol guidelines. At the federal level, Congressman Steny Hoyer introduced and passed HR2468 **"School Based Allergies and Asthma Management Program Act", December 2020 and became law in January 2021.** The bill amends the Public Health Service Act to increase the preference given in awarding certain allergy and asthma related grants to states that require certain public schools to have allergy and asthma management programs. This federal act allows states to create and implement programs as needed with financial assistance.

What I've learned about Asthma is that you cannot diagnose it without first having an incident, or an asthma attack. **Unfortunately for some, an initial asthmatic attack can lead to sudden death.**

An inhaler is as important and lifesaving as an EpiPen, and Naloxone (Narcan). It must be available in our schools, and it must be added as a stock item to the lifesaving tool box for our schools and school professionals.

Thank you for your time and consideration of HB266. I ask for a favorable report.

Regina T. Boyce

2023 MNA HB 266 Senate Side FAV.pdf
Uploaded by: Robyn Elliott
Position: FAV

Committee:	**Senate Education, Energy and Environment Committee**
Bill Number:	**House Bill 266 – Public and Nonpublic Schools – Bronchodilator and Epinephrine Availability and Use - Policies**
Hearing Date:	**March 22, 2023**
Position:	**Support**

The Maryland Nurses Association supports *House Bill 266 – Public and Nonpublic Schools – Bronchodilator and Epinephrine Availability and Use – Policies.* The bill requires local boards of education to implement policies for stock bronchodilators. With stock bronchodilators, school nurses would be better positioned to support students who have forgotten or lost their bronchodilators. School nurses could administer the stock bronchodilators to students with asthma and a prescription for a bronchodilator. School nurses could delegate the administration of bronchodilators to teachers and other school personnel who meet certain criteria, as specified under Title 8 of the Health Occupations Article.

MNA supports this measure because it aligns the administration of stock bronchodilators with best practices for treating students in respiratory distress. It also aligns with the law on the administration of medication within schools.

We ask for a favorable report. If we can provide any additional information, please contact Robyn Elliott at relliott@policypartners.net.

ALA_MD Asthma Testimony - HB 266_Senate Comments 3
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Position: FWA

American Lung Association Testimony House Bill 266
Education, Energy and the Environment
March 22, 2023
Favorable with Amendments

Chair Feldman, Vice-Chair Kagan and Members of the Committee:

Thank you for the opportunity to provide comments on House Bill 266, Bronchodilator Rescue Inhaler Law sponsored by Delegate Boyce. The American Lung Association strongly supported this bill **as originally drafted** as it would have allowed schools in Maryland to provide more immediate access to medications for students with asthma or suffering from respiratory distress. Asthma can be a deadly disease if flare-ups are not treated immediately, this bill as originally drafted has the potential to save lives and keep kids safe in schools. However, significant amendments were made to the bill during the House Early Childhood Subcommittee hearing which stakeholders like the American Lung Association were not invited to participate in. Unfortunately, the amendments drastically change the bill, and we are requesting additional amendments to ensure that Maryland is not putting children in danger.

The American Lung Association is the leading organization working to save lives by improving lung health and preventing lung disease, through research, education and advocacy. The work of the American Lung Association is focused on four strategic imperatives: to defeat lung cancer; to improve the air we breathe; to reduce the burden of lung disease on individuals and their families; and to eliminate tobacco use and tobacco-related diseases.

During the House Early Childhood Subcommittee, the bill was amended to instruct Maryland Department of Health and Maryland Department of Education to update the Maryland State school health service guidelines for the management of students with asthma. We are concerned that this process is not transparent and there are no requirements for pediatric asthma specialists such as Pediatric Pulmonologists to be involved in updating these guidelines. Throughout many of the conversations the opponents of the bill had much discussion around the use of EpiPen as the first line of treatment for children who are in respiratory distress but do not have documented asthma. As many of the volunteer clinical pediatric asthma experts have discussed the use of EpiPen is not the standard of care for the treatment of asthma and can be dangerous if administered to a child unnecessarily. We are very concerned that EpiPen as a treatment for undiagnosed children in schools will be included in the guidelines and **request that the bill be amended to include language to ensure pediatric asthma specialists such as a Pediatric Pulmonologist is involved in the guideline development to ensure the standards of care are met and followed appropriately.**

Secondly, the bill was also amended to only allow stock asthma medications to be used for children with documented asthma. We are concerned by this change, as it makes the bill essentially ineffective and states like Texas who have similar laws in place are right now in process of changing their law to broaden it to include children who are in respiratory distress, not requiring any documentation of asthma. Children who are diagnosed or documented in the school environment are children who have their paperwork signed by their physician on record with the school. In many communities, the ability to obtain the paperwork from the physician can be a significant barrier. Restricting the law to children who can obtain the appropriate paperwork is exacerbating the equity divide, and failing to protect Maryland's most vulnerable children, the children the bill was originally intended help. **We would encourage the committee to amend the bill back to include all children with respiratory distress in the case of an emergency** and not just children with a diagnosis or paperwork on file with the school. The rescue asthma medication would be housed in the same section of the statute that allow schools to stock and administer both EpiPen and Narcan, both also rescue medications and neither require a diagnosis to be used in an emergency situation.

We understand there has been a lot of discussion around distinguishing between respiratory distress and anaphylaxis however, this can be addressed through education and the American Lung Association, our stakeholders and volunteers are happy to partner to help address this concern. Pediatric Asthma Specialists teach their child patients, caregivers and families each and every day to tell the difference between respiratory distress and anaphylaxis and there are some clear clinical indicators that can be used to help easily tell the difference between the two reactions.

The Lung Association thanks the Maryland General Assembly for their continued commitment to the health and wellbeing of the residents of Maryland and the desire to protect Maryland students. The Lung Association ***only supports this bill with the requested amendments outlined in our comments*** and we encourage the committee to amend the bill before it moves forward.

Sincerely,

Aleks Casper
Director of Advocacy, Maryland
202-719-2810
aleks.casper@lung.org

ATS policy.pdf
Uploaded by: Aleks Casper
Position: FWA

AMERICAN THORACIC SOCIETY DOCUMENTS

Ensuring Access to Albuterol in Schools: From Policy to Implementation

An Official ATS/AANMA/ALA/NASN Policy Statement

Anna Volerman, Ashley A. Lowe, Andrea A. Pappalardo, Charmayne M. C. Anderson, Kathryn V. Blake, Tyra Bryant-Stephens, Thomas Carr, Heather Carter, Lisa Cicutto, Joe K. Gerald, Tina Miller, Nuala S. Moore, Hanna Phan, S. Christy Sadreameli, Andrea Tanner, Tonya A. Winders, and Lynn B. Gerald; on behalf of the American Thoracic Society Assembly on Behavioral Science and Health Services Research

This official policy statement was approved by the American Thoracic Society and Allergy and Asthma Network May 2021 and by the American Lung Association and National Association of School Nurses June 2021

Abstract

Rationale: For children with asthma, access to quick-relief medications is critical to minimizing morbidity and mortality. An innovative and practical approach to ensure access at school is to maintain a supply of stock albuterol that can be used by any student who experiences respiratory distress. To make this possible, state laws allowing for stock albuterol are needed to improve medication access.

Objectives: To provide policy recommendations and outline steps for passing and implementing stock albuterol laws.

Methods: We assembled a diverse stakeholder group and reviewed guidelines, literature, statutes, regulations, and implementation documents related to school-based medication access. Stakeholders were divided into two groups—legislation and implementation—on the basis of expertise. Each group met virtually to review documents and draft recommendations. Recommendations were compiled and revised in iterative remote meetings with all stakeholders.

Main Results: We offer several recommendations for crafting state legislation and facilitating program implementation. *1*) Create a coalition of stakeholders to champion legislation and implement stock albuterol programs. The coalition should include school administrators, school nurses and health personnel, parents, or caregivers of children with asthma, pediatric primary care and subspecialty providers (e.g., pulmonologists/allergists), pharmacists, health department staff, and local/regional/national advocacy organizations. *2*) Legislative components critical for effective implementation of stock albuterol programs include specifying that medication can be administered in good faith to any child in respiratory distress, establishing training requirements for school staff, providing immunity from civil liability for staff and prescribers, ensuring pharmacy laws allow prescriptions to be dispensed to schools, and suggesting inhalers with valved holding chambers/spacers for administration. *3*) Select an experienced and committed legislator to sponsor legislation and guide revisions as needed during passage and implementation. This person should be from the majority party and serve on the legislature's health or education committee. *4*) Develop plans to disseminate legislation and regulations/policies to affected groups, including school administrators, school nurses, pharmacists, emergency responders, and primary/subspecialty clinicians. Periodically evaluate implementation effectiveness and need for adjustments.

Conclusions: Stock albuterol in schools is a safe, practical, and potentially life-saving option for children with asthma, whether asthma is diagnosed or undiagnosed, who lack access to their personal quick-relief medication. Legislation is imperative for aiding in the adoption and implementation of school stock albuterol policies, and key policy inclusions can lay the groundwork for success. Future work should focus on passing legislation in all states, implementing policy in schools, and evaluating the impact of such programs on academic and health outcomes.

Keywords: asthma; children; health policy; inhaler; medication

Endorsed by the Pediatric Pharmacy Association June 2021.

ORCID IDs: 0000-0002-7406-1098 (A.V.), 0000-0001-6252-0368 (A.A.L.), 0000-0002-4901-3465 (A.A.P.), 0000-0002-7279-0051 (L.B.G.).

Correspondence and requests for reprints should be addressed to Anna Volerman, M.D., Departments of Medicine and Pediatrics, University of Chicago, 5841 South Maryland Ave, MC 2007, Chicago, IL 60637. E-mail: avolerman@uchicago.edu.

This document has an online supplement, which is accessible from this issue's table of contents at www.atsjournals.org.

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Contents

Introduction

Asthma affects approximately 10% of school-aged children in the United States, with higher prevalence and morbidity being demonstrated among low-income and minority populations (1–4). Sixty percent of children experience an asthma exacerbation, leading to approximately 767,000 emergency department visits and 74,000 hospitalizations annually (1, 5). Compared with their peers, children with asthma miss more school days per year (6, 7), totaling 13.8 million absences annually (8).

School-aged children spend a majority of their day in school; therefore, evidence-based asthma care practices are important for guiding school asthma management (9–13). Guidelines recommend that all children with asthma have access to quick-relief medications. All 50 states and the District of Columbia permit children with asthma to self-carry and self-administer personal inhalers (14). However, access to emergency albuterol remains low, with studies suggesting that as few as 14% of children have quick-relief medication at school (15–17). Common barriers include difficulty accessing health care (18), challenges with obtaining asthma action plans and inhalers/valved holding chambers (VHCs) (15, 19–23), and the potential for lost or expired inhalers.

Because children with asthma may experience a sudden, unexpected, and life-threatening exacerbation at any time, access to albuterol can be life-saving. Although they are rare, there were a total of 192 asthma-related deaths among children in 2018 (1), and 38 asthma-related deaths occurred at school between 1990 and 2003 (24). Delays in albuterol administration were reported in one-third of these deaths, and a third of the delays were attributed to a lack of medication. Asthma-related deaths have also occurred among athletes on school sports teams, and up to 10% of high school athletes have undiagnosed asthma (25).

An innovative and practical mechanism exists to ensure that students with asthma have access to potentially life-saving quick-relief medication while at school. Schools, with the assistance of a medical consultant and appropriate training for staff (26), can make albuterol available to all students with, for example, a single albuterol inhaler that is used with a different VHC/spacer for each child. Although 88% of schools are willing to store students' personal inhalers (27), few schools stock quick-relief medicine. A stock albuterol program ensures that a school has albuterol that can be used by any child experiencing respiratory distress. Expanding schools' capacity to acquire and maintain stock albuterol may help maintain the safety of students with asthma when personal quick-relief medicines are unavailable, expired, or empty. Furthermore, when children lack a documented asthma diagnosis in school, access to quick-relief medicine may provide ready access to treatment for a student who has an established diagnosis but no documentation at school or a student with a first-time asthma episode.

Over the past decade, stock albuterol policies have increased across the United States, with at least 15 states passing such legislation and a few states with experience implementing such policies. One state reports that 84% of respiratory events treated with a stock inhaler resulted in the child returning to class (28, 29). Because these policies are relatively new, further data are not available on the impact of stock albuterol. Notably, the evidence shows that quick-relief medications are effective for respiratory distress and safe for children, thus demonstrating that access at school is important for improving outcomes. In light of students' limited access to albuterol and the positive outcomes with stock albuterol, the goal of this statement is to advocate for stock albuterol legislation in all states and for wide-scale implementation to improve access to emergency asthma medications in schools.

Methods

We assembled a diverse group of stakeholders, including clinicians, pharmacists, researchers, policy experts, school nurses, and parents. Stakeholders included representatives from major organizations, including the American Thoracic Society, Allergy and Asthma Network, American Lung Association, and National Association of School Nurses. Conflicts of interest were collected from each stakeholder and vetted at the start of the project. Updates were requested throughout the project. No stakeholders had conflicts that required management during meetings and discussions. We applied our collective experience and expertise to develop this policy statement on stock albuterol legislation and implementation.

We first identified and reviewed guidelines, literature, statutes, and implementation documents related to school-based medication access. A literature search was conducted in the PubMed and Education Resources Information Center databases to identify existing literature about stock albuterol. Specific search terms included "albuterol," "medicine," "inhaler," "nebulizer," "stock," "school," "class," "child," and "student." We examined relevant abstracts and conference programs to supplement this search. Our search focused specifically on the United States, given the differences among countries in terms of pharmaceutical and school-related regulation and legislation as well as the processes for passing and implementing policy. Because research in this area is limited, most information came from state statutes and

implementation guides. Consideration was given to specific components of current policies, including the school type, medication indications, standing medical authority, training requirements, good faith use, and medical devices.

Stakeholders were divided into two groups—legislation and implementation—on the basis of expertise. Each group met two to three times virtually to review documents and draft recommendations. These recommendations were compiled and revised in iterative remote meetings with all stakeholders. On the basis of multiple data sources and expert opinions, we developed policy recommendations and outlined steps for passing and implementing stock albuterol laws.

Steps to Pass Stock Albuterol Legislation

Medical licensing, pharmaceutical drugs, and education are largely regulated at the state level; thus, legislation for programs like stock albuterol must occur within individual states. It is crucial to understand legislative processes and necessary steps to pass stock albuterol legislation within a state (Figure 1) (30, 31). The overall process is similar across states, and we review the basic steps below.

Build Stakeholder Coalition

The first step in passing stock albuterol legislation is to form a coalition of stakeholders (Table 1). Key stakeholders include healthcare professionals, school nurses, parents/guardians of children with asthma, pharmacy organizations, managed care organizations, advocacy groups, and legal groups, as well as health and education departments. Several key questions and pitfalls should be considered when building a stakeholder coalition (Table 2).

Create Issue Brief and Factsheets

Next, an issue brief and factsheets should be developed and disseminated to summarize key asthma facts and policy considerations to help advocates garner support. These documents provide a framework and consistent message for discussions with legislators and testimony.

An issue brief is a two- to four-page summary of an identified problem with recommendations for solutions (*see* online supplement) (32).In the case of stock albuterol, this brief provides a concise summary of asthma prevalence, morbidity, and mortality; highlights state asthma-related policy; and describes similar legislation in other states. The brief also emphasizes how existing asthma state policies have affected change. If seeking an amendment to existing legislation (e.g., stock epinephrine for anaphylaxis), it is helpful to include any positive outcomes from that legislation.

A factsheet is a one-page document with a bulleted summary of facts relevant to the issue. This document provides a set of talking points for testimony and discussion; it can also be shared with legislators. Several organizations (e.g., the American Public Health Association) provide examples of pertinent factsheets for health-related policy issues, and states with existing stock albuterol policies have created topic relevant factsheets (*see* online supplement) (33).

Find a Legislative Sponsor

Concurrently, a legislator must be identified to sponsor the legislation. The sponsor's background, experience, committee assignments, and political party can be critical to success. An ideal sponsor would have experience with education or public health issues (e.g., asthma, health disparities, health policy, school health), have sufficient time to devote to the issue, be a member of the majority party in the legislature (or House if control is split), and ideally be a member of a committee in which the bill could be introduced (e.g., the Health, Education, or Appropriations Committees). Lobbyists or coalition partners who advocate in the legislature have relationships with legislators and their staff and are important to include.

The first step is to connect with key staff of the legislator or committee through direct outreach via phone/e-mail or working through existing relationships of partners. Once a legislator agrees to sponsor stock albuterol legislation, it is critical to remain engaged to advance the process. Although staffing structures differ in every state's legislature, staff must be treated with the same level of respect as the sponsor, given that staff remain in that role longer than some lawmakers are in office and are key to moving legislation forward. Regularly scheduled meetings and/or calls can be helpful, and frequency may depend on the legislative session length. Meetings may be held during an interim period between legislative sessions (often summer and/or fall) when preparatory writing occurs for the next session. The sponsor and staff can help advocates understand preliminary processes, which may include study sessions (to consider long-term issues), informational hearings (to introduce potential legislative topics), or sunrise processes (to outline the costs and benefits of proposed legislation) (34).

Address Opposition

To secure bill passage, it is essential to understand the arguments opposing part or all of the bill and effectively respond. Because opposition may emerge at various times, the understanding of opposition arguments and the development of responses need to be undertaken iteratively, starting as early as sponsor identification, as they may impact sponsorship decisions. The sponsor will need this information to effectively advocate for the bill. Policy staff on health and education committees in both legislative chambers (the House and Senate), advocacy organizations with legislative experience, and provider organizations can provide context about opposition and ways to overcome issues. Federal legislation can also support efforts to pass state legislation (*see* online supplement), and national stakeholders (e.g., healthcare and education associations) can influence state policy-makers. For stock albuterol, opposition may be raised regarding prescriptions for stock albuterol, persons who can receive stock albuterol (e.g., students vs. nonstudents, asthma diagnosis vs. no diagnosis), training personnel to deliver stock albuterol, and the safety of albuterol.

Draft Legislation

Before the legislative session, stakeholder meetings should occur to discuss key components to include in the legislation. Stakeholder organizations may assist with drafting or choose to use existing model policies (*see* online supplement) (32, 33). All 50 states have school stock epinephrine laws to treat anaphylaxis, and one strategy is to amend those laws to include stock albuterol. It is important to review how stock epinephrine laws have functioned and how stock albuterol may mirror or differ from epinephrine.

Key implementation principles should be considered early and incorporated into legislation to avoid future pitfalls. For example, consider the implementation burden on school nurses, such as staff training requirements for recognizing symptoms and administering medicine. School nurses champion the health and safety of students, and it is part of their duties to instruct in care for emergencies. Depending on state nurse practice acts, nursing delegation may be key, thus making direct training by the school nurse essential. Although we advocate for full-

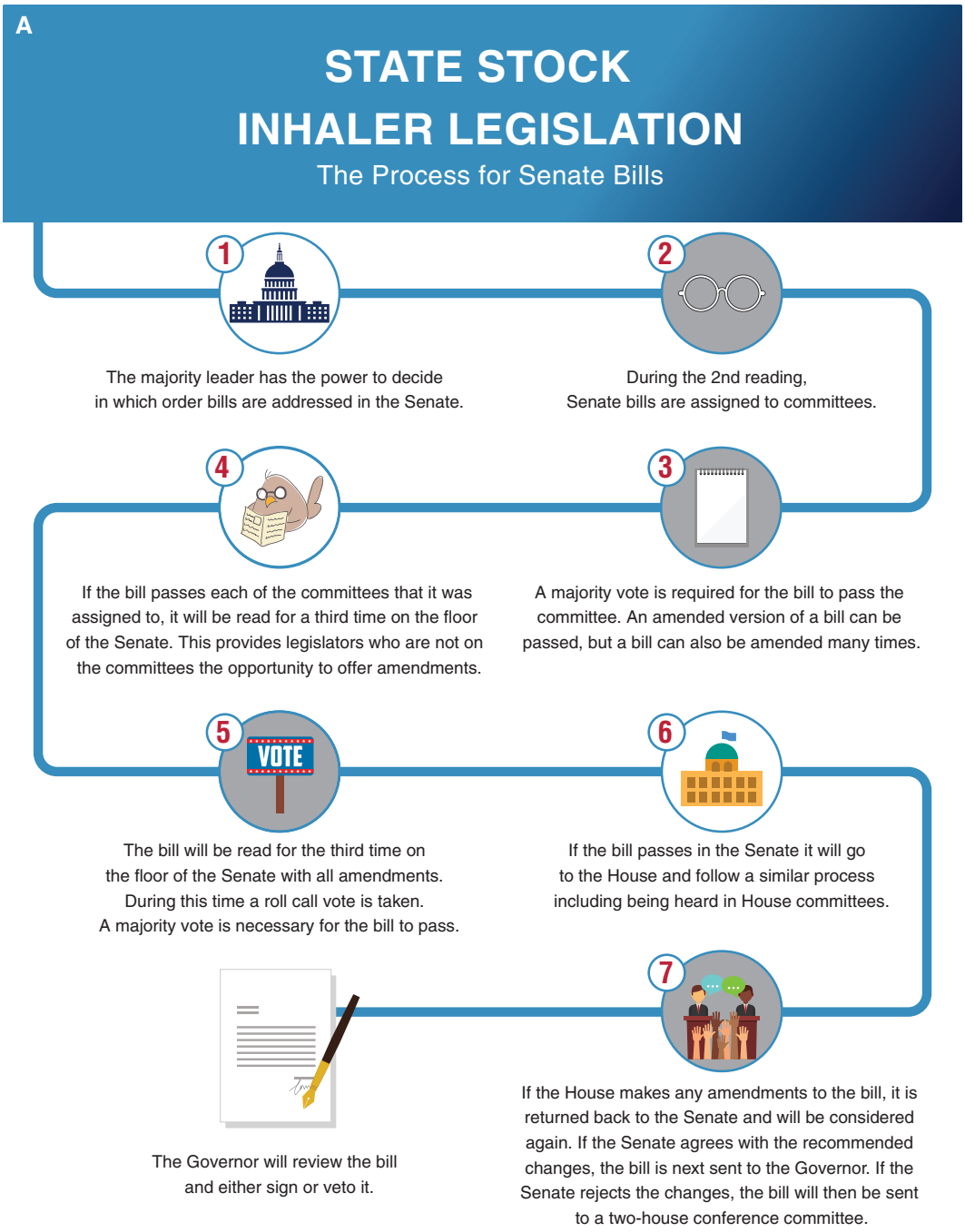

Figure 1. Stock albuterol legislative steps. (*A*) The process for Senate bills. (*B*) The process for House bills. The process of passing a bill may differ across states and within the legislative chambers of a particular state (House and Senate). It is important to understand the process within your own state.

time nurses in every school, it is important to recognize that many schools do not have nurses or that nurses have limited time in the school building. Thus, legislation can incorporate online platforms or alternative mechanisms for training by school nurses, asthma educators, or other trained individuals; alternatively, this language can be included in committee reports or regulations developed after bill passage.

On the basis of states' experiences to date, we created a list of essential and recommended components for stock albuterol legislation (Table 3). For example, schools should be allowed to use albuterol in respiratory emergencies, even when a child lacks a documented asthma diagnosis. Albuterol is a safe drug to administer to any child in respiratory distress (35–38). To obtain stock medication for schools/districts, pharmacy dispensing law(s) should also be addressed.

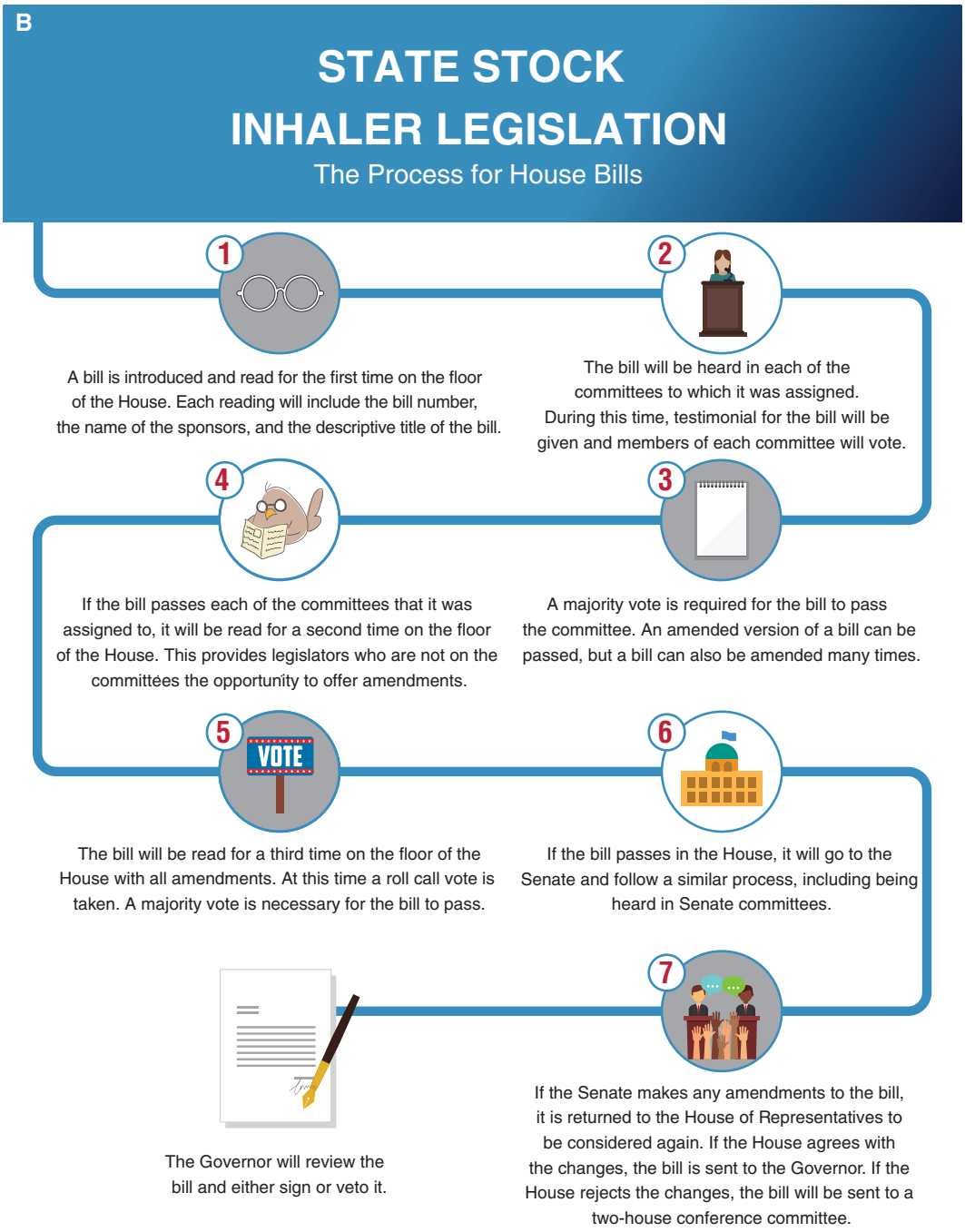

Figure 1. (*Continued*).

Legislation drafts should be shared with stakeholders to negotiate compromises to any key concerns. It also may be important to reach out to the state governor's office while drafting legislation, as this office may provide feedback to incorporate into the bill. Engaging these groups early to discuss concerns helps move the bill smoothly toward passage and minimize the potential of a delay or veto.

Before bill introduction, costs incurred by the state must be estimated through a fiscal note produced by the legislature. Most state legislation has allowed, but not required, schools to stock albuterol. The reason is that funding for such policies is difficult to obtain, and as such, legislation is less likely to be passed if funding is required. Many stakeholders are not supportive of unfunded school mandates because it puts undue burden on already underfunded schools.

Introduce Legislation

Each state has different processes for introducing and passing legislation. The state legislature's website provides legislative session details, including the state's processes and timelines for introducing legislation. Formal

Table 1. Key Stakeholders and Their Role in Stock Albuterol Legislation and Implementation

Stakeholder Group	Examples	Expertise/Role in Legislation	Expertise/Role in Implementation
Nonprofit health organizations	• Allergy and Asthma Foundation of America • Allergy and Asthma Network • American Academy of Pediatrics • American Lung Association • American Thoracic Society • National Association of School Nurses • Asthma coalitions • National professional medical, nursing, and pharmacy organizations • State medical societies	• Experience with legislative process • State-specific knowledge • Relationships with specific legislators and stakeholders	• Experience with implementation • Knowledge about legislation passed and relevant issues • Develop and deliver training • Provide medical expertise, specifically on asthma
School nursing	• National Association of School Nurses • National, state, and local organization representatives • State school nurse consultants • School nursing leaders from districts	• Understand how nurses are hired and function in schools • Provide expert testimony • Provide asthma and respiratory disease expertise	• Provide medical expertise, specifically on asthma • Share knowledge about legislation and relevant issues • Disseminate policy to school administrators/staff and children/families • Develop and deliver training • Implement in schools
Healthcare professionals	• Primary care pediatricians • Asthma subspecialists (e.g., pulmonologists, allergists) • Certified asthma educators • Academic researchers	• Provide information on asthma and treating respiratory distress • Provide information on safety of albuterol • Discuss training of lay personnel	• Write standing orders and prescriptions • Discuss policy with patients and families
Health and education departments	• State and/or county health department • State superintendent • Board of Education • School/district administration	• Ensure implementation considered in legislative process	• Disseminate policy broadly • Help support funding of program • Develop and deliver training
School staff and administrators	• Principals/administrators • Teachers • Coaches, security guards, and office clerks • Unions for teachers and staff	• Share insights about asthma care in school	• Understand and champion policy • Participate in training
Healthcare organizations	• Managed care organizations • State Medicaid Agency • Private insurance companies • Hospitals and emergency departments	• Early awareness of legislation can facilitate implementation	• Provide avenue for potential funding
Pharmacy	• State Board of Pharmacy • Pediatric Pharmacy Association and other state and national pharmacy organizations • Durable medical supply vendors	• State Board of Pharmacy should be part of legislation related to dispensing of medication to schools • National and state pharmacy organizations can support stock albuterol programs	• Provide medications and devices to schools • Communicate about drug recalls • Help communicate with pharmaceutical companies
Legal expertise	• Legislative counsel • Trial Lawyers Association	• Consultation on appropriate legal language for drafting policy • Children health policy expertise	• Support safe adoption of policy within school
Children with asthma and parents/guardians	• Elementary, middle, and high school students • Parents/guardians/caregivers	• Provide personal stories and perspectives	• Raise awareness and champion policy • Share stories of impact

Listing does not indicate endorsement of document unless noted otherwise in statement.

introduction typically occurs when the legislative session starts, although some states start work on bills earlier and have deadlines after which legislation can no longer be introduced.

Legislation can be introduced in one or both houses of the legislature. The strategy around advancing legislation, including whether to introduce in one or both houses, is typically decided by the coalition supporting the legislation and the legislative sponsor. States have 1- or 2-year sessions. Typically, if a bill is not acted on in a state within the first year of a 2-year session, it will carry over to the session's second year. Details of how a bill moves through the House and/or Senate are depicted in Figure 1.

Testify

It is important to identify key people to testify in support of the legislation and understand how testimony occurs. The speaker must register in advance so that they are called on during the bill's hearing. The statement should begin with the proper address and thank you to the bill sponsor. For example, an opening could be "Chair and senators, thank you for allowing me to testify on an issue that is of extreme importance for the safety of our school children." Testimony is usually limited to 1–2 minutes, prompting most individuals to prepare a script. Testimony should end with an "ask," such as, "Therefore, I would urge you to vote "yes" to Bill [number] allowing schools to stock albuterol medication for respiratory emergencies." After each testimony, legislators can ask questions.

Different stakeholders bring important expertise and experience for testimony (*see* online supplement). Clinicians can speak about asthma prevalence, symptom frequency, and safe treatment of respiratory episodes with albuterol. Common questions include "What happens if albuterol is given to children who do not have asthma?" and "What are side effects of albuterol?" We suggest that the testimony include several points: it should be noted that if the school calls 911, it is likely the child will receive albuterol from emergency responders; it should be noted that it is better for a child to be given albuterol as a potentially life-saving medication than for treatment to be withheld, which would increase the risk of poor outcomes; and it is also important to discuss the safety profile of albuterol across a range of doses (34). In addition, school nurses can discuss how difficult it is to obtain a child's asthma medications for school, care for children with respiratory distress in a nonhealthcare setting, and reach parent/guardians. They can discuss how availability of stock albuterol would allow treatment to begin while awaiting emergency assistance (39). Most school nurses have experienced caring for students during a respiratory emergency, and without albuterol, the only option is to call parents/guardians and/or 911. This treatment delay can be difficult when albuterol may allow a child to return to class or may lessen the severity of symptoms. Finally, a school-aged child with asthma or their parent/guardian can share a story of a respiratory episode without available albuterol.

Passage of Legislation

Proposed legislation is discussed and voted on in committee and then on the floor in each chamber. Revisions to the legislation may occur at each step. The timeline for voting in each chamber depends on the legislators who control the floor schedule. Once both chambers pass the legislation, it is acted on by the state governor, and this action includes signing it or vetoing it. If signed by the governor, the legislation is enacted as a law. If the legislation is vetoed, the state legislature can override the veto, usually with a supermajority vote (e.g., two-thirds of legislators).

Components for Implementation of Stock Albuterol

Once legislation is passed, regulations are developed by designated state agencies (e.g., the board of education, health department). Then, efforts must be directed to implementation. Schools should be prepared to complete several steps for successful implementation (Figure2) (40). Although processes may differ across schools/districts, it is critical to engage stakeholders in key components to successfully implement stock albuterol (Table 1). Importantly, it should be recognized that stock albuterol is one piece of asthma care within the school, which should include education for affected students, training for staff, access to medications, and more.

Policy Dissemination and Education

Stock albuterol policy must be broadly disseminated. State-level professional organizations and advocacy groups are useful dissemination avenues for healthcare professionals (e.g., prescribers, nurses, pharmacists). Local and state-level health departments, education agencies, or policy e-mail listservs can serve as additional channels to disseminate policy and provide sample wording for school/district-level policies. School/district-level administrators and medical directors/nurses should notify school personnel about the policy.

Families and students are essential to effectively implementing stock albuterol policy. Annual notification about the policy should be sent home to families. To minimize barriers to life-saving medication, the policy should not require parents/guardians to sign waivers allowing albuterol administration in an emergency. Ideally, the policy should specify that school staff can assume parent/guardian consent in the case of emergency medications. Communication should be provided about by whom, when, and how medication will be administered, maintained, and stored and also about how staff will be trained. Parents/guardians must know stock albuterol does not replace the need for children to have their own quick-relief medications. A parent/guardian champion may be helpful for garnering support within the school community.

Training of School Personnel

To effectively implement the policy, annual training is critical to ensuring requisite knowledge and skills of school personnel who are designated to administer stock albuterol for respiratory symptoms or a respiratory emergency. At each school, a minimum of two individuals should be trained per building, with consideration given to additional individuals on the basis of asthma prevalence and other school indicators (e.g., population, social needs) (41). It is preferable to train as many as feasible to ensure that at least one trained individual is present in school daily. Both licensed and unlicensed school personnel, including unlicensed assistive personnel, may be designated to administer stock albuterol. Training should be geared to both groups, regardless of experience, in alignment with state legislation.

Training content about stock albuterol for school staff should include *1*) signs and symptoms of respiratory distress; *2*) an overview of asthma medications that includes inhaler administration, technique, maintenance, and cleaning; and *3*) a protocol to manage respiratory episodes. Opportunities to teach back are particularly important to ensuring proper technique. Training should be delivered by individuals with requisite knowledge and expertise in asthma and stock

Table 2. Key Questions and Pitfalls in Building a Coalition of Stakeholders

Building Coalition	Key Questions and Inclusions	Pitfalls to Avoid
Be clear about goals of engaging diverse stakeholders.	• How does engaging diverse stakeholders fit into your goals? • What do you hope to achieve in short-term for legislation and long-term for implementation?	• Trying to engage people without clarity about goals • Tokenistic approach in which focus is "getting people to the table" without commitment to authentic partnership and learning
Invest in building relationships and trust.	• What types of relationships exist among different stakeholders? • What are ways to strengthen relationships and build trust? • The goal is to engage diverse stakeholders early on to help future implementation efforts with due understanding of distinct perspectives and roles of each participant or group represented.	• Narrow focus on "getting people to the table," rather than partnership building • Paternalistic approach that does not recognize strengths • Unwillingness to hear feedback that is not positive • Overlooking importance of relationship-building and focusing on tasks • Focusing prematurely on formal structure of relationships
Recognize and work with different agendas and interests.	• What are priorities of different stakeholders you wish to engage? • What are common interests? • Can involvement in coalition add value for each stakeholder's work or help them achieve goals? • Do agendas of dominant groups within coalition get in way?	• Assuming that coalition issues should be a priority for everyone or that people who do not engage are apathetic • Allowing agendas of one group or few groups to dominate coalition
Explore different strategies for engaging communities.	• What are best strategies and structures to reach goals for engaging different stakeholders? • Are there other strategies that might meet your needs? • How can momentum be maintained once legislation is passed but before implementation?	• Structuring coalition in a way that makes it difficult for groups with fewer resources to participate • Restricting engagement strategies to coalition building
Build inclusive coalition culture.	• Are there barriers to participation built into coalition's structure or how it conducts business? • What type of coalition culture would be most welcoming and inclusive to diverse groups?	• Making assumptions about how to be inclusive without talking to people you want to engage • Attachment to "right" way to do things, leaving no room for exploration
Acknowledge and address differences in power and resources.	• How do differences in power and resources impact coalition and partnerships between groups? • What are ways to navigate differences and share power? • How can different groups in coalition share resources and strengths in a way that will benefit everyone? • Are there ways to invest resources to build infrastructure and support participation of groups that have fewer resources? It is key to build infrastructure in the legislative process so that future implementation is successful.	• Ignoring differences in power and resources, and operating as if they do not exist • Undervaluing the strengths of groups that have fewer resources • Bringing people to the table without sharing power • Allowing any group or clique to dominate the coalition

albuterol policy. School nurses are key professionals who can provide and/or facilitate training on stock albuterol for school personnel. Partnerships with local organizations and/or coalitions (e.g., the American Lung Association, Allergy and Asthma Network) are also encouraged.

Content may be delivered synchronously or asynchronously with in-person or remote (e.g., web-based, video) methods. In-person workshops are ideal for school personnel with limited prior health experience or who prefer hands-on learning, especially for reviewing inhaler techniques for which immediate feedback is beneficial. In contrast, a

Table 3. Essential and Suggested Components of Stock Albuterol Legislation

Component	Explanation/Reasoning
Essential components	
Medication can be administered in good faith to any child in respiratory distress.	The bill should permit emergency use of stock albuterol for any student in respiratory distress, not only students known to have an asthma diagnosis. Reasoning: • Many students have undiagnosed asthma and may have their first asthma exacerbation at school. • Emergency administration of albuterol may be necessary and time sensitive; review of records to determine whether a student has asthma may delay care. • There are few causes of respiratory distress in children that would not respond to or would be harmed by administration of albuterol. • Albuterol is a safe medicine.
Establish training requirements for school staff.	The bill should outline details about how many staff should be trained and about how training should be conducted to ensure that enough staff have the necessary knowledge and skills to administer stock albuterol. • The recommendation is that a minimum of two individuals be trained per school building at a ratio of one individual for every 225 students. • Recommend permitting live or remote training that can be accessed by school staff at a convenient time at no cost.
Ensure immunity from civil liability for staff and prescribers.	The bill should provide: • Immunity for medical professionals who write the orders as well as pharmacists who dispense orders. • Immunity for school districts, school staff, or agents of the school who have the required training and administer the albuterol in good faith.
Ensure that pharmacy laws allow medication dispensing to schools.	In parallel with preparing legislation, review the state's current pharmacy dispensing laws and assess whether it is necessary to update pharmacy state board laws. Specifically, it is important that pharmacies are able to dispense medication to a school/district rather than to a specific individual.
Suggested components	
Allow schools to accept donations of money or product.	Donations can help with financing for the implementation of stock albuterol programs.
Use metered-dose inhalers with VHCs/spacers.	Metered-dose inhalers with VHCs/spacers for administration of quick-relief medication allows for the inhaler to be used for multiple individuals with less cleaning, easier storage/portability, and reduced aerosolization of particles.
Ensure authorization of parents or caregivers/school volunteers to administer albuterol.	Include parents or caregivers as well as school volunteers as authorized administrators of stock albuterol to ensure that they are indemnified from good faith use if they have appropriate training. • There are many situations in which parents or caregivers as well as school volunteers act as agents of the school, such as during after-school activities, field trips, and sports.
Ensure inclusion of nonpublic schools (e.g., private, tribal).	States often do not have significant oversight for activities in nonpublic (e.g., private, tribal) schools, as they are not state licensed. • Stakeholders should explore state-specific strategies with legislators to include nonpublic schools in legislation. • Even if a school does not fall under state licensing requirements, prescribing providers and dispensing pharmacists need to legally be able to provide stock albuterol for nonpublic schools.

Definition of abbreviation: VHC = valved holding chamber.

Stock Inhaler Program

Quick Reference Guide for Schools

1 Pre-Implementation

1. Ensure your state has a current stock inhaler law
2. Review the key components of your state's law
   a. Types of schools
   b. Training requirements
   c. Devices (e.g., spacers)
   d. Prescriptive authority
   e. Liability
   f. Documentation, Reporting & Medication administration requirements
3. Conduct outreach to stakeholders
   a. School administration
   b. Parents
   c. Teachers & school personnel
   d. Pediatricians
   e. Pharmacists
   f. EMS providers
   g. Hospitals & urgent care facilities

2 Implementation

1. Procure all necessary supplies for your school
   a. Inhaler (albuterol sulfate)
   b. Supply of spacers
   c. Prescription for both stock inhaler & spacers
   a. Signed standing medical order
   b. Protocol for medication administration
   c. Documentation forms
2. Complete training requirements
   a. Training platform (online training, in-person training or either)
   b. Who conducts training (non-licensed / licensed health care provider)
   c. Frequency of training
   d. Minimum number of individuals who shall be trained at each school **(1 trained person to 225 students (1:225) but ≥2 trained, school personnel)**
3. Notify parents of the stock inhaler program at the beginning of the academic year

3 "School Champion"

1. Identify a stock inhaler **"School Champion"** who can lead your school's stock inhaler program
   a. District-level nurses or supervisors
   b. School nurses or Health Assistants (HAs)
2. Roles of the School Champion include:
   a. Organizes and distributes stock inhaler program supplies
   b. Ensures staff are trained in accordance with state law
   c. Monitors documentation requirements including retention & reporting requirements
   a. Communicates program updates to school administration, parents (when applicable) & trained, school personnel

4 Capacity Building

1. Build strong partnerships with community stakeholders & governmental organizations who can help sustain your program
   a. County & State Health Departments
   b. Department of Health Services
   c. Local & state organizations
   d. American Lung Association
   e. Asthma & Allergy Network
   f. Local health care providers
   g. Pediatricians / Primary Care Providers (PCPs)
   h. Pediatric Pulmonologists
   i. Local health care facilities
   j. Rural hospitals
   k. Local businesses
   l. Philanthropic partners
   m. Parent teacher associations (PTAs) / Parent teacher organizations (PTOs)

5 Sustainability

1. Identify sustainable program funding. Schools can have a stock inhaler for approximately **$85 per school**
   a. Community stakeholders & partners (listed above)
   b. School health office budget
   c. Grant funds
   d. Foundation funds
2. Capture program data if possible

Stock Inhaler Programs: A Quick Reference Guide to Implementation for Schools, December 2020.

Figure 2. Stock albuterol program: quick reference guide for schools. Reprinted by permission from Reference 40.

Table 4. Essential Components to Implement Stock Albuterol in Schools

Essential Component	Explanation/Reasoning
Dissemination and education about policy	After legislation is passed, it is critical to broadly disseminate the policy to healthcare providers, school staff, and families. It is also important to provide annual education and communication about the legislation. Key individuals who should be involved in dissemination and education about the policy include: • Policy-makers • Schools, school boards, and superintendents • School nurses • Local hospitals and urgent care facilities • Primary care and subspecialty clinicians • Emergency medical service personnel • Pharmacists • Local health departments (city, county, state) • Nonprofit health organizations
Training	At each school, a minimum of two individuals should be trained per building at a ratio of one trained individual for every 225 students. School nurses are key professionals who can provide and/or facilitate training of school personnel on stock albuterol. Training should include: • Basic asthma pathophysiology and common triggers • How quick-relief medications work to treat respiratory distress • Recognizing mild, moderate, and severe respiratory distress • Demonstration of correct technique to administer treatment by using a metered-dose inhaler with a valved holding chamber • Determining the course of action for managing respiratory distress events • Maintenance of stock albuterol devices • Postincident instructions, including timely documentation and parent/guardian/caregiver contact instructions
Orders and prescriptions	Key supplies needed for stock albuterol program (with cost*) include: • Albuterol sulfate metered-dose inhaler ($20–$100 per inhaler) • Supply of one-way valved holding chambers/spacers (plastic or cardboard, $3–6 per unit) • Alcohol wipes to clean canister body and nozzle • Template documents (<$20/yr) A standing medical order and/or prescriptions are needed to obtain albuterol and valved holding chambers/spacers for each school.
Supplies	Program supplies require funding of <$85 for a stock inhaler and needed materials for a school. Program expenses may vary on the basis of student enrollment, the school layout, and the community asthma prevalence. Schools with a large student body, sports programs, or extracurricular activities may opt to purchase additional stock albuterol inhalers to store in convenient locations (e.g., the gym, fields).
Standardized protocol	The protocol provides instructions regarding the use of stock albuterol in case of respiratory distress. It should include: 1. Signs and symptoms of mild, moderate, and severe respiratory distress 2. The course of action based on the initial presentation of the individual 3. Specific indications for when to summon emergency medical services 4. The dose of albuterol to give (e.g., the number of inhaler puffs for initial use and subsequent use for same episode of respiratory distress) 5. Postincident instructions 6. The duration that an individual's documentation log shall remain on file with the school
Documents	Schools need the following forms for the implementation of stock albuterol: • Instruction sheet for stock albuterol implementation process • Template letters for communication with parents/guardians/caregivers and school/district administrative personnel • Directions about and a pictorial graphic of the effective technique for administering treatment using a metered-dose inhaler with a valved holding chamber/spacer • Documentation forms (stock albuterol documentation log; *see* online supplement) (46) • Copies of the State Board of Education regulation and stock albuterol law or statute

*Cost is based on 2020 dollars.

Table 5. Data Elements for Documentation of Stock Albuterol Usage Event Reporting in Schools

Description	Data Element
Date	Date the event occurred
Time	Time of d the event occurred
Responding person	Fill-in-the-blank space for name and role
Student's or individual's name	First name Last name
Student's or individual's age or date of birth	Fill-in-the-blank space
Student's or individual's gender	Male Female Nonbinary
Student's or individual's race	American Indian or Alaska Native Asian Black or African American Native Hawaiian or Pacific Islander White Multiracial
Student's or individual's ethnicity	Hispanic or Latino Non-Hispanic or non-Latino
Previously known asthma diagnosis	Yes No Unknown
Reason for stock albuterol use (e.g., symptoms)	Fill-in-the-blank space
Number of inhaler actuations (e.g., puffs)	Checkboxes for number of puffs based on protocol; also provide option for off-protocol with blank for number puffs and reason
Student or individual's disposition status	Returned to class Sent home Summoned EMS and not transported Summoned EMS and transported
Contact with parent/guardian	Open-ended
Comments (e.g., why stock albuterol inhaler was used)	Open-ended

Definition of abbreviation: EMS = emergency medical services.
Additional information can be recorded at the school level or individual level, including the national drug code and lot number of the albuterol medication.

standardized web or video-based curriculum provides flexibility, as many schools are unable to hold training that can be attended by all designated personnel. Because schools typically experience cyclic transitions of personnel throughout the academic year, flexible training options are necessary.

Program Supplies

Stocking albuterol in schools requires annual funding, primarily for supplies, for effective implementation. Essential program supplies are reported in Table 4 (*see also* the online supplement). To enable each school/district to meet its unique needs, policy should specify flexible options to procure supplies and promote equity for all students in the state, regardless of resources within a school or district.

Ideally, schools can procure supplies by using the school health annual budget. Alternative mechanisms include product or monetary donations from interested organizations (e.g., pharmaceutical companies, patient advocacy groups, hospitals), discounts or reimbursements from pharmaceutical companies, or fundraising through existing stakeholders, such as parent–teacher groups. Current programs cost less than $85.00 (in 2020 dollars) for an albuterol inhaler and needed supplies for a school (29). Program expenses may be affected by the number of inhalers needed at the school. We recommend at least one quick-relief inhaler per school building, with additional inhalers being added on the basis of student enrollment, the school layout (e.g., the number of buildings, locations of playgrounds and fields), and asthma prevalence.

Albuterol may come from pharmacies, pharmaceutical companies, or manufacturers. School nurses or medical directors should keep records of where medication is obtained and contact information if product issues arise. They should also monitor national databases for drug recalls (42). If the school uses a pharmacy to obtain albuterol, it is beneficial to develop relationships with the pharmacy manager to ensure notification of a drug recall or shortage.

In the school, stock albuterol should be stored in a temperate, dry, and unlocked place that is easily accessible to trained individuals for medication administration. Medication expiration dates should be monitored. All medications should be disposed of on the basis of school procedures.

Metered-dose inhalers (MDIs) should be primed before administration and cleaned after each use, as per manufacturer instructions (e.g., before the first dose, if not used for 2 wk). The MDI should always be used in conjunction with a one-way VHC/spacer ($3–$6 per unit). Most VHCs/spacers are constructed of plastic, but they are also available in cardboard models. The plastic models are available in rigid and collapsible versions and tend to be more expensive. Cardboard VHCs/spacers are also collapsible and relatively less expensive. Plastic and cardboard VHCs are equally effective, not suitable for use by more than one child, and should be cleaned or stored as per the manufacturer instructions. Schools can stock a supply of VHCs/spacers and use one per child, while using a single MDI. Once a child uses a VHC/spacer (plastic or cardboard), it should be stored in its original packaging and labeled with the child's name if reuse is needed later during the school year, as studies show

paperboard spacers can safely last the entire school year without microbial growth (43).

Standardized Protocol for Medication Administration

Every school should follow a standardized protocol for stock albuterol administration that is created and adopted at the school, district, or potentially state level and aligns with school, nursing, and other relevant regulations. The protocol should include specifics about who can receive medicine, what symptoms warrant albuterol, the number of doses to administer, how to assess the response, when to repeat administration, and what to do if medication is or is not effective.

Schools/districts in states that lack a standardized protocol should identify a medical consultant (or prescriber authority) to work with them to implement an existing or modified protocol that can be widely adopted. Medical consultants who sign the standing medical order should have the ability to modify existing protocols on the basis of their clinical practice and guideline-based care. For example, in Arizona, a protocol using a standardized number of inhaler actuations (instead of a dose range) stratified by the initial presentation of symptoms was widely adopted (29). Importantly, treatment for any child who requires stock albuterol should follow the standardized protocol and prescription instructions specified on the standing medical order, regardless of whether they have an asthma action plan on file at school. An asthma action plan provides school personnel with instructions on how to use a child's personal medicine, not stock albuterol.

Procedures for Event Documentation

All respiratory episodes requiring stock albuterol should be documented by trained school personnel (Table 5). Documentation should be retained on file with the school in accordance with school policy for student health information as well as state legislation and regulation for stock albuterol. For states that have adopted stock epinephrine in schools, these procedures can be adapted to document stock albuterol administration.

States with existing infrastructure can assist schools with maintaining documentation of quick-relief medication through centralized databases with medication events for epinephrine, naloxone, and albuterol. However, many states do not have infrastructure capable of systematic data collection on medication administration in schools. In this scenario, schools should create a documentation system that reports events in both the child's individual health record and a centralized place (within the school or electronically) for all stock albuterol events that occurred during a single academic year. Procedures should be reviewed annually.

Together with documentation, parents/guardians should be notified each time their child uses stock albuterol to encourage follow-up with their primary care or subspecialty clinician and to obtain an inhaler to have at school. Frequent communication among the school, family, and medical home should occur, especially for children who use stock albuterol more than once in a school year. If a child does not have an asthma diagnosis, the family should be advised to follow up with a healthcare professional to be evaluated for asthma, and, if necessary, a referral should be made. Template communication resources are available (*see* online supplement).

Additional Considerations

Children and/or adults. Traditionally, emergency use protects both children and adults with emergency needs. For stock albuterol, the legislation varies by state in terms of whether only children or anyone is included. Approximately half of the 15 states with stock albuterol legislation include adults, representing a gap that should be considered in future legislation and in amendments to current policies.

Stock inhaler versus nebulizer. Several states allow administration of stock albuterol via an inhaler and/or nebulizer, although specific policies vary by state in terms of which of these can be administered by school nurses or designated personnel. The literature shows that MDIs with VHCs/spacers are as, if not more, effective than nebulizers in children during acute respiratory episodes (44). Stock nebulizers also have greater upfront cost, although the cost of albuterol used in nebulizers is presently less expensive than an inhaler; this may change as generic quick-relief inhalers become more available. Nebulizer machines are bulky and lack portability, making them less practical in certain situations (e.g., recess, before exercise). Although the administration of medicine through nebulizers tends to be easier, it takes longer to administer the same dose when using nebulizers, keeping students out of class longer. On balance, we recommend inhalers with VHCs/spacers as the preferred stock albuterol delivery system in schools, unless otherwise clinically indicated.

Stock albuterol and coronavirus disease. The severe acute respiratory syndrome coronavirus 2 pandemic has changed practices around albuterol administration via nebulizers. Nebulizers are not recommended in school settings during the pandemic because of the potential for the spread infectious aerosols. Instead, stock albuterol MDIs can be used when they are properly cleaned after use with a single, one-way VHC/spacer for each child. As per CDC guidance, proper personal protective equipment should be used by the staff person aiding in any inhaled or nebulized medication administration, and medicine should not be administered in the classroom with other children present (45).

Conclusions

Because albuterol is a safe and potentially life-saving medication that is recommended by guidelines, it is important that schools make quick-relief medications available to all school-aged children, both with and without a documented asthma diagnosis. This failsafe measure can prevent exacerbations, reduce emergency service calls to schools, and enable children to return to class (29). Stock albuterol legislation is imperative to aiding in adoption and implementation, and key policy inclusions can lay the groundwork for success. A strong group of stakeholders and a carefully chosen sponsor are crucial to successful legislation and implementation across the United States. Future work should focus on passing legislation in all states and implementing policy in schools as well as on evaluating the impact of such programs on academic and health outcomes. Effective implementation of stock albuterol can help ensure that children have access to medication that enables them to live, learn, and play. ■

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Members of the task force are as follows:

Anna Volerman, M.D. (*Co-Chair*)[1,2*‡]
Ashley A. Lowe, Ph.D., M.S.P.H. (*Co-Chair*)[3*‡]
Lynn B. Gerald, Ph.D., M.S.P.H. (*Co-Chair*)[3*]
Charmayne M. C. Anderson, M.P.A.[4]
Kathryn V. Blake, Pharm.D.[5]
Tyra Bryant-Stephens, M.D.[6]
Thomas Carr, B.A.[7]
Heather Carter, Ed.D.[8§]
Lisa Cicutto, R.N., A.C.N.P., Ph.D.[9]
Joe K. Gerald, M.D., Ph.D.[10]
Jamila Jefferson, B.S., M.S.N., R.N., C.S.N.[11‖¶]
Tina Miller, B.S.N., R.N., N.C.S.N.[12¶]
Nuala S. Moore, M.A.[13]
Andrea A. Pappalardo, M.D.[14,15*‡]
Hanna Phan, Pharm.D.[16]
S. Christy Sadreameli, M.D., M.H.S.[17]
Andrea Tanner, M.S.N., R.N., N.C.S.N.[18]
Tonya A. Winders, M.B.A.[4]

*Subgroup leader.
‡Co–first author.
§Former Arizona State Senator.
‖Member of the task force who was not part of the writing committee.
¶School nurse.

[1]Department of Medicine and [2]Department of Pediatrics, University of Chicago, Chicago, Illinois; [3]Department of Health Promotion Sciences, [8]Arizona Center for Rural Health, Mel and Enid Zuckerman College of Public Health, and [10]Community, Environment, and Policy Department, University of Arizona, Tucson, Arizona; [4]Allergy and Asthma Network, Vienna, Virginia; [5]Nemours Center for Pharmacogenomics and Translational Research, Nemours Children's Health System, Orlando, Florida; [6]Community Asthma Prevention Program, Children's Hospital of Philadelphia, Philadelphia, Pennsylvania; [7]American Lung Association, Chicago, Illinois; [9]Department of Medicine, National Jewish Health and University of Colorado, Denver, Colorado; [11]The School District of Philadelphia, Philadelphia, Pennsylvania; [12]Clark County School District, Las Vegas, Nevada; [13]American Thoracic Society, Washington, DC; [14]Department of Medicine and [15]Department of Pediatrics, University of Illinois at Chicago, Chicago, Illinois; [16]Department of Clinical Pharmacy, College of Pharmacy, C. S. Mott Children's Hospital and University of Michigan, Ann Arbor, Michigan; [17]Department of Pediatrics, Eudowood Division of Pediatric Respiratory Sciences, Johns Hopkins University, Baltimore, Maryland; and [18]School of Nursing, Indiana University, Indianapolis, Indiana

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Compliance to a Standardized Protocol for Stock Albuterol Medication among School Staff

Ashley A. Lowe, PhD, MSPH[1], Joe K. Gerald, MD, PhD[2], Conrad Clemens, MD, MPH[3], and Lynn B. Gerald, PhD, MSPH[1]

Abstract

A stock inhaler program provided access to rescue medication (albuterol sulfate) for school children. School staff were provided with a standardized protocol for medication administration. We hypothesized licensed nurses were more likely to report compliant events compared to unlicensed school staff. Stock inhaler events were defined as either compliant or non-compliant. A school protocol compliance score was calculated using the total number of compliant events divided by the total number of all events. The protocol for administration indicated 4 puffs for mild respiratory distress and 8 puffs for severe respiratory distress; therefore, events were defined as compliant if the dose of medication was divisible by 4. A Cragg Poisson hurdle regression was used to examine the association between compliance score and school staff experience. One-hundred fifty-two schools reported 999 stock inhaler events. Of these events, 28% were compliant and 72% of events were non-compliant. After controlling for school organizational type, grades served, and school size, school staff experience was not predictive of protocol compliance. Future efforts should focus on improving protocol compliance among licensed nurses and unlicensed school staff.

Keywords

stock inhaler, schools, respiratory distress, school nursing, unlicensed assistive personnel, medication administration, emergency medication, school nurses

Introduction

Asthma is a chronic inflammatory condition that affects 8.6% of children in the United States (US) (Centers for Disease Control and Prevention (CDC), 2021). Children with asthma may experience breathing difficulties that prevents them from fully participating in school activities. When these breathing problems occur at school, quick relief medication (albuterol sulfate) is often necessary to relieve their symptoms. Immediate access to this life-saving drug is a central component of guideline concordant care (i.e., best practice) and often prevents the need for escalated care such as summoning the Emergency Medical System (EMS) (Cloutier et al., 2020; Krishnan et al., 2020; National Heart, 2007). However, less than 12% of asthmatic children have access to this life saving drug while at school (Gerald et al., 2012). School personnel should be trained on how to identify the signs and symptoms of an acute asthma episode (or respiratory distress) and when to administer albuterol to a child (McClure et al., 2020). Albuterol sulfate is often administered by a licensed, school nurse or unlicensed assistive personnel (UAP) who has been delegated the task of medication administration by a licensed provider (National Council of State Boards of Nursing, 2020). The term UAP is used in the school nursing field to refer to unlicensed personnel who have been trained by the school nurse. However, many schools do not have a school nurse to train UAPs and training among UAPs varies widely. Therefore, in this discussion, we use the term UAP to refer to any school staff member who is not a licensed nurse or health professional.

Albuterol sulfate can be safely administered by any school staff who have been trained to do so because modern day formulas are safe with a wide-therapeutic

[1] Asthma & Airway Disease Research Center, University of Arizona Health Sciences, Tucson, AZ, USA
[2] Mel and Enid Zuckerman College of Public Health, Department of Community, Environment & Policy, University of Arizona, Tucson, AZ, USA
[3] College of Medicine – Tucson Campus, Department of Pediatrics, University of Arizona, Tucson, AZ, USA

Corresponding Author:
Ashley A. Lowe, PhD, MSPH, Asthma & Airway Disease Research Center, University of Arizona Health Sciences, 1501 N. Campbell Ave., Box 245030, Room 2346, Tucson, Arizona 85724, USA.
Email: aaray@arizona.edu

index (Gerald et al., 2014a, 2014b; National Heart, 2007). Schools can prepare for a respiratory emergency regardless of the presence of a full-time licensed nurse by implementing a stock inhaler program (Gerald et al., 2016; Lowe et al., 2021). Stock inhalers are a single, albuterol inhaler used with a disposable valved-holding chamber (VHC) which allows the inhaler to be used by multiple students. Approximately 18 U.S. states have enacted legislation that allows schools to procure, stock and administer albuterol sulfate to students experiencing respiratory distress while at school; however, key components of such legislation vary widely across states (Lowe et al., 2022). Variations in these laws include who can be treated (previously known or unknown asthma) and who can administer the medication (UAPs versus licensed nurses) (Lowe et al., 2022).

Despite the safety and effectiveness of albuterol sulfate in children, medication should be given in accordance with the written directions provided on the standing medical order (for stock albuterol) or a child's individual Asthma Action Plan (AAP) (for personal inhalers). Both a standing medical order and AAP provide school personnel with specific directions regarding how much medication to administer and when the medication should be taken by the child. Wide-ranging differences in the written directives exist among standing medical orders and AAPs which may introduce confusion for school personnel. One of the common variations is the recommended dose of medication. When a child does not receive the prescribed dose outlined in the standing medical order or their individual AAP, a medication administration error occurs.

Given a large proportion of schools rely on both licensed nurses and UAPs, examining compliance to medication administration tasks remains an important component of school nursing care. Previous studies have associated UAPs with increased medication errors causing some concern for liability among both schools and licensed providers who delegate their authority to the UAP for medication administration tasks (Canham et al., 2007; Health, 2009; Maughan et al., 2018; McCarthy et al., 2000). Increased medication errors are further associated with schools that have multiple school personnel responsible for medication administration tasks and schools with high student enrollment or caseloads (Canham et al., 2007; Maughan et al., 2018; McCarthy et al., 2000). While reducing medication errors remains essential to school nursing, stock inhaler laws work outside the Nurse Practice Act which governs the delegation of medication administration tasks. In Arizona, H.B. 2208, "Stock Inhaler for Schools" allows any trained and designated school staff to administer a stock inhaler to any child experiencing respiratory distress while administered in good faith (State of Arizona, 2017). The purpose of this study was to examine medication errors as measured by compliance to the standardized protocol for stock albuterol medication administration in Pima County, Arizona. We hypothesized that schools provisioned with a full-time, licensed nurse would be more likely to report compliant stock inhaler events as compared to schools with UAPs.

Methods

Stock Inhaler Program and Standardized Protocol

In 2017, Arizona passed H.B. 2208, "*Stock Inhalers for Schools*" which allowed charter/private/parochial and public schools to procure, stock and administer albuterol sulfate to any student experiencing respiratory distress regardless of previously known asthma (State of Arizona, 2017). Schools were provided a toolkit that included a quick relief inhaler (albuterol sulfate), a supply of disposable valved holding chambers, documentation forms, an online training curriculum, a signed standing medical order, and a standardized protocol. The standardized protocol was developed by a team of asthma experts, pediatric pulmonologists, pharmacists, licensed school nurses and stakeholders (see Supplemental Materials). Trained staff were instructed to use the standardized protocol anytime the stock inhaler was administered to a student. The online training curriculum trained personnel in identifying the signs and symptoms of respiratory distress and how to use the standardized protocol to manage a respiratory emergency. Depending on the student's initial presentation and the severity of their symptoms, staff were trained to administer a fixed dose of 4 puffs (inhaler actuations) for mild-to-moderate respiratory distress and 8 puffs for severe respiratory distress. When a child presented with severe respiratory distress, staff were instructed to summon EMS immediately. After each stock inhaler event, school staff were required by law to document the number of puffs administered on the form provided in the toolkit.

Study Design, Setting & Participants

The study population included all charter, private/parochial and public schools located in Pima County, Arizona, that voluntarily enrolled in the stock inhaler program and reported stock inhaler events that included the number of puffs on the event documentation form (Figure 1). The primary findings of this study have been previously published (Lowe et al., 2021). The study was approved and monitored by the University of Arizona Institutional Review Board (IRB) in Tucson, Arizona (approval 1804445166).

Primary Outcome Variable

The primary outcome variable was school protocol compliance score (continuous ranging from 0–100%). Because schools were asked to use a standardized protocol for medication administration, we examined the total number of inhaler puffs (actuations) recorded on the documentation form by trained and designated school staff (see Supplemental Materials). Stock inhaler events were defined as "compliant" if the dose

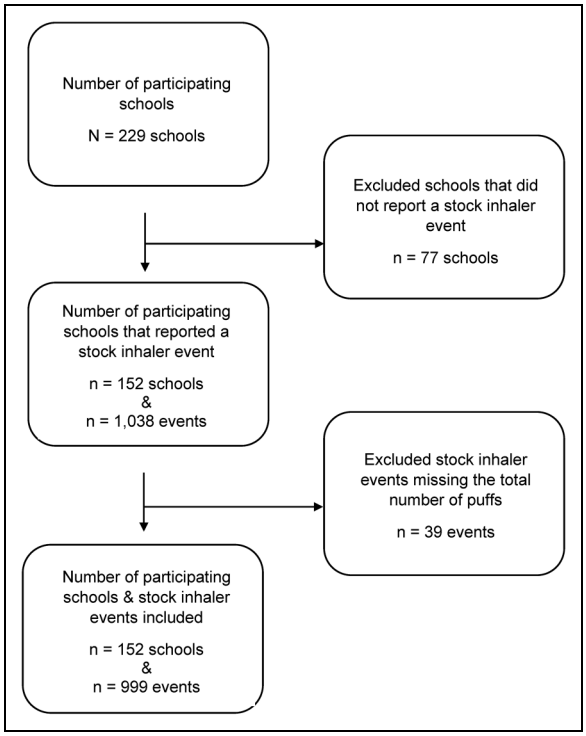

Figure 1. PRISMA flow diagram of school participation and stock inhaler events during the stock inhaler for schools program, 2017–2018.

of medication (i.e., the number of inhaler puffs) was divisible by 4. All events with an odd number of inhaler puffs or events where the number of puffs was not divisible by 4 were considered "non-compliant". A protocol compliance score was calculated using the total number of compliant events divided by the total number of all events for each school.

Predictor Variable

The main predictor of interest was school staff experience (nurse, nurse-supervised or UAP). Nurses were defined as any licensed nurse who may delegate their authority of medication administration tasks to UAPs in the State of Arizona (i.e., Registered Nurse (RN), Master of Nursing Science (MSN) and Doctor of Nursing Practice (DNP) licenses. Nurse-supervised was defined as schools that had a full-time UAP who was supervised by a full-time, licensed nurse who rotated between multiple campuses. UAPs were often the primary health person responsible for student health, but many schools had unlicensed staff which included teachers, office personnel, physical education teachers and coaches, and designated agents of the school. Therefore, we use the term UAP to encompass any school staff responsible for administering albuterol who was not a licensed nurse. This variable was measured at the school level as it was not completed on most documentation forms.

Table 1. Baseline Characteristics of Schools in the Pima County Stock Inhaler for Schools Program That Reported a Stock Inhaler Event, 2017–2018.

School characteristics	Total N = 152
School staff experience, *n* (%)	
UAP[a]	22 (14.5)
Licensed nurse (RN, MSN or DNP)	16 (10.5)
Nurse-supervised	114 (75.0)
Organizational type, *n* (%)	
Charter/Private/Parochial	11 (7.9)
Public	140 (92.1)
Grades served[b], *n* (%)	
Elementary (Kinder-6th)	82 (54.0)
Middle (5th – 8th)	22 (14.5)
High (9th – 12th)	22 (14.5)
Multi-grade (K – 12th)	26 (17.11)
Student enrollment, median (IQR)	514 (350, 725)
NSLP[a,c], mean % (*SD*)	60.6 (24.7)
Protocol compliance score, median % (IQR)	0.0 (0.0, 46.8)

[a]Abbreviations: RN = Registered Nurse; MSN = Masters of Nursing Science; DNP = Doctor or Nursing Practice; UAP = Unlicensed Assistive Personnel; IQR = Interquartile range; NSLP = National School Lunch Program; SD = Standard deviation.
[b]Percentages may not add up to 100% as a result of rounding.
[c]Missing data: NSLP = 9.2% (210/229).

Covariates

We controlled for demographic variables at the school level including school organizational type (public or charter/private/parochial schools), grades served (elementary, middle, high and multi-grade) and school size (total number of students) in the model.

Statistical Analysis

Table 1 shows the demographic characteristics of schools that participated in the Pima County Stock Inhaler for Schools Program. One-way ANOVAs were conducted to examine baseline differences of stock inhaler events reported by schools (Table 2). Once stock inhaler events were dichotomized by protocol compliance (compliant versus non-compliant), we examined all stock inhaler events by their compliance outcome. Pearson's Chi-squared tests (X^2) were conducted to examine differences across groups including school staff experience, school organizational type, grades served, student gender (male or female), known asthma status (yes or no), and disposition status (returned to class, sent home or EMS summoned) (Table 3). To examine the relationship between a school's protocol compliance score and school staff experience, we used a Cragg-Poisson hurdle regression (Table 4) (Loeys et al., 2012; Rose et al., 2006). This method allowed us to account for a zero-inflated distribution as most schools only reported

Table 2. Baseline Characteristics of Stock Inhaler Events Reported by Pima County Schools, 2017–2018.

Event characteristics	Total Events[b] *N (%)* = 999	No. Puffs Mean *(SD)*	*P*-value
School Staff Experience			
UAP	178 (17.8)	2.6 (1.0)	.17
Nurse	729 (72.9)	2.7 (1.2)	
Nurse-supervised	92 (9.2)	2.8 (1.2)	
Organizational, mean *(SD)*			
Public	959 (96.0)	2.7 (1.2)	**.00**
Charter/Private/Parochial	16 (1.6)	2.2 (0.6)	
Grades served			
Elementary (Kinder – 6th)	435 (43.5)	2.82 (1.3)	.06
Middle school (5th – 8th)	219 (21.9)	2.62 (1.0)	
High school (9th – 12th)	193 (19.3)	2.62 (1.2)	
Multi-grade (Kinder – 12th)	152 (15.2)	2.4 (0.9)	
Gender[a]			
Male	503 (50.3)	2.7 (1.2)	.99
Female	451 (45.1)	2.7 (1.2)	
Known asthma			
Yes	783 (78.3)	2.7 (1.2)	.05
No	118 (11.8)	2.8 (1.4)	
Disposition status[a]			
Returned to class	766 (76.6)	2.5 (1.0)	**.00**
Sent home	140 (14.0)	3.2 (1.4)	
EMS summoned	6 (6.0)	7 (5.1)	

[a]Missing data: Disposition status = 3.8% (999/1,038).
[b]Percentages may not add up to 100% as a result of rounding and/or missing data.
Bolded values means these are statistically significant.

Table 3. Characteristics of Stock Inhaler Events Reported by Schools Enrolled in the Stock Inhaler for Schools Program by Protocol Compliance, 2017–2018.

Characteristics	Total Events[b] *N (%)* = 999	Compliance Score Mean % *(SD)*	Compliant *n* = 276	Non-compliant *n* = 723	*P*-value
Administrator Experience, *N* %					
UAP[c]	178 (17.8)	27.4 (26.6)	26 (28.3)	66 (71.7)	.41
Nurse	729 (72.9)	23.3 (25.4)	42 (23.6)	136 (76.4)	
Nurse-supervised	92 (9.2)	27.2 (33.4)	208 (28.5)	521 (71.5)	
Organizational, *N* %					
Public	959 (96.0)	26.8 (31.6)	8 (2.9)	32 (4.4)	.27
Charter/Private/Parochial	16 (1.6)	19.5 (29.7)	268 (97.1)	691 (95.6)	
Grades served, *N* %[b]					
Elementary (Kinder – 6th)	435 (43.5)	31.8 (37.8)	144 (52.3)	291 (40.3)	**.009**
Middle school (5th – 8th)	219 (21.9)	24.0 (21.1)	50 (18.1)	169 (23.4)	
High school (9th – 12th)	193 (19.3)	22.0 (24.9)	47 (17.0)	146 (20.2)	
Multi-grade (Kinder – 12th)	152 (15.2)	21.2 (29.4)	35 (12.7)	117 (16.2)	
Gender[a], *N* %					
Male	503 (50.3)	25.3 (30.0)	140 (50.9)	363 (50.9)	.68
Female	451 (45.1)	29.1 (33.3)	131 (29.1)	320 (71.0)	
Known asthma, *N* %					
Yes	783 (78.3)	26.4 (31.9)	214 (77.5)	569 (78.7)	.50
No	118 (11.8)	28.0 (28.5)	38 (32.3)	80 (67.8)	
Disposition status, *N* %					
Returned to class	766 (76.6)	24.9 (31.0)	179 (64.9)	587 (81.2)	**<.000**
Sent home	140 (14.0)	37.2 (34.3)	67 (24.3)	73 (10.1)	
EMS summoned	6 (6.0)	49.5 (38.3)	5 (1.8)	1 (0.1)	

[a]Missing data: Known asthma = 9.8% (98/999); All other missing data <5%.
[b]Percentages may not add up to 100% as a result of rounding.
[c]Abbreviations: UAP = Unlicensed Assistive Personnel, SD = Standard deviation; IQR = Interquartile range; EMS = Emergency Medical System.
Bolded values means these are statistically significant.

Table 4. Cragg Poisson Hurdle Regression Results for Protocol Compliance Score among Participating Schools That Reported a Stock Inhaler Event, 2017–2018.

	Logistic Model (0 vs. >0)			Zero-truncated Cragg Poisson (>0)		
Variable	OR	95% CI	*P*-value	IRR	95% CI	*P*-value
School Staff Experience						
UAP*	1.00	—	—	1.00	—	—
Nurse	0.50	0.17, 1.47	.21	1.20	0.43, 3.32	.73
Nurse-supervised	0.49	0.21, 1.21	.12	0.97	0.44, 2.13	.93
Grades Served						
Elementary*	1.00	—	—	1.00	—	—
Middle School	0.39	0.21, 0.75	**.004**	1.54	0.83, 2.90	.17
High School	0.37	0.13, 1.11	.08	0.96	0.38, 2.42	.93
Multi-grade	0.77	0.41, 1.44	.42	0.93	0.51, 1.69	.81
Organizational Type						
Public*	1.00	—	—	1.00	—	—
Charter or Private/Parochial	1.08	0.34, 3.42	.89	0.70	0.24, 2.04	.52

*No. of students was included as a covariate in the model.

non-compliant events. We examined if school staff experience was predictive of the school's compliance score versus if school staff experience was predictive of the school's compliance score being 0% or >0%. We used an alpha level of .05 for all statistical tests. All statistical analyses were conducted in Stata version 16.1, College Station, Texas (Stata, 2020).

Results

One-hundred fifty-two charter/private/parochial and public schools reported a total of 999 stock inhaler events that included the number of puffs administered to the student. Ninety-six percent of all stock inhaler events reported by schools (999/1,038) were included in our analysis (Figure 1). Seventy-five percent (114/152) of schools had a nurse-supervised UAP who was trained and designated to administer the stock inhaler to a student. Ninety-two percent (140/152) of schools were public and the most common grades served were elementary (82/152). The median student enrollment was 514 students (Interquartile range (IQR) = 350, 725) and the median protocol compliance score among schools was 0.0 (IQR = 0.0, 46.8) (Table 1).

The median number of puffs administered for an event was 2 (IQR = 2, 4). Figure 2 illustrates the standardized protocol used for medication administration of the stock inhaler. Figure 3 illustrates the mean number of inhaler puffs administered by health staff experience level for all n = 999 events. Approximately 90.6% (776/999) events resulted in the student returning to their classroom or being sent home. There were no statistically significant differences in the mean number of inhaler puffs when compared across grades served, school staff experience level and student gender. However, statistically significant differences in the mean number of inhaler puffs were found when compared across school organizational type ($p = .00$), and disposition status ($p = .00$) (Table 2).

Of the n = 999 events, 28% (276/999) were compliant to the protocol and 72% (723/999) were non-compliant to the protocol. Seventy-nine percent (569/783) of events that included the number of puffs and the child's previously known asthma status occurred in children with previously known asthma. There were no statistically significant differences in protocol compliance when compared across gender and known asthma status; however, statistically significant differences were observed in the percentage of protocol compliant events when compared across grades served and disposition status ($X^2(3) = 11.7$, $p = .009$ and $X^2(3) = 44.9$, $p < .000$ respectively) (Table 3). Figure 4 illustrates the mean number of puffs for all non-compliant stock inhaler events (773/999) by school staff experience, school organizational type and grade-level served.

After controlling for school organizational type, grade-levels served and school size, school staff experience was not predictive of protocol compliance among schools who reported a stock inhaler event. The only characteristic that influenced protocol compliance was school organizational type where middle schools (grades 6^{th}–8^{th}) were 0.4 (95% CI 0.21–0.75) times less likely to ever report a non-compliant event as compared to elementary schools when controlling for other factors ($p = .004$) (Table 4).

Discussion

Medication administration is a common task completed by school personnel. These tasks include giving students rescue medication during a health emergency. In the absence of a full-time licensed nurse, schools rely heavily on UAPs to manage student health including respiratory emergencies. Our examination of medication errors

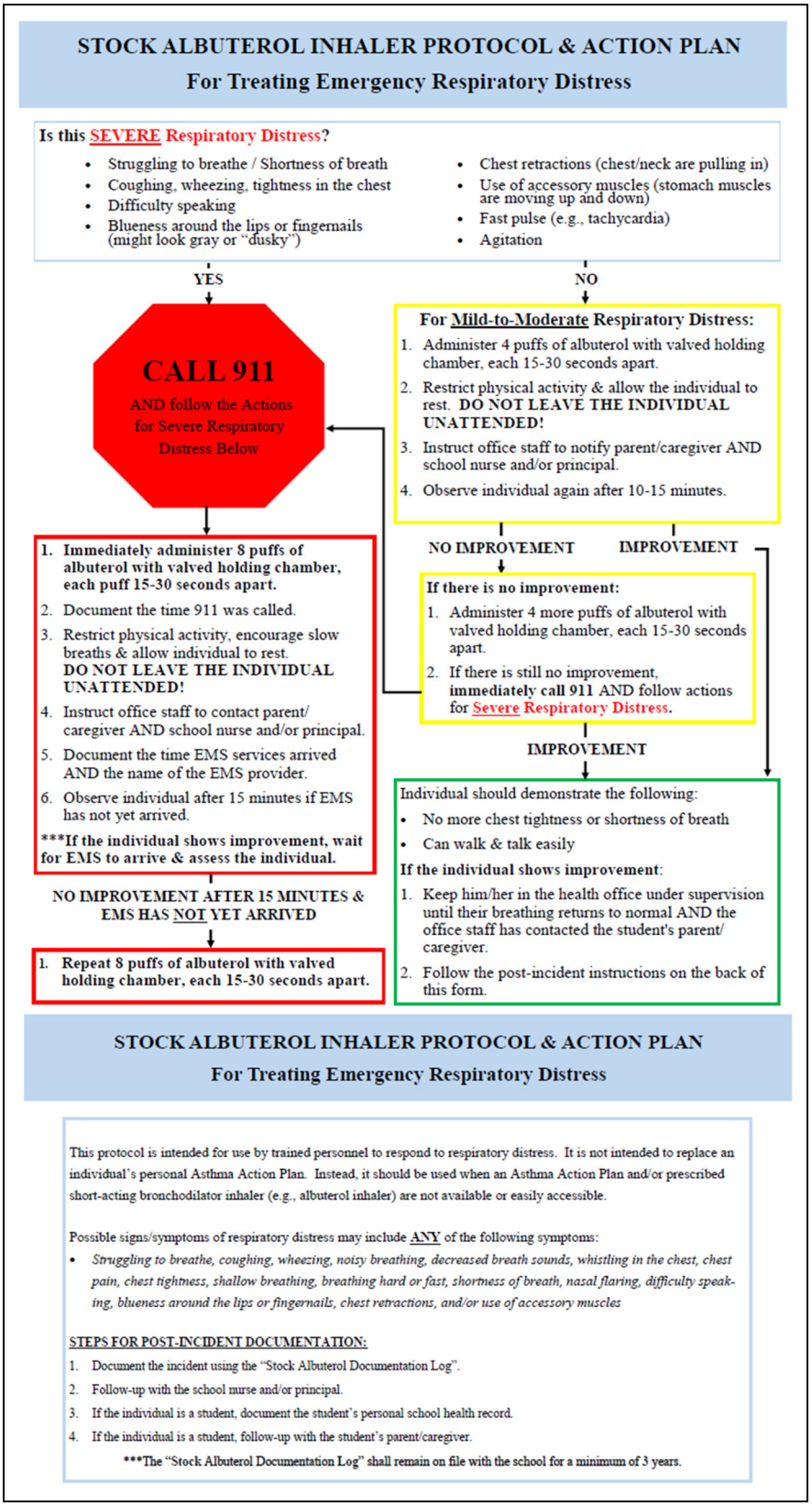

Figure 2. Standardized stock albuterol protocol and action plan for medication administration by trained personnel, 2018.

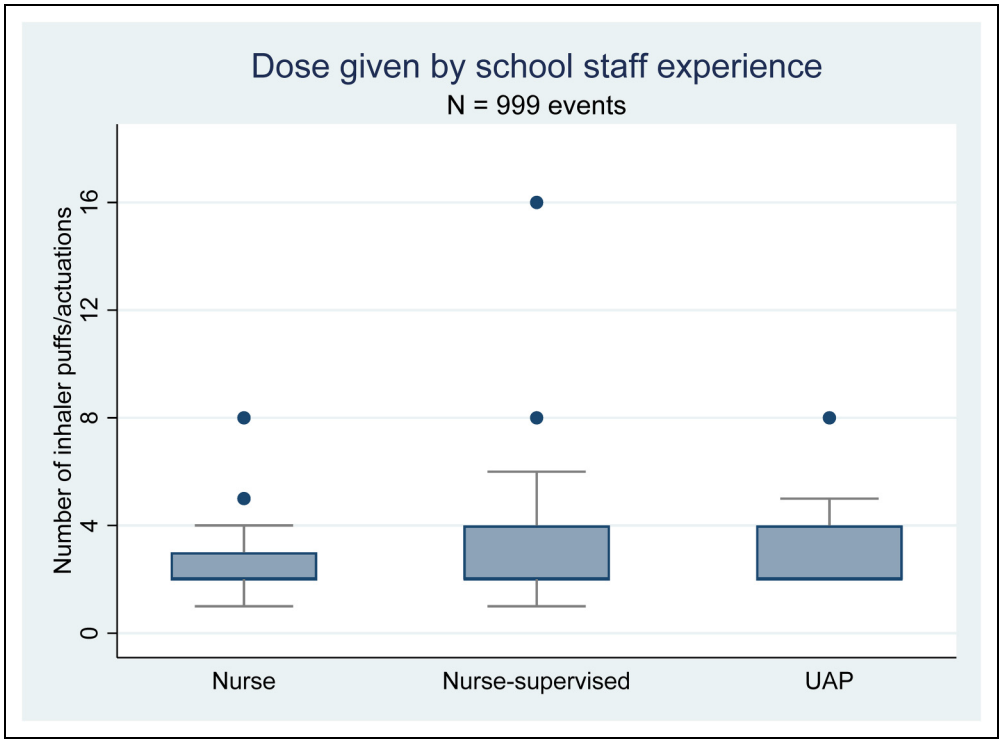

Figure 3. Number of puffs administer by school staff experience level, 2017–2018. Abbreviations: UAP = Unlicensed Assistive Personnel.

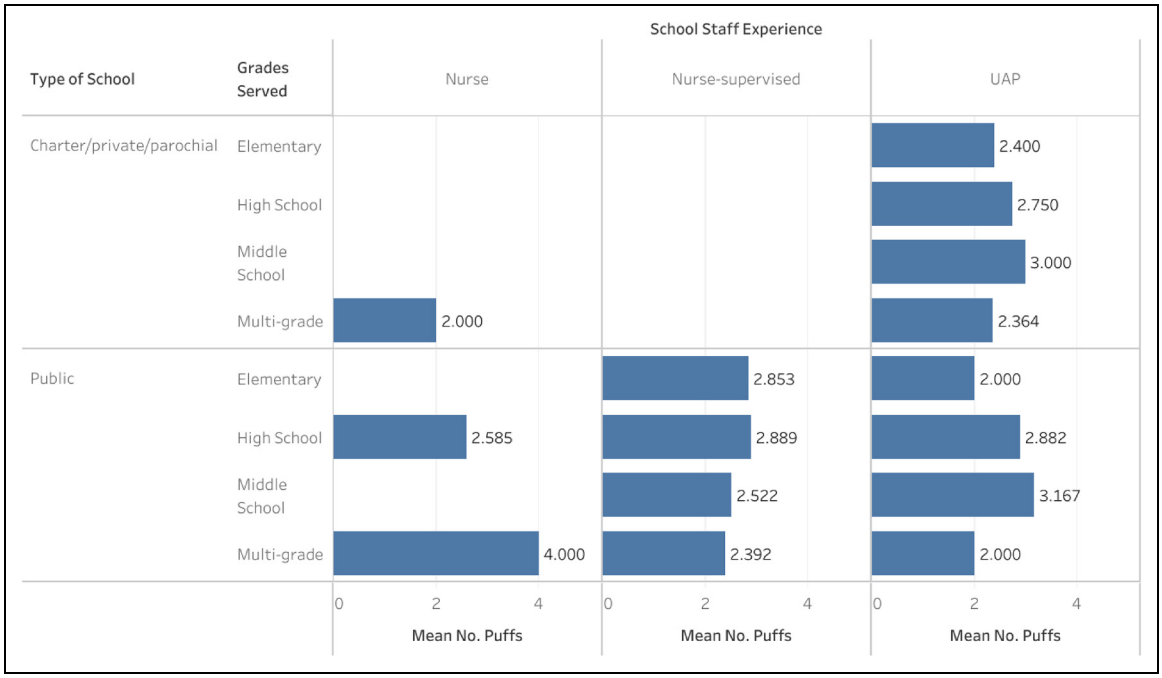

Figure 4. Off-protocol stock inhaler events (mean number of puffs) by school staff experience, school type and grades served, 2017–2018. Abbreviations: UAP = Unlicensed Assistive Personnel.

in the Pima County Stock Inhaler for Schools Program was the first study to examine compliance to a standardized protocol for stock albuterol administration among trained school staff in the U.S. Furthermore, we examined the association between protocol compliance and school staff experience as an important predictor of medication errors. Results indicated that protocol compliance was very low among all types of schools that participated in

the program regardless of the presence of a full-time licensed nurse or UAP at the school.

While we anticipated high compliance among trained school staff, 65.6% (657/999) of stock inhaler events led to the student receiving 2 puffs of medication instead of the required 4 puffs of medication. Given most events were not severe respiratory distress and 90.6% (766/999) events resulted in the child returning to class or being sent home with their guardian, the non-compliance to the protocol may have resulted from school staff using the traditional approach to administering albuterol sulfate as a dose range (e.g., 2–4 puffs) where the minimum dose prescribed is 2 inhaler puffs. When the standardized protocol was created, asthma experts acknowledged that a dose range left room for interpretation regarding exactly how much medication should be administered to a student and could be confusing for UAPs. Given the wide safety profile of albuterol and the preference for preventing life-threatening events, experts concluded that a fixed-dose protocol of 4 inhaler puffs for mild-to-moderate respiratory distress was most appropriate. Both licensed nurses and UAPs may be more reluctant to administer the higher dose prescribed on the standardized protocol based on their prior experiences with individual students AAPs. Early non-selective beta agonists had increased risks for death with high doses; thus, many experienced school nurses and UAPs may have been previously trained to not administer high doses of albuterol sulfate for asthma (Billington et al., 2017). However, current formulas of beta agonists are selective for the beta-2 receptor and have excellent safety profiles in children. The standardized protocol used in Pima County required that 4 inhaler puffs (i.e., 90 mcg/puff) of medication which is compatible with current asthma guidelines for children who present to the ED with an asthma exacerbation (Camargo et al., 2009). In the ED, children who present in respiratory distress receive 4–8 puffs every 20 min for 3 doses, then every 1–4 hours (Camargo et al., 2009). Our data also suggest that when children were most sick as measured by the severity of their symptoms and disposition status, both licensed and unlicensed staff were more likely to follow the standardized protocol. This may indicate more comfort with higher doses in situations of severe respiratory distress.

Second, the high rate of protocol non-compliance among schools enrolled in the program occurred among school staff trained through a web-based curriculum (Lowe et al., 2021) (Western Public Health Training Center, 2021). This eliminated any opportunity for trained staff to ask specific, clarifying questions regarding the standardized protocol and how it should be used. When presenting the findings on compliance to school staff, many reported confusions regarding when to use the student's individual AAP and when to use the standardized stock inhaler protocol given that many individual AAPs are often written with a range of puffs (i.e., 2–4 puffs) while the standardized protocol specified a fixed dose. Current training materials now specify when to use the child's individual AAP and when to use the standardize protocol. Current trainings also emphasize the importance of ensuring the correct dose of medication is administered and the fact that the risk for experiencing an adverse event is much greater when a child does not receive enough medication as compared to too much medication and how modern-day albuterol sulfate is extremely safe with a wide-therapeutic index (Gerald et al., 2014a, 2014b; National Heart, 2007).

Finally, these data indicated no association between school staff experience and compliance to the standardized protocol. Regardless of school staff experience, both licensed and unlicensed staff rarely reported compliance to the standardized protocol. When we examined differences among schools such as grade levels served, we found that school staff were more likely to follow the protocol in elementary schools than in schools that served older children. Younger children may be less inclined to speak up about the dose of albuterol they are directed to take from an adult such as the school nurse. These data further indicated that protocol compliance was more likely in elementary children but students in middle and high schools were less likely to take a fixed dose (4 puffs) of albuterol from school staff. During an adolescent's transition to emerging adulthood, they gain greater independence from their parents and obtain more say in their asthma management. This awareness and ability to advocate for their own asthma management may additionally explain the high rate of non-compliance to the standardized protocol. When presenting the protocol compliance findings back to school staff, they indicated that middle and high school students would often refuse the fixed dose of 4 puffs for mild symptoms. Therefore, subsequent trainings have discussed how to properly document when a student (or their legal guardian) refuses the prescribed dose when using the stock inhaler.

Limitations

There are several limitations that may influence protocol compliance among trained personnel who were designated to administer the stock inhaler. First, we acknowledge the methods used to determine protocol compliance by trained and designated health staff and their respective experience level (licensed nurse, nurse-supervised UAP, or unsupervised UAP) did not capture the full extent of compliance to the standardized protocol. Because stock inhaler events could only be examined for the total number of puffs documented on the event form, we could not differentiate between compliant and non-compliant events that were divisible by 4. We reviewed each event for the total number of puffs and the respective level of respiratory distress notated on the form and determined compliance based on these two factors. Unfortunately, this does not account for events where school staff documented the correct number of puffs

and level of respiratory distress, but the level of respiratory distress changed from mild-to-moderate to severe respiratory distress (e.g., 12 puffs) which subsequently changes the dosage of medication that should be administered. Because only 16.7% (1/6) EMS-summoned events were non-compliant, we believe the potential for this circumstance was limited in this sample. Additionally, staff experience was measured at the school level and not the individual event level. While staff position was a field on the documentation form, it was rarely completed. Therefore, we used school level data for the analysis. This means that in nurse-supervised schools we do not know for sure whether the medication administration was done by a nurse or a UAP. However, given that nurses were responsible for 5–15 schools, it is likely that the administration was done by a UAP.

Another limitation of these data were that the event documentation form did not include a unique identifier or personally identifying information in order to remain compliant to Health Insurance Portability and Accountability Act (HIPAA) and Federal Educational Rights and Protections Act (FERPA) regulations. Therefore, we could not examine if events were unique to the same child or multiple children. For example, if an adolescent child used the stock inhaler multiple times and also refused the fixed dose of 4 puffs, these data may not be representative of the staff member's compliance to the protocol, but rather a result of the same child refusing the appropriate dose of medication several times. Another limitation was the inability to examine if the stock inhaler was administered by the same staff person at each school. Given that schools experience frequent turnover and are provisioned with multiple, part-time personnel, our analysis did not examine medication errors among individual school personnel. Rather, these data simply capture patterns across schools during the first year of program implementation.

Implications for School Nursing Practice

As the nation-wide effort to pass stock albuterol legislation and program expansion continues, these results have important implications to the field of school nursing science. These findings uniquely inform licensed school nurses and stakeholder groups involved in the legislation and program implementation efforts regarding important components of medication administration tasks. The Pima County Stock Inhaler for Schools Program was the very first study to examine the use of a standardized protocol for stock albuterol medication administration tasks among trained and designated unlicensed staff. Findings indicated very low protocol compliance among both licensed nurses and UAPs. While school staff were more likely to report compliance to the standardized protocol in younger children, there was no association between protocol compliance and school staff experience.

These findings indicate that both licensed school nurses and UAPs need training on stock inhaler protocols. The data reported here were from the first year of the program and both school nurses and unlicensed staff were new to the program. We are confident that over time school nurses will be able to provide the education and training for unlicensed school staff who administer medication; however, our data indicate the importance of extensive training for all new personnel whether licensed or unlicensed.

There are several interrelated factors (macro-, meso- and micro-level) that influence the principals of delegating medication administration tasks to UAPs. Shore et al. (2022) found good communication and relationships between the licensed delegator and unlicensed delegates was central to successful medication administration. Further, when policies, skills, training, and supervisory arrangements are aligned with medication administration tasks, school nurses are supported (Shore et al., 2022). H.B. 2208 provides licensed school nurses and UAPs with consistency and clarity surrounding stock albuterol medication administration tasks at the macro-level (i.e., state); however, at the micro-level (i.e., school), this legislation does not ensure good communication practices between the delegator and UAPs are maintained. Furthermore, not all UAPs have a licensed supervisor. To increase protocol compliance, nurse delegators should ensure all designated staff complete the annual training requirements and further facilitate a supportive and communicative environment. Licensed school nurses should consistently review stock albuterol documentation logs that were completed by UAPs and encourage discussion when protocol deviations (i.e., medication errors) occur to ensure that staff understand medication errors and how to properly document such errors. Lastly, when students present to the health office and need to use the stock inhaler, follow-up between the school nurse/UAP and the child's guardian and medical home should subsequently occur. In schools who do not have a licensed nurse, there should be some oversight at the state level to ensure that medication errors are minimized. Further development of these best practices for stock inhalers in schools remains necessary to enhance safety, reduce liability concerns and improve guideline concordant care for children with asthma.

Acknowledgements

We thank all school personnel across the 229 charter, private/parochial and public schools in Pima County, Arizona who worked with our team to implement the Pima County Stock Inhaler for Schools Program. Their contributions to this program were essential to improving access to rescue medication for schoolchildren in Pima County. We further extend our gratitude for the gracious donations provided by Banner University Medical Center – Tucson Campus, the Mel and Enid Zuckerman Family Foundation and Thayer Medical Corporation.

Author's Note

Lynn B. Gerald is also affiliated with Mel and Enid Zuckerman College of Public Health, Department of Health Promotion Sciences, University of Arizona, Tucson, AZ, USA.

Declaration of Conflicting Interests

The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: Dr. Lynn Gerald reports product donation from Thayer Medical Corporation, Tucson, Arizona.

Ethical Approval of Study

The study was approved and monitored by the University of Arizona Institutional Review Board (IRB) in Tucson, Arizona (approval 1804445166).

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ORCID iD

Ashley A. Lowe https://orcid.org/0000-0001-6252-0368

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Author Biographies

Ashley A. Lowe, PhD, MSPH, is a post-doctoral associate at the University of Arizona Asthma & Airway Disease Research Center.

Joe K. Gerald, MD, PhD, is an associate professor at the Department of Community, Environment, & Policy, Mel and Enid Zuckerman College of Public Health, University of Arizona, Tucson, AZ, USA.

Conrad Clemens, MD, MPH, is the senior associate dean of Graduate Medical Education and professor of Pediatrics at the College of Medicine, University of Arizona, Tucson, Arizona, USA.

Lynn B. Gerald, PhD, MSPH, is a distinguished outreach professor at the Department of Health Promotion Sciences Mel and Enid Zuckerman College of Public Health and a Research Scientist at the Asthma & Airway Disease Research Center, University of Arizona Health Sciences, Tucson, Arizona, USA.

senate written support.pdf
Uploaded by: Anne Goldsborough
Position: FWA

In support of House Bill 266 (HB266), Public and Nonpublic school – bronchodilator and epinephrine availability and use – policies.

To members of the Education, Energy and the Environment Committee of the Maryland Senate:

I write to you in **support of HB266**, which I believe should be passed with amendments.

I am the primary pediatric asthma nurse at Johns Hopkins Hospital, where I work in the Division of Pediatric Pulmonology. In the past, I was a research nurse (also at Johns Hopkins) and coordinated an NIH-funded randomized clinical trial for Baltimore children with atopic asthma (allergies and asthma together). I have a bachelor's degree in biology from Davidson College in Davidson, North Carolina; a second bachelor's degree in nursing from Johns Hopkins; and a master's degree in Palliative Care from the University of Maryland School of Pharmacy. I'm currently getting a second master's degree, a master's in nursing, from Drexel University in Philadelphia, Pennsylvania. I live and work in Baltimore City and have school-age children of my own with atopic asthma and food allergies. I am well-versed in epinephrine and albuterol guidelines both on a professional level and on a personal level.

National and international asthma guidelines recommend **albuterol as first-line treatment**, not epinephrine IM. If a child is in respiratory distress, with or without a previous asthma diagnosis, school nurses should have access to albuterol. Epinephrine IM is not an appropriate alternative to albuterol when students experience difficulty breathing or shortness of breath. Children with respiratory distress, whether or not they are known to have a diagnosis of asthma, should be able to receive this safe, life-saving medication in school during emergencies.

The original version of HB266 makes good sense. At least 17 other states have taken similar measures, allowing rescue medications to be stocked in schools and administered for breathing emergencies. Unfortunately, the bill was amended and that severely limits its impact and efficacy. Please **further amend the bill to allow for administration of stock albuterol to children experiencing breathing emergencies, like cough, wheeze or shortness of breath, whether or not they have official documentation on file of an asthma diagnosis**. Asthma attacks can be life threatening. Quick access to safe and life-saving medication, like albuterol, is critical.

Thank you for your time and attention to this matter. I strongly believe that the passage of this bill is in the best interest of students in Maryland. Ensuring passage of HB226 will help save lives.

Please do not hesitate to contact me if you have questions or concerns about this letter. My email address is apowell3@jhmi.edu (and below).

Thank you,
Anne Powell Goldsborough BS BSN MS RN
Clinical Nurse and Discharge Coordinator
Pediatric Pulmonology
Johns Hopkins Hospital

AAN Testimony_MD Hearing on HB266 School Stock Alb
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Position: FWA

10203 Eaton Place, Suite 100, Fairfax, VA 22030 • 800.878.4403 • AllergyAsthmaNetwork.org

Testimony
Senate Committee on Education, Energy and the Environment
on
Public and Nonpublic Schools - Bronchodilator Availability and Use - Policy (HB266)
Maryland General Assembly
March 22, 2023

Allergy & Asthma Network ("Network"), the leading national nonprofit dedicated to ending needless death and suffering due to asthma, allergies and related conditions, supports HB266 *Public and Nonpublic Schools – Bronchodilator Availability and Use* with an amendment. Our suggested amendment for the bill includes having emergency stock albuterol inhalers for ALL students (diagnosed and undiagnosed) experiencing systems of respiratory distress. This ensures any student can be helped who either does not have their own medication available or experiences respiratory distress for the first time.

In 2021, Allergy & Asthma Network joined with the American Thoracic Society, American Lung Association and the National Association of School Nurses and developed an official policy statement, *Ensuring Access to Albuterol in Schools: From Policy to Implementation* that provides policy recommendations and outlines steps for passing and implementing stock albuterol laws in states. While Allergy & Asthma Network agrees with the overall intent of HB266, we are concerned that the version being considered in this Senate Committee limits access to quick-relief medication by imposing restrictions that are not aligned with national best practice recommendations.

Respiratory distress can strike at any time, bringing difficulty breathing, coughing, wheezing, and chest tightness. These episodes cause anxiety, interfere with daily activities, may require Emergency Medical Services or hospitalization, and can be fatal. Quick-relief medication (albuterol) is safe, effective, inexpensive, and may rapidly bring relief.

With more than 26 million Americans living with asthma, including six million children, asthma remains one of the most serious chronic diseases. Asthma is the number one reason that children and youth are absent from school. Approximately 4,145 Americans die each year from asthma and this chronic condition costs the U.S. healthcare system $80 billion annually in direct healthcare expenditures (emergency department visits and hospitalizations) and indirect costs from lost productivity (missed school days and work days).

When the *Asthmatic Schoolchildren's Treatment and Health Management Act* was signed into law in 2004, it led to legislation in all 50 states ensuring schoolchildren with asthma had the right to self-carry and administer their quick-relief bronchodilator inhaler at school. There is a movement in states across the country to pass laws or guidelines that standardize asthma management plans in schools and permit schools to stock emergency supplies of albuterol inhalers with a prescription and administer to a student believed to be in respiratory distress. Currently 17 states (Arizona, Arkansas, Georgia, Illinois, Indiana, Iowa, Kentucky, Missouri, Nebraska, New Hampshire, New Mexico, New York, Ohio, Oklahoma, Texas, Utah, and Virginia) have laws or guidelines in place and legislation is pending in Hawaii.

Thank you for your consideration of Allergy & Asthma Network's comment and proposed amendment. We are hopeful Maryland continues the great work to support the health and academic success for ALL students.

stock albuterol ATS Document.pdf
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Position: FWA

AMERICAN THORACIC SOCIETY DOCUMENTS

Ensuring Access to Albuterol in Schools: From Policy to Implementation

An Official ATS/AANMA/ALA/NASN Policy Statement

Anna Volerman, Ashley A. Lowe, Andrea A. Pappalardo, Charmayne M. C. Anderson, Kathryn V. Blake, Tyra Bryant-Stephens, Thomas Carr, Heather Carter, Lisa Cicutto, Joe K. Gerald, Tina Miller, Nuala S. Moore, Hanna Phan, S. Christy Sadreameli, Andrea Tanner, Tonya A. Winders, and Lynn B. Gerald; on behalf of the American Thoracic Society Assembly on Behavioral Science and Health Services Research

This official policy statement was approved by the American Thoracic Society and Allergy and Asthma Network May 2021 and by the American Lung Association and National Association of School Nurses June 2021

Abstract

Rationale: For children with asthma, access to quick-relief medications is critical to minimizing morbidity and mortality. An innovative and practical approach to ensure access at school is to maintain a supply of stock albuterol that can be used by any student who experiences respiratory distress. To make this possible, state laws allowing for stock albuterol are needed to improve medication access.

Objectives: To provide policy recommendations and outline steps for passing and implementing stock albuterol laws.

Methods: We assembled a diverse stakeholder group and reviewed guidelines, literature, statutes, regulations, and implementation documents related to school-based medication access. Stakeholders were divided into two groups—legislation and implementation—on the basis of expertise. Each group met virtually to review documents and draft recommendations. Recommendations were compiled and revised in iterative remote meetings with all stakeholders.

Main Results: We offer several recommendations for crafting state legislation and facilitating program implementation. *1*) Create a coalition of stakeholders to champion legislation and implement stock albuterol programs. The coalition should include school administrators, school nurses and health personnel, parents, or caregivers of children with asthma, pediatric primary care and subspecialty providers (e.g., pulmonologists/allergists), pharmacists, health department staff, and local/regional/national advocacy organizations. *2*) Legislative components critical for effective implementation of stock albuterol programs include specifying that medication can be administered in good faith to any child in respiratory distress, establishing training requirements for school staff, providing immunity from civil liability for staff and prescribers, ensuring pharmacy laws allow prescriptions to be dispensed to schools, and suggesting inhalers with valved holding chambers/spacers for administration. *3*) Select an experienced and committed legislator to sponsor legislation and guide revisions as needed during passage and implementation. This person should be from the majority party and serve on the legislature's health or education committee. *4*) Develop plans to disseminate legislation and regulations/policies to affected groups, including school administrators, school nurses, pharmacists, emergency responders, and primary/subspecialty clinicians. Periodically evaluate implementation effectiveness and need for adjustments.

Conclusions: Stock albuterol in schools is a safe, practical, and potentially life-saving option for children with asthma, whether asthma is diagnosed or undiagnosed, who lack access to their personal quick-relief medication. Legislation is imperative for aiding in the adoption and implementation of school stock albuterol policies, and key policy inclusions can lay the groundwork for success. Future work should focus on passing legislation in all states, implementing policy in schools, and evaluating the impact of such programs on academic and health outcomes.

Keywords: asthma; children; health policy; inhaler; medication

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ORCID IDs: 0000-0002-7406-1098 (A.V.), 0000-0001-6252-0368 (A.A.L.), 0000-0002-4901-3465 (A.A.P.), 0000-0002-7279-0051 (L.B.G.).

Correspondence and requests for reprints should be addressed to Anna Volerman, M.D., Departments of Medicine and Pediatrics, University of Chicago, 5841 South Maryland Ave, MC 2007, Chicago, IL 60637. E-mail: avolerman@uchicago.edu.

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Introduction

Asthma affects approximately 10% of school-aged children in the United States, with higher prevalence and morbidity being demonstrated among low-income and minority populations (1–4). Sixty percent of children experience an asthma exacerbation, leading to approximately 767,000 emergency department visits and 74,000 hospitalizations annually (1, 5). Compared with their peers, children with asthma miss more school days per year (6, 7), totaling 13.8 million absences annually (8).

School-aged children spend a majority of their day in school; therefore, evidence-based asthma care practices are important for guiding school asthma management (9–13). Guidelines recommend that all children with asthma have access to quick-relief medications. All 50 states and the District of Columbia permit children with asthma to self-carry and self-administer personal inhalers (14). However, access to emergency albuterol remains low, with studies suggesting that as few as 14% of children have quick-relief medication at school (15–17). Common barriers include difficulty accessing health care (18), challenges with obtaining asthma action plans and inhalers/valved holding chambers (VHCs) (15, 19–23), and the potential for lost or expired inhalers.

Because children with asthma may experience a sudden, unexpected, and life-threatening exacerbation at any time, access to albuterol can be life-saving. Although they are rare, there were a total of 192 asthma-related deaths among children in 2018 (1), and 38 asthma-related deaths occurred at school between 1990 and 2003 (24). Delays in albuterol administration were reported in one-third of these deaths, and a third of the delays were attributed to a lack of medication. Asthma-related deaths have also occurred among athletes on school sports teams, and up to 10% of high school athletes have undiagnosed asthma (25).

An innovative and practical mechanism exists to ensure that students with asthma have access to potentially life-saving quick-relief medication while at school. Schools, with the assistance of a medical consultant and appropriate training for staff (26), can make albuterol available to all students with, for example, a single albuterol inhaler that is used with a different VHC/spacer for each child. Although 88% of schools are willing to store students' personal inhalers (27), few schools stock quick-relief medicine. A stock albuterol program ensures that a school has albuterol that can be used by any child experiencing respiratory distress. Expanding schools' capacity to acquire and maintain stock albuterol may help maintain the safety of students with asthma when personal quick-relief medicines are unavailable, expired, or empty. Furthermore, when children lack a documented asthma diagnosis in school, access to quick-relief medicine may provide ready access to treatment for a student who has an established diagnosis but no documentation at school or a student with a first-time asthma episode.

Over the past decade, stock albuterol policies have increased across the United States, with at least 15 states passing such legislation and a few states with experience implementing such policies. One state reports that 84% of respiratory events treated with a stock inhaler resulted in the child returning to class (28, 29). Because these policies are relatively new, further data are not available on the impact of stock albuterol. Notably, the evidence shows that quick-relief medications are effective for respiratory distress and safe for children, thus demonstrating that access at school is important for improving outcomes. In light of students' limited access to albuterol and the positive outcomes with stock albuterol, the goal of this statement is to advocate for stock albuterol legislation in all states and for wide-scale implementation to improve access to emergency asthma medications in schools.

Methods

We assembled a diverse group of stakeholders, including clinicians, pharmacists, researchers, policy experts, school nurses, and parents. Stakeholders included representatives from major organizations, including the American Thoracic Society, Allergy and Asthma Network, American Lung Association, and National Association of School Nurses. Conflicts of interest were collected from each stakeholder and vetted at the start of the project. Updates were requested throughout the project. No stakeholders had conflicts that required management during meetings and discussions. We applied our collective experience and expertise to develop this policy statement on stock albuterol legislation and implementation.

We first identified and reviewed guidelines, literature, statutes, and implementation documents related to school-based medication access. A literature search was conducted in the PubMed and Education Resources Information Center databases to identify existing literature about stock albuterol. Specific search terms included "albuterol," "medicine," "inhaler," "nebulizer," "stock," "school," "class," "child," and "student." We examined relevant abstracts and conference programs to supplement this search. Our search focused specifically on the United States, given the differences among countries in terms of pharmaceutical and school-related regulation and legislation as well as the processes for passing and implementing policy. Because research in this area is limited, most information came from state statutes and

implementation guides. Consideration was given to specific components of current policies, including the school type, medication indications, standing medical authority, training requirements, good faith use, and medical devices.

Stakeholders were divided into two groups—legislation and implementation—on the basis of expertise. Each group met two to three times virtually to review documents and draft recommendations. These recommendations were compiled and revised in iterative remote meetings with all stakeholders. On the basis of multiple data sources and expert opinions, we developed policy recommendations and outlined steps for passing and implementing stock albuterol laws.

Steps to Pass Stock Albuterol Legislation

Medical licensing, pharmaceutical drugs, and education are largely regulated at the state level; thus, legislation for programs like stock albuterol must occur within individual states. It is crucial to understand legislative processes and necessary steps to pass stock albuterol legislation within a state (Figure 1) (30, 31). The overall process is similar across states, and we review the basic steps below.

Build Stakeholder Coalition

The first step in passing stock albuterol legislation is to form a coalition of stakeholders (Table 1). Key stakeholders include healthcare professionals, school nurses, parents/guardians of children with asthma, pharmacy organizations, managed care organizations, advocacy groups, and legal groups, as well as health and education departments. Several key questions and pitfalls should be considered when building a stakeholder coalition (Table 2).

Create Issue Brief and Factsheets

Next, an issue brief and factsheets should be developed and disseminated to summarize key asthma facts and policy considerations to help advocates garner support. These documents provide a framework and consistent message for discussions with legislators and testimony.

An issue brief is a two- to four-page summary of an identified problem with recommendations for solutions (*see* online supplement) (32).In the case of stock albuterol, this brief provides a concise summary of asthma prevalence, morbidity, and mortality; highlights state asthma-related policy; and describes similar legislation in other states. The brief also emphasizes how existing asthma state policies have affected change. If seeking an amendment to existing legislation (e.g., stock epinephrine for anaphylaxis), it is helpful to include any positive outcomes from that legislation.

A factsheet is a one-page document with a bulleted summary of facts relevant to the issue. This document provides a set of talking points for testimony and discussion; it can also be shared with legislators. Several organizations (e.g., the American Public Health Association) provide examples of pertinent factsheets for health-related policy issues, and states with existing stock albuterol policies have created topic relevant factsheets (*see* online supplement) (33).

Find a Legislative Sponsor

Concurrently, a legislator must be identified to sponsor the legislation. The sponsor's background, experience, committee assignments, and political party can be critical to success. An ideal sponsor would have experience with education or public health issues (e.g., asthma, health disparities, health policy, school health), have sufficient time to devote to the issue, be a member of the majority party in the legislature (or House if control is split), and ideally be a member of a committee in which the bill could be introduced (e.g., the Health, Education, or Appropriations Committees). Lobbyists or coalition partners who advocate in the legislature have relationships with legislators and their staff and are important to include.

The first step is to connect with key staff of the legislator or committee through direct outreach via phone/e-mail or working through existing relationships of partners. Once a legislator agrees to sponsor stock albuterol legislation, it is critical to remain engaged to advance the process. Although staffing structures differ in every state's legislature, staff must be treated with the same level of respect as the sponsor, given that staff remain in that role longer than some lawmakers are in office and are key to moving legislation forward. Regularly scheduled meetings and/or calls can be helpful, and frequency may depend on the legislative session length. Meetings may be held during an interim period between legislative sessions (often summer and/or fall) when preparatory writing occurs for the next session. The sponsor and staff can help advocates understand preliminary processes, which may include study sessions (to consider long-term issues), informational hearings (to introduce potential legislative topics), or sunrise processes (to outline the costs and benefits of proposed legislation) (34).

Address Opposition

To secure bill passage, it is essential to understand the arguments opposing part or all of the bill and effectively respond. Because opposition may emerge at various times, the understanding of opposition arguments and the development of responses need to be undertaken iteratively, starting as early as sponsor identification, as they may impact sponsorship decisions. The sponsor will need this information to effectively advocate for the bill. Policy staff on health and education committees in both legislative chambers (the House and Senate), advocacy organizations with legislative experience, and provider organizations can provide context about opposition and ways to overcome issues. Federal legislation can also support efforts to pass state legislation (*see* online supplement), and national stakeholders (e.g., healthcare and education associations) can influence state policy-makers. For stock albuterol, opposition may be raised regarding prescriptions for stock albuterol, persons who can receive stock albuterol (e.g., students vs. nonstudents, asthma diagnosis vs. no diagnosis), training personnel to deliver stock albuterol, and the safety of albuterol.

Draft Legislation

Before the legislative session, stakeholder meetings should occur to discuss key components to include in the legislation. Stakeholder organizations may assist with drafting or choose to use existing model policies (*see* online supplement) (32, 33). All 50 states have school stock epinephrine laws to treat anaphylaxis, and one strategy is to amend those laws to include stock albuterol. It is important to review how stock epinephrine laws have functioned and how stock albuterol may mirror or differ from epinephrine.

Key implementation principles should be considered early and incorporated into legislation to avoid future pitfalls. For example, consider the implementation burden on school nurses, such as staff training requirements for recognizing symptoms and administering medicine. School nurses champion the health and safety of students, and it is part of their duties to instruct in care for emergencies. Depending on state nurse practice acts, nursing delegation may be key, thus making direct training by the school nurse essential. Although we advocate for full-

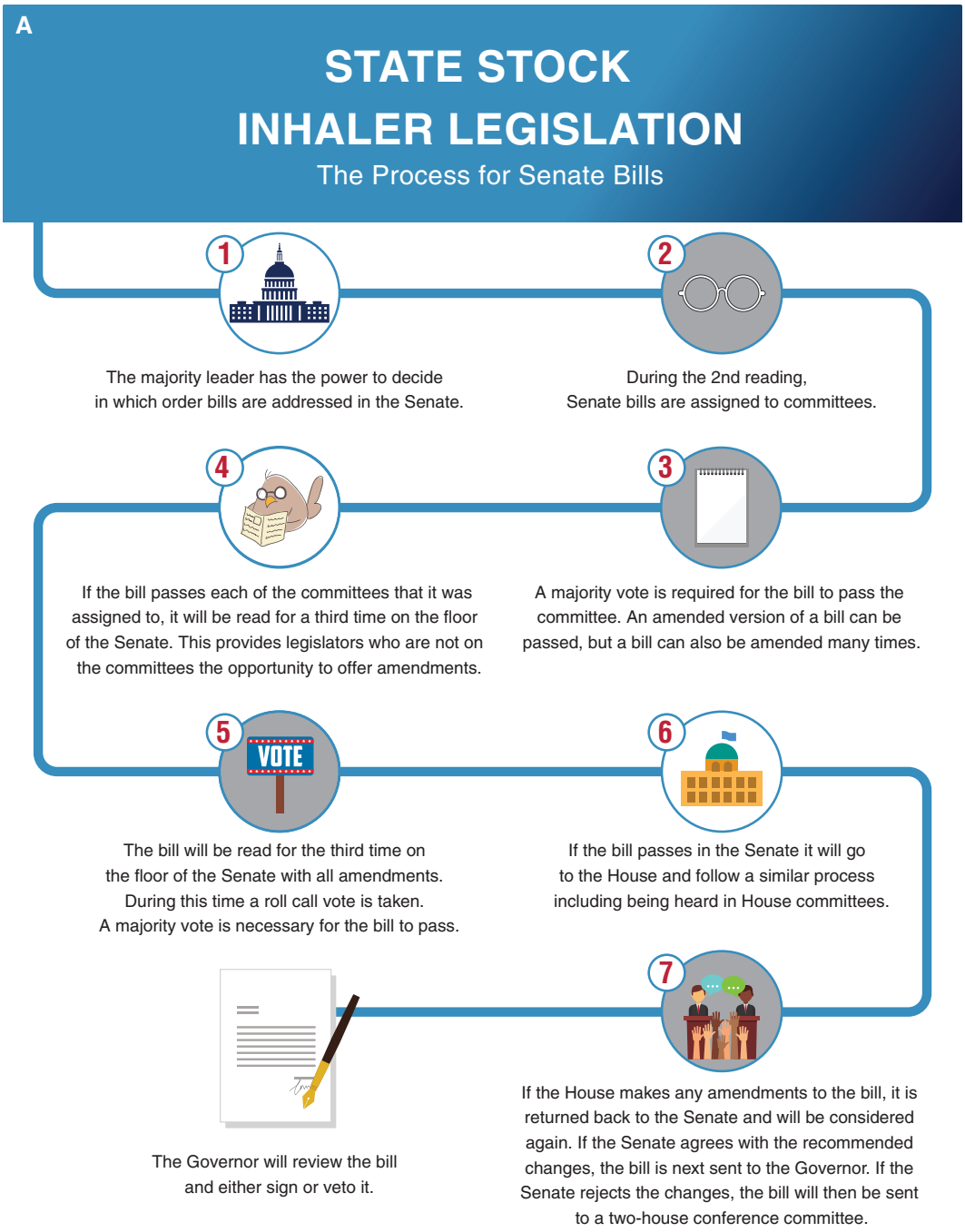

Figure 1. Stock albuterol legislative steps. (*A*) The process for Senate bills. (*B*) The process for House bills. The process of passing a bill may differ across states and within the legislative chambers of a particular state (House and Senate). It is important to understand the process within your own state.

time nurses in every school, it is important to recognize that many schools do not have nurses or that nurses have limited time in the school building. Thus, legislation can incorporate online platforms or alternative mechanisms for training by school nurses, asthma educators, or other trained individuals; alternatively, this language can be included in committee reports or regulations developed after bill passage.

On the basis of states' experiences to date, we created a list of essential and recommended components for stock albuterol legislation (Table 3). For example, schools should be allowed to use albuterol in respiratory emergencies, even when a child lacks a documented asthma diagnosis. Albuterol is a safe drug to administer to any child in respiratory distress (35–38). To obtain stock medication for schools/districts, pharmacy dispensing law(s) should also be addressed.

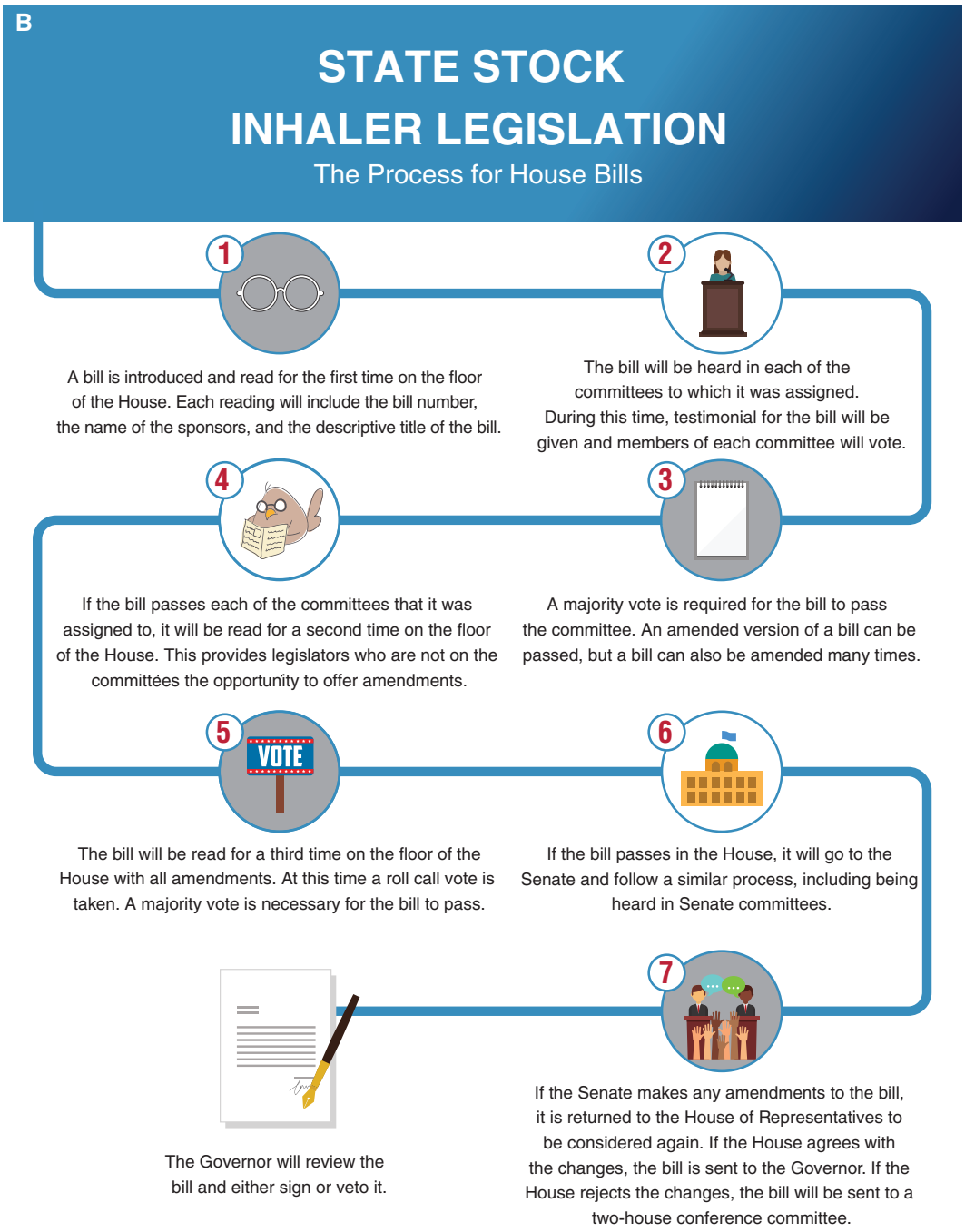

Figure 1. (*Continued*).

Legislation drafts should be shared with stakeholders to negotiate compromises to any key concerns. It also may be important to reach out to the state governor's office while drafting legislation, as this office may provide feedback to incorporate into the bill. Engaging these groups early to discuss concerns helps move the bill smoothly toward passage and minimize the potential of a delay or veto.

Before bill introduction, costs incurred by the state must be estimated through a fiscal note produced by the legislature. Most state legislation has allowed, but not required, schools to stock albuterol. The reason is that funding for such policies is difficult to obtain, and as such, legislation is less likely to be passed if funding is required. Many stakeholders are not supportive of unfunded school mandates because it puts undue burden on already underfunded schools.

Introduce Legislation

Each state has different processes for introducing and passing legislation. The state legislature's website provides legislative session details, including the state's processes and timelines for introducing legislation. Formal

Table 1. Key Stakeholders and Their Role in Stock Albuterol Legislation and Implementation

Stakeholder Group	Examples	Expertise/Role in Legislation	Expertise/Role in Implementation
Nonprofit health organizations	• Allergy and Asthma Foundation of America • Allergy and Asthma Network • American Academy of Pediatrics • American Lung Association • American Thoracic Society • National Association of School Nurses • Asthma coalitions • National professional medical, nursing, and pharmacy organizations • State medical societies	• Experience with legislative process • State-specific knowledge • Relationships with specific legislators and stakeholders	• Experience with implementation • Knowledge about legislation passed and relevant issues • Develop and deliver training • Provide medical expertise, specifically on asthma
School nursing	• National Association of School Nurses • National, state, and local organization representatives • State school nurse consultants • School nursing leaders from districts	• Understand how nurses are hired and function in schools • Provide expert testimony • Provide asthma and respiratory disease expertise	• Provide medical expertise, specifically on asthma • Share knowledge about legislation and relevant issues • Disseminate policy to school administrators/staff and children/families • Develop and deliver training • Implement in schools
Healthcare professionals	• Primary care pediatricians • Asthma subspecialists (e.g., pulmonologists, allergists) • Certified asthma educators • Academic researchers	• Provide information on asthma and treating respiratory distress • Provide information on safety of albuterol • Discuss training of lay personnel	• Write standing orders and prescriptions • Discuss policy with patients and families
Health and education departments	• State and/or county health department • State superintendent • Board of Education • School/district administration	• Ensure implementation considered in legislative process	• Disseminate policy broadly • Help support funding of program • Develop and deliver training
School staff and administrators	• Principals/administrators • Teachers • Coaches, security guards, and office clerks • Unions for teachers and staff	• Share insights about asthma care in school	• Understand and champion policy • Participate in training
Healthcare organizations	• Managed care organizations • State Medicaid Agency • Private insurance companies • Hospitals and emergency departments	• Early awareness of legislation can facilitate implementation	• Provide avenue for potential funding
Pharmacy	• State Board of Pharmacy • Pediatric Pharmacy Association and other state and national pharmacy organizations • Durable medical supply vendors	• State Board of Pharmacy should be part of legislation related to dispensing of medication to schools • National and state pharmacy organizations can support stock albuterol programs	• Provide medications and devices to schools • Communicate about drug recalls • Help communicate with pharmaceutical companies
Legal expertise	• Legislative counsel • Trial Lawyers Association	• Consultation on appropriate legal language for drafting policy • Children health policy expertise	• Support safe adoption of policy within school
Children with asthma and parents/guardians	• Elementary, middle, and high school students • Parents/guardians/caregivers	• Provide personal stories and perspectives	• Raise awareness and champion policy • Share stories of impact

Listing does not indicate endorsement of document unless noted otherwise in statement.

introduction typically occurs when the legislative session starts, although some states start work on bills earlier and have deadlines after which legislation can no longer be introduced.

Legislation can be introduced in one or both houses of the legislature. The strategy around advancing legislation, including whether to introduce in one or both houses, is typically decided by the coalition supporting the legislation and the legislative sponsor. States have 1- or 2-year sessions. Typically, if a bill is not acted on in a state within the first year of a 2-year session, it will carry over to the session's second year. Details of how a bill moves through the House and/or Senate are depicted in Figure 1.

Testify

It is important to identify key people to testify in support of the legislation and understand how testimony occurs. The speaker must register in advance so that they are called on during the bill's hearing. The statement should begin with the proper address and thank you to the bill sponsor. For example, an opening could be "Chair and senators, thank you for allowing me to testify on an issue that is of extreme importance for the safety of our school children." Testimony is usually limited to 1–2 minutes, prompting most individuals to prepare a script. Testimony should end with an "ask," such as, "Therefore, I would urge you to vote "yes" to Bill [number] allowing schools to stock albuterol medication for respiratory emergencies." After each testimony, legislators can ask questions.

Different stakeholders bring important expertise and experience for testimony (*see* online supplement). Clinicians can speak about asthma prevalence, symptom frequency, and safe treatment of respiratory episodes with albuterol. Common questions include "What happens if albuterol is given to children who do not have asthma?" and "What are side effects of albuterol?" We suggest that the testimony include several points: it should be noted that if the school calls 911, it is likely the child will receive albuterol from emergency responders; it should be noted that it is better for a child to be given albuterol as a potentially life-saving medication than for treatment to be withheld, which would increase the risk of poor outcomes; and it is also important to discuss the safety profile of albuterol across a range of doses (34). In addition, school nurses can discuss how difficult it is to obtain a child's asthma medications for school, care for children with respiratory distress in a nonhealthcare setting, and reach parent/guardians. They can discuss how availability of stock albuterol would allow treatment to begin while awaiting emergency assistance (39). Most school nurses have experienced caring for students during a respiratory emergency, and without albuterol, the only option is to call parents/guardians and/or 911. This treatment delay can be difficult when albuterol may allow a child to return to class or may lessen the severity of symptoms. Finally, a school-aged child with asthma or their parent/guardian can share a story of a respiratory episode without available albuterol.

Passage of Legislation

Proposed legislation is discussed and voted on in committee and then on the floor in each chamber. Revisions to the legislation may occur at each step. The timeline for voting in each chamber depends on the legislators who control the floor schedule. Once both chambers pass the legislation, it is acted on by the state governor, and this action includes signing it or vetoing it. If signed by the governor, the legislation is enacted as a law. If the legislation is vetoed, the state legislature can override the veto, usually with a supermajority vote (e.g., two-thirds of legislators).

Components for Implementation of Stock Albuterol

Once legislation is passed, regulations are developed by designated state agencies (e.g., the board of education, health department). Then, efforts must be directed to implementation. Schools should be prepared to complete several steps for successful implementation (Figure2) (40). Although processes may differ across schools/districts, it is critical to engage stakeholders in key components to successfully implement stock albuterol (Table 1). Importantly, it should be recognized that stock albuterol is one piece of asthma care within the school, which should include education for affected students, training for staff, access to medications, and more.

Policy Dissemination and Education

Stock albuterol policy must be broadly disseminated. State-level professional organizations and advocacy groups are useful dissemination avenues for healthcare professionals (e.g., prescribers, nurses, pharmacists). Local and state-level health departments, education agencies, or policy e-mail listservs can serve as additional channels to disseminate policy and provide sample wording for school/district-level policies. School/district-level administrators and medical directors/nurses should notify school personnel about the policy.

Families and students are essential to effectively implementing stock albuterol policy. Annual notification about the policy should be sent home to families. To minimize barriers to life-saving medication, the policy should not require parents/guardians to sign waivers allowing albuterol administration in an emergency. Ideally, the policy should specify that school staff can assume parent/guardian consent in the case of emergency medications. Communication should be provided about by whom, when, and how medication will be administered, maintained, and stored and also about how staff will be trained. Parents/guardians must know stock albuterol does not replace the need for children to have their own quick-relief medications. A parent/guardian champion may be helpful for garnering support within the school community.

Training of School Personnel

To effectively implement the policy, annual training is critical to ensuring requisite knowledge and skills of school personnel who are designated to administer stock albuterol for respiratory symptoms or a respiratory emergency. At each school, a minimum of two individuals should be trained per building, with consideration given to additional individuals on the basis of asthma prevalence and other school indicators (e.g., population, social needs) (41). It is preferable to train as many as feasible to ensure that at least one trained individual is present in school daily. Both licensed and unlicensed school personnel, including unlicensed assistive personnel, may be designated to administer stock albuterol. Training should be geared to both groups, regardless of experience, in alignment with state legislation.

Training content about stock albuterol for school staff should include *1*) signs and symptoms of respiratory distress; *2*) an overview of asthma medications that includes inhaler administration, technique, maintenance, and cleaning; and *3*) a protocol to manage respiratory episodes. Opportunities to teach back are particularly important to ensuring proper technique. Training should be delivered by individuals with requisite knowledge and expertise in asthma and stock

Table 2. Key Questions and Pitfalls in Building a Coalition of Stakeholders

Building Coalition	Key Questions and Inclusions	Pitfalls to Avoid
Be clear about goals of engaging diverse stakeholders.	• How does engaging diverse stakeholders fit into your goals? • What do you hope to achieve in short-term for legislation and long-term for implementation?	• Trying to engage people without clarity about goals • Tokenistic approach in which focus is "getting people to the table" without commitment to authentic partnership and learning
Invest in building relationships and trust.	• What types of relationships exist among different stakeholders? • What are ways to strengthen relationships and build trust? • The goal is to engage diverse stakeholders early on to help future implementation efforts with due understanding of distinct perspectives and roles of each participant or group represented.	• Narrow focus on "getting people to the table," rather than partnership building • Paternalistic approach that does not recognize strengths • Unwillingness to hear feedback that is not positive • Overlooking importance of relationship-building and focusing on tasks • Focusing prematurely on formal structure of relationships
Recognize and work with different agendas and interests.	• What are priorities of different stakeholders you wish to engage? • What are common interests? • Can involvement in coalition add value for each stakeholder's work or help them achieve goals? • Do agendas of dominant groups within coalition get in way?	• Assuming that coalition issues should be a priority for everyone or that people who do not engage are apathetic • Allowing agendas of one group or few groups to dominate coalition
Explore different strategies for engaging communities.	• What are best strategies and structures to reach goals for engaging different stakeholders? • Are there other strategies that might meet your needs? • How can momentum be maintained once legislation is passed but before implementation?	• Structuring coalition in a way that makes it difficult for groups with fewer resources to participate • Restricting engagement strategies to coalition building
Build inclusive coalition culture.	• Are there barriers to participation built into coalition's structure or how it conducts business? • What type of coalition culture would be most welcoming and inclusive to diverse groups?	• Making assumptions about how to be inclusive without talking to people you want to engage • Attachment to "right" way to do things, leaving no room for exploration
Acknowledge and address differences in power and resources.	• How do differences in power and resources impact coalition and partnerships between groups? • What are ways to navigate differences and share power? • How can different groups in coalition share resources and strengths in a way that will benefit everyone? • Are there ways to invest resources to build infrastructure and support participation of groups that have fewer resources? It is key to build infrastructure in the legislative process so that future implementation is successful.	• Ignoring differences in power and resources, and operating as if they do not exist • Undervaluing the strengths of groups that have fewer resources • Bringing people to the table without sharing power • Allowing any group or clique to dominate the coalition

albuterol policy. School nurses are key professionals who can provide and/or facilitate training on stock albuterol for school personnel. Partnerships with local organizations and/or coalitions (e.g., the American Lung Association, Allergy and Asthma Network) are also encouraged.

Content may be delivered synchronously or asynchronously with in-person or remote (e.g., web-based, video) methods. In-person workshops are ideal for school personnel with limited prior health experience or who prefer hands-on learning, especially for reviewing inhaler techniques for which immediate feedback is beneficial. In contrast, a

Table 3. Essential and Suggested Components of Stock Albuterol Legislation

Component	Explanation/Reasoning
Essential components	
Medication can be administered in good faith to any child in respiratory distress.	The bill should permit emergency use of stock albuterol for any student in respiratory distress, not only students known to have an asthma diagnosis. Reasoning: • Many students have undiagnosed asthma and may have their first asthma exacerbation at school. • Emergency administration of albuterol may be necessary and time sensitive; review of records to determine whether a student has asthma may delay care. • There are few causes of respiratory distress in children that would not respond to or would be harmed by administration of albuterol. • Albuterol is a safe medicine.
Establish training requirements for school staff.	The bill should outline details about how many staff should be trained and about how training should be conducted to ensure that enough staff have the necessary knowledge and skills to administer stock albuterol. • The recommendation is that a minimum of two individuals be trained per school building at a ratio of one individual for every 225 students. • Recommend permitting live or remote training that can be accessed by school staff at a convenient time at no cost.
Ensure immunity from civil liability for staff and prescribers.	The bill should provide: • Immunity for medical professionals who write the orders as well as pharmacists who dispense orders. • Immunity for school districts, school staff, or agents of the school who have the required training and administer the albuterol in good faith.
Ensure that pharmacy laws allow medication dispensing to schools.	In parallel with preparing legislation, review the state's current pharmacy dispensing laws and assess whether it is necessary to update pharmacy state board laws. Specifically, it is important that pharmacies are able to dispense medication to a school/district rather than to a specific individual.
Suggested components	
Allow schools to accept donations of money or product.	Donations can help with financing for the implementation of stock albuterol programs.
Use metered-dose inhalers with VHCs/spacers.	Metered-dose inhalers with VHCs/spacers for administration of quick-relief medication allows for the inhaler to be used for multiple individuals with less cleaning, easier storage/portability, and reduced aerosolization of particles.
Ensure authorization of parents or caregivers/school volunteers to administer albuterol.	Include parents or caregivers as well as school volunteers as authorized administrators of stock albuterol to ensure that they are indemnified from good faith use if they have appropriate training. • There are many situations in which parents or caregivers as well as school volunteers act as agents of the school, such as during after-school activities, field trips, and sports.
Ensure inclusion of nonpublic schools (e.g., private, tribal).	States often do not have significant oversight for activities in nonpublic (e.g., private, tribal) schools, as they are not state licensed. • Stakeholders should explore state-specific strategies with legislators to include nonpublic schools in legislation. • Even if a school does not fall under state licensing requirements, prescribing providers and dispensing pharmacists need to legally be able to provide stock albuterol for nonpublic schools.

Definition of abbreviation: VHC = valved holding chamber.

Stock Inhaler Program

Quick Reference Guide for Schools

1 Pre-Implementation

1. Ensure your state has a current stock inhaler law
2. Review the key components of your state's law
   a. Types of schools
   b. Training requirements
   c. Devices (e.g., spacers)
   d. Prescriptive authority
   e. Liability
   f. Documentation, Reporting & Medication administration requirements
3. Conduct outreach to stakeholders
   a. School administration
   b. Parents
   c. Teachers & school personnel
   d. Pediatricians
   e. Pharmacists
   f. EMS providers
   g. Hospitals & urgent care facilities

2 Implementation

1. Procure all necessary supplies for your school
   a. Inhaler (albuterol sulfate)
   b. Supply of spacers
   c. Prescription for both stock inhaler & spacers
   a. Signed standing medical order
   b. Protocol for medication administration
   c. Documentation forms
2. Complete training requirements
   a. Training platform (online training, in-person training or either)
   b. Who conducts training (non-licensed / licensed health care provider)
   c. Frequency of training
   d. Minimum number of individuals who shall be trained at each school **(1 trained person to 225 students (1:225) but ≥2 trained, school personnel)**
3. Notify parents of the stock inhaler program at the beginning of the academic year

3 "School Champion"

1. Identify a stock inhaler **"School Champion"** who can lead your school's stock inhaler program
   a. District-level nurses or supervisors
   b. School nurses or Health Assistants (HAs)
2. Roles of the School Champion include:
   a. Organizes and distributes stock inhaler program supplies
   b. Ensures staff are trained in accordance with state law
   c. Monitors documentation requirements including retention & reporting requirements
   a. Communicates program updates to school administration, parents (when applicable) & trained, school personnel

4 Capacity Building

1. Build strong partnerships with community stakeholders & governmental organizations who can help sustain your program
   a. County & State Health Departments
   b. Department of Health Services
   c. Local & state organizations
   d. American Lung Association
   e. Asthma & Allergy Network
   f. Local health care providers
   g. Pediatricians / Primary Care Providers (PCPs)
   h. Pediatric Pulmonologists
   i. Local health care facilities
   j. Rural hospitals
   k. Local businesses
   l. Philanthropic partners
   m. Parent teacher associations (PTAs) / Parent teacher organizations (PTOs)

5 Sustainability

1. Identify sustainable program funding. Schools can have a stock inhaler for approximately **$85 per school**
   a. Community stakeholders & partners (listed above)
   b. School health office budget
   c. Grant funds
   d. Foundation funds
2. Capture program data if possible

Stock Inhaler Programs: A Quick Reference Guide to Implementation for Schools, December 2020.

Figure 2. Stock albuterol program: quick reference guide for schools. Reprinted by permission from Reference 40.

Table 4. Essential Components to Implement Stock Albuterol in Schools

Essential Component	Explanation/Reasoning
Dissemination and education about policy	After legislation is passed, it is critical to broadly disseminate the policy to healthcare providers, school staff, and families. It is also important to provide annual education and communication about the legislation. Key individuals who should be involved in dissemination and education about the policy include: • Policy-makers • Schools, school boards, and superintendents • School nurses • Local hospitals and urgent care facilities • Primary care and subspecialty clinicians • Emergency medical service personnel • Pharmacists • Local health departments (city, county, state) • Nonprofit health organizations
Training	At each school, a minimum of two individuals should be trained per building at a ratio of one trained individual for every 225 students. School nurses are key professionals who can provide and/or facilitate training of school personnel on stock albuterol. Training should include: • Basic asthma pathophysiology and common triggers • How quick-relief medications work to treat respiratory distress • Recognizing mild, moderate, and severe respiratory distress • Demonstration of correct technique to administer treatment by using a metered-dose inhaler with a valved holding chamber • Determining the course of action for managing respiratory distress events • Maintenance of stock albuterol devices • Postincident instructions, including timely documentation and parent/guardian/caregiver contact instructions
Orders and prescriptions	Key supplies needed for stock albuterol program (with cost*) include: • Albuterol sulfate metered-dose inhaler ($20–$100 per inhaler) • Supply of one-way valved holding chambers/spacers (plastic or cardboard, $3–6 per unit) • Alcohol wipes to clean canister body and nozzle • Template documents (<$20/yr) A standing medical order and/or prescriptions are needed to obtain albuterol and valved holding chambers/spacers for each school.
Supplies	Program supplies require funding of <$85 for a stock inhaler and needed materials for a school. Program expenses may vary on the basis of student enrollment, the school layout, and the community asthma prevalence. Schools with a large student body, sports programs, or extracurricular activities may opt to purchase additional stock albuterol inhalers to store in convenient locations (e.g., the gym, fields).
Standardized protocol	The protocol provides instructions regarding the use of stock albuterol in case of respiratory distress. It should include: 1. Signs and symptoms of mild, moderate, and severe respiratory distress 2. The course of action based on the initial presentation of the individual 3. Specific indications for when to summon emergency medical services 4. The dose of albuterol to give (e.g., the number of inhaler puffs for initial use and subsequent use for same episode of respiratory distress) 5. Postincident instructions 6. The duration that an individual's documentation log shall remain on file with the school
Documents	Schools need the following forms for the implementation of stock albuterol: • Instruction sheet for stock albuterol implementation process • Template letters for communication with parents/guardians/caregivers and school/district administrative personnel • Directions about and a pictorial graphic of the effective technique for administering treatment using a metered-dose inhaler with a valved holding chamber/spacer • Documentation forms (stock albuterol documentation log; *see* online supplement) (46) • Copies of the State Board of Education regulation and stock albuterol law or statute

*Cost is based on 2020 dollars.

Table 5. Data Elements for Documentation of Stock Albuterol Usage Event Reporting in Schools

Description	Data Element
Date	Date the event occurred
Time	Time of d the event occurred
Responding person	Fill-in-the-blank space for name and role
Student's or individual's name	First name Last name
Student's or individual's age or date of birth	Fill-in-the-blank space
Student's or individual's gender	Male Female Nonbinary
Student's or individual's race	American Indian or Alaska Native Asian Black or African American Native Hawaiian or Pacific Islander White Multiracial
Student's or individual's ethnicity	Hispanic or Latino Non-Hispanic or non-Latino
Previously known asthma diagnosis	Yes No Unknown
Reason for stock albuterol use (e.g., symptoms)	Fill-in-the-blank space
Number of inhaler actuations (e.g., puffs)	Checkboxes for number of puffs based on protocol; also provide option for off-protocol with blank for number puffs and reason
Student or individual's disposition status	Returned to class Sent home Summoned EMS and not transported Summoned EMS and transported
Contact with parent/guardian	Open-ended
Comments (e.g., why stock albuterol inhaler was used)	Open-ended

Definition of abbreviation: EMS = emergency medical services.
Additional information can be recorded at the school level or individual level, including the national drug code and lot number of the albuterol medication.

standardized web or video-based curriculum provides flexibility, as many schools are unable to hold training that can be attended by all designated personnel. Because schools typically experience cyclic transitions of personnel throughout the academic year, flexible training options are necessary.

Program Supplies

Stocking albuterol in schools requires annual funding, primarily for supplies, for effective implementation. Essential program supplies are reported in Table 4 (*see also* the online supplement). To enable each school/district to meet its unique needs, policy should specify flexible options to procure supplies and promote equity for all students in the state, regardless of resources within a school or district.

Ideally, schools can procure supplies by using the school health annual budget. Alternative mechanisms include product or monetary donations from interested organizations (e.g., pharmaceutical companies, patient advocacy groups, hospitals), discounts or reimbursements from pharmaceutical companies, or fundraising through existing stakeholders, such as parent–teacher groups. Current programs cost less than $85.00 (in 2020 dollars) for an albuterol inhaler and needed supplies for a school (29). Program expenses may be affected by the number of inhalers needed at the school. We recommend at least one quick-relief inhaler per school building, with additional inhalers being added on the basis of student enrollment, the school layout (e.g., the number of buildings, locations of playgrounds and fields), and asthma prevalence.

Albuterol may come from pharmacies, pharmaceutical companies, or manufacturers. School nurses or medical directors should keep records of where medication is obtained and contact information if product issues arise. They should also monitor national databases for drug recalls (42). If the school uses a pharmacy to obtain albuterol, it is beneficial to develop relationships with the pharmacy manager to ensure notification of a drug recall or shortage.

In the school, stock albuterol should be stored in a temperate, dry, and unlocked place that is easily accessible to trained individuals for medication administration. Medication expiration dates should be monitored. All medications should be disposed of on the basis of school procedures.

Metered-dose inhalers (MDIs) should be primed before administration and cleaned after each use, as per manufacturer instructions (e.g., before the first dose, if not used for 2 wk). The MDI should always be used in conjunction with a one-way VHC/spacer ($3–$6 per unit). Most VHCs/spacers are constructed of plastic, but they are also available in cardboard models. The plastic models are available in rigid and collapsible versions and tend to be more expensive. Cardboard VHCs/spacers are also collapsible and relatively less expensive. Plastic and cardboard VHCs are equally effective, not suitable for use by more than one child, and should be cleaned or stored as per the manufacturer instructions. Schools can stock a supply of VHCs/spacers and use one per child, while using a single MDI. Once a child uses a VHC/spacer (plastic or cardboard), it should be stored in its original packaging and labeled with the child's name if reuse is needed later during the school year, as studies show

paperboard spacers can safely last the entire school year without microbial growth (43).

Standardized Protocol for Medication Administration

Every school should follow a standardized protocol for stock albuterol administration that is created and adopted at the school, district, or potentially state level and aligns with school, nursing, and other relevant regulations. The protocol should include specifics about who can receive medicine, what symptoms warrant albuterol, the number of doses to administer, how to assess the response, when to repeat administration, and what to do if medication is or is not effective.

Schools/districts in states that lack a standardized protocol should identify a medical consultant (or prescriber authority) to work with them to implement an existing or modified protocol that can be widely adopted. Medical consultants who sign the standing medical order should have the ability to modify existing protocols on the basis of their clinical practice and guideline-based care. For example, in Arizona, a protocol using a standardized number of inhaler actuations (instead of a dose range) stratified by the initial presentation of symptoms was widely adopted (29). Importantly, treatment for any child who requires stock albuterol should follow the standardized protocol and prescription instructions specified on the standing medical order, regardless of whether they have an asthma action plan on file at school. An asthma action plan provides school personnel with instructions on how to use a child's personal medicine, not stock albuterol.

Procedures for Event Documentation

All respiratory episodes requiring stock albuterol should be documented by trained school personnel (Table 5). Documentation should be retained on file with the school in accordance with school policy for student health information as well as state legislation and regulation for stock albuterol. For states that have adopted stock epinephrine in schools, these procedures can be adapted to document stock albuterol administration.

States with existing infrastructure can assist schools with maintaining documentation of quick-relief medication through centralized databases with medication events for epinephrine, naloxone, and albuterol. However, many states do not have infrastructure capable of systematic data collection on medication administration in schools. In this scenario, schools should create a documentation system that reports events in both the child's individual health record and a centralized place (within the school or electronically) for all stock albuterol events that occurred during a single academic year. Procedures should be reviewed annually.

Together with documentation, parents/guardians should be notified each time their child uses stock albuterol to encourage follow-up with their primary care or subspecialty clinician and to obtain an inhaler to have at school. Frequent communication among the school, family, and medical home should occur, especially for children who use stock albuterol more than once in a school year. If a child does not have an asthma diagnosis, the family should be advised to follow up with a healthcare professional to be evaluated for asthma, and, if necessary, a referral should be made. Template communication resources are available (*see* online supplement).

Additional Considerations

Children and/or adults. Traditionally, emergency use protects both children and adults with emergency needs. For stock albuterol, the legislation varies by state in terms of whether only children or anyone is included. Approximately half of the 15 states with stock albuterol legislation include adults, representing a gap that should be considered in future legislation and in amendments to current policies.

Stock inhaler versus nebulizer. Several states allow administration of stock albuterol via an inhaler and/or nebulizer, although specific policies vary by state in terms of which of these can be administered by school nurses or designated personnel. The literature shows that MDIs with VHCs/spacers are as, if not more, effective than nebulizers in children during acute respiratory episodes (44). Stock nebulizers also have greater upfront cost, although the cost of albuterol used in nebulizers is presently less expensive than an inhaler; this may change as generic quick-relief inhalers become more available. Nebulizer machines are bulky and lack portability, making them less practical in certain situations (e.g., recess, before exercise). Although the administration of medicine through nebulizers tends to be easier, it takes longer to administer the same dose when using nebulizers, keeping students out of class longer. On balance, we recommend inhalers with VHCs/spacers as the preferred stock albuterol delivery system in schools, unless otherwise clinically indicated.

Stock albuterol and coronavirus disease. The severe acute respiratory syndrome coronavirus 2 pandemic has changed practices around albuterol administration via nebulizers. Nebulizers are not recommended in school settings during the pandemic because of the potential for the spread infectious aerosols. Instead, stock albuterol MDIs can be used when they are properly cleaned after use with a single, one-way VHC/spacer for each child. As per CDC guidance, proper personal protective equipment should be used by the staff person aiding in any inhaled or nebulized medication administration, and medicine should not be administered in the classroom with other children present (45).

Conclusions

Because albuterol is a safe and potentially life-saving medication that is recommended by guidelines, it is important that schools make quick-relief medications available to all school-aged children, both with and without a documented asthma diagnosis. This failsafe measure can prevent exacerbations, reduce emergency service calls to schools, and enable children to return to class (29). Stock albuterol legislation is imperative to aiding in adoption and implementation, and key policy inclusions can lay the groundwork for success. A strong group of stakeholders and a carefully chosen sponsor are crucial to successful legislation and implementation across the United States. Future work should focus on passing legislation in all states and implementing policy in schools as well as on evaluating the impact of such programs on academic and health outcomes. Effective implementation of stock albuterol can help ensure that children have access to medication that enables them to live, learn, and play. ■

This official policy statement was prepared by an *ad hoc* task force of the American Thoracic Society, Allergy and Asthma Network, American Lung Association, and National Association of School Nurses.

Members of the task force are as follows:

Anna Volerman, M.D. (*Co-Chair*)[1,2*‡]
Ashley A. Lowe, Ph.D., M.S.P.H. (*Co-Chair*)[3*‡]
Lynn B. Gerald, Ph.D., M.S.P.H. (*Co-Chair*)[3*]
Charmayne M. C. Anderson, M.P.A.[4]
Kathryn V. Blake, Pharm.D.[5]
Tyra Bryant-Stephens, M.D.[6]
Thomas Carr, B.A.[7]
Heather Carter, Ed.D.[8§]
Lisa Cicutto, R.N., A.C.N.P., Ph.D.[9]
Joe K. Gerald, M.D., Ph.D.[10]
Jamila Jefferson, B.S., M.S.N., R.N., C.S.N.[11‖¶]
Tina Miller, B.S.N., R.N., N.C.S.N.[12¶]
Nuala S. Moore, M.A.[13]
Andrea A. Pappalardo, M.D.[14,15*‡]
Hanna Phan, Pharm.D.[16]
S. Christy Sadreameli, M.D., M.H.S.[17]
Andrea Tanner, M.S.N., R.N., N.C.S.N.[18]
Tonya A. Winders, M.B.A.[4]

*Subgroup leader.
‡Co–first author.
§Former Arizona State Senator.
‖Member of the task force who was not part of the writing committee.
¶School nurse.

[1]Department of Medicine and [2]Department of Pediatrics, University of Chicago, Chicago, Illinois; [3]Department of Health Promotion Sciences, [8]Arizona Center for Rural Health, Mel and Enid Zuckerman College of Public Health, and [10]Community, Environment, and Policy Department, University of Arizona, Tucson, Arizona; [4]Allergy and Asthma Network, Vienna, Virginia; [5]Nemours Center for Pharmacogenomics and Translational Research, Nemours Children's Health System, Orlando, Florida; [6]Community Asthma Prevention Program, Children's Hospital of Philadelphia, Philadelphia, Pennsylvania; [7]American Lung Association, Chicago, Illinois; [9]Department of Medicine, National Jewish Health and University of Colorado, Denver, Colorado; [11]The School District of Philadelphia, Philadelphia, Pennsylvania; [12]Clark County School District, Las Vegas, Nevada; [13]American Thoracic Society, Washington, DC; [14]Department of Medicine and [15]Department of Pediatrics, University of Illinois at Chicago, Chicago, Illinois; [16]Department of Clinical Pharmacy, College of Pharmacy, C. S. Mott Children's Hospital and University of Michigan, Ann Arbor, Michigan; [17]Department of Pediatrics, Eudowood Division of Pediatric Respiratory Sciences, Johns Hopkins University, Baltimore, Maryland; and [18]School of Nursing, Indiana University, Indianapolis, Indiana

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Written Testimony HB0266 senate 2023 2.pdf
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Position: FWA

Written Testimony for House Bill 0266
"Public and Nonpublic Schools – Bronchodilator and Epinephrine Availability and Use (Bronchodilator Rescue Inhaler Law)."
Prepared by: Elaine M. Papp RN MSN COHN-S(R), CM(R) FAAOHN

Dear Chairman Feldman and members of the Education, Energy and Environment Committee,

Thank you for the opportunity to provide written testimony on this bill HB 0266.

My Name is Elaine M. Papp. I am a Master's prepared Registered Nurse. I retired from my full-time job in 2015. In 2017, through a contracting agency, I began working as a school health nurse in Baltimore City Schools, two to three days per week. After a serious asthma emergency at a high school in Baltimore City, I began advocating to place stock albuterol inhalers (bronchodilator rescue inhalers) in all Maryland schools as emergency medication, particularly for those students who do not have doctor's orders on file in the school's student health unit. I have advocated for this issue for four years. In 2002, the bill, as originally written, was passed unanimously by the House of Delegate. The exact same language was offered, again, this year. However it was drastically amended during a subcommittee meeting to which the advocates were not invited nor formally notified. .

HB266 had important provisions that were removed during the Ways and Means Subcommittee meeting. The only testimony heard at that subcommittee meeting was from the opposition. The advocates had no opportunity to present important , relevant testimony about the latest scientific information and statistics from various states who have already enacted legislation to protect children with asthma. The opposition offered amendments that literally gutted almost all of our provisions and drastically changed the original bill.

Thus, I am writing to support the HB 266, but only, with amendments to: 1) give albuterol rescue inhalers to all children experiencing respiratory distress from asthma whether or not the child has a doctor's order on file in the student health unit; 2) include a pediatric pulmonologist specializing in treatment of childhood asthma to help write the Maryland Asthma Guidelines for Schools.; 3) to train non-medical personnel to administer albuterol inhalers when the nurse is not available. Just as Naarcan, AED's and CPR, non-medical personnel can learn to administer the important life-saving medication to a child suffering an asthma flare/attack.

Below, I share the circumstances that led to my advocacy, provide information on how our advocacy group developed, and our rationale. I also include my perspective as a nurse

advocate about training non-medical personnel to administer the bronchodilator rescue inhaler in an emergency and potential program costs.

CIRCUMSTANCES LEADING TO MY ADVOCACY FOR PLACING EMERGENCY ASTHMA INHALERS IN ALL MARYLAND SCHOOLS

In 2018, I saved a student's life, but lost my job! I was working as a school nurse, at Vivien T. Thompson Medical Arts Academy, a Baltimore City High School. A student with exercise-induced asthma experienced a serious asthma flare/attack. She had an albuterol inhaler at school, but it was locked in the gym teacher's desk and the gym teacher was not in the building. Although 911 was called, they were very delayed in responding. I assessed the situation quickly, as I have been trained to do. I didn't know the student. I didn't have medication for her. And, I had no doctor's order for an inhaler for her in the school health clinic, even though she had a prescribed albuterol inhaler on the school premises.

While the principal, teachers and other staff tried valiantly to find the keys to the gym teacher's office and desk, the student lost consciousness. I, without an asthma inhaler to administer, watched the unconscious student as she gasped for air at a rate of 70 breaths per minute and her heart raced at 124 beats per minute. I believed that the student was dying. I believed she would have a maximum of 15 minutes to live now that she had lost consciousness, unless she was treated with an albuterol inhaler.

I knew the situation was quickly becoming life threatening. As a school nurse, I had to act. The ambulance had not yet arrived. Waiting for it could have cost this student her life. I requested that the principal find me any student's rescue inhaler (albuterol inhaler).

Albuterol Inhalers are universally used as rescue inhalers for people with asthma. In fact, albuterol inhalers are the first line therapy for emergency relief of bronchospasm and are given in a standard dose. The student in crisis had an albuterol inhaler that was provided by her physician. It was inaccessible. Using another student's albuterol for this student was the best choice at the time. The other student's inhaler contained the same medication as had been prescribed for the distressed student. Thus, I gave the unconscious student another student's albuterol inhaler.

Within a few minutes of administering the albuterol, her respiratory rate lessened, and her heart rate came down. Her mother arrived, and I told her what I had done. She was grateful. Soon, the student regained consciousness. By the time the ambulance arrived, the student was sitting in a chair, talking to her mother. The paramedic said, "I guess it was more important for the dispatcher to get a cup of coffee than to tell us where we needed to go."

I saved the student's life but lost my job. I made a choice. I broke the rules to save the student's life. The rules:

1) Never give a student another's medication.
2) Never give a medication if you do not have doctor's orders in the student health file.

As a school health nurse, I had Maryland's guidelines for Asthma in schools, I had Narcan I had Epipen. But, I could not use Epipen to treat asthma since it is not FDA approved for treating asthma. I did not have a medication for treating the most common life-threatening illness among Maryland's children - asthma. I did not have an emergency rescue inhaler.

At the time of my employment at Vivian T Thompson Medical Arts Academy, there were 480 students enrolled in the school. The community from which the school draws its population has a high prevalence of childhood asthma. Approximately 15-20% of the children hare diagnosed with asthma. Based on that statistic, I should have had 72 doctor's orders on file in the health unit. I had none—-Zero— doctors orders on file in the health unit. Yet. I saw students carrying inhalers in the school all the time. I gave those students the papers necessary for doctors orders. I called parents. Yet I had no doctors orders on file.

Recognizing the problem was the system, I began a quest to get emergency rescue inhalers as stock medication in all schools in Maryland specifically to address situations like the one I just described- — a student who does not have a doctor's order on file in the student health unit.

OTHER ORGANIZATIONS WHO SUPPORT PLACING ASTHMA INHALERS IN ALL MARYLAND SCHOOLS AS AN EMERGENCY MEDICATION

I began this grassroots effort as a political novice with an informal, ad hoc group of advocates. I began working with a pediatric pulmonologist from Johns Hopkins University (JHU), a pediatrician from JHU, and an emergency pharmacist from JHU. We obtained support from the Allergy Asthma Network and The American Lung Association, a nurse practitioner who has worked as a school health nurse, a PhD prepared pharmacist who specialized in emergency

medication for children. Our ad hoc group also worked with a school-age asthma researcher from the University of Arizona.

NATIONAL ORGANIZATIONS SUPPORTING PLACING ALBUTEROL INHALERS IN ALL OUR NATION'S SCHOOLS

In September of 2021, **the American Thoracic Society (ATS), the Allergy Asthma Network (AAN) the National School Health Nurse Association (NSHNA), and the American Lung Association (ALA)** published a policy on Asthma in schools. This policy paper was researched for 2.5 years by over 20 specialists across the nation including school health nurses, pulmonologists, respiratory therapists and other child health specialists. The policy recommends that all schools in the United Staes have asthma rescue inhalers as a stock emergency medicine. Their recommendations contain all the provisions we include in HB 0266. The policy recommends that all children suffering from respiratory distress be giving an albuterol rescue inhaler as the first line of treatment and recommends that non-medical personnel be trained to administer emergency asthma inhalers when a school health nurse is not present.

OUR RATIONALE

Children cannot be diagnosed with asthma until they have had their first asthma flare, commonly called an "asthma attack."As Dr. Ben Wormser (previous ad hoc group member) stated, "We do not have a test that can predict if a child will have asthma. A child is diagnosed with asthma based on their physical exam and any history of asthma symptoms or asthma attacks. This means that they need to have already had symptoms to be diagnosed. Since children spend the majority of their awake time at school, it is very likely that this first asthma attack will occur during the school day. We need to make sure our schools are ready to treat them when this occurs."

Our advocates are dedicated to the idea of helping students, families, school personnel and school health staff cope with asthma emergencies in school to:

- reduce number of lost days from school,
- reduce number of 911 calls,

- reduce the number of hospitalizations and the length of hospital stay by providing effective and efficient emergency care at the moment of an asthma flare.

We believe that instituting a stock albuterol inhaler program in schools for all children, whether they have doctors orders on file in the health unit or not, will lead to better health outcomes for school age children and adolescents who suffer from asthma flares in school. In addition, we believe that the reductions listed above will lead to reduction in costs to the school system, the EMS system, families, and the schools.

Seventeen other states have already instated these laws. Statistics from those states are showing positive gains in medical outcomes, costs and lost days from school. Maryland will not be the first to begin a program like this. Do we, a state that prides itself on being in the forefront of cutting issues, want to be the last?

THE PROBLEM AS I SEE IT

I am a registered nurse. As mentioned above, I had access to Maryland's guidelines on how to manage asthma in school age children. I had expertise in recognizing asthma emergencies and treating them. However, without albuterol to use in an asthma emergency, I was handicapped.

I am not the only nurse that has experienced this, though I may be one of the few who has reported it. I base this on the results of a study conducted in Pima County, Arizona where school health nurses were asked, anonymously, if they had ever given one student another's inhaler. Many said, "yes." However, they stated that they had not reported it. When asked, "why," they replied, "fear of losing my job."

School health nurses are placed in a position of responsibility without authority. I had no way to enforce the requirement to bring in a doctor's order. I was the only health care professional on site. But I had no emergency medications to administer for asthma exacerbations. I had an EpiPen for allergic reactions. I had Narcan for opiate overdoses. Yet, I did not have a medication to administer for the most common life-threatening illness among Maryland's children.

To remedy this problem, I strongly advocate for passage of this bill HB 0266 with amendments. I offer an amendment to allow asthma inhalers to be administered to children

who are suffering .from respiratory distress whether or not they have doctors orders on file in the student health unit.

Individual doctor's orders for a student's food allergy or insect bites when a student suffers anaphylaxis not required to administer Epipen.

Why are we treating asthma emergencies differently? Why was this bill amended to require an individual child have a doctor's order to administer a rescue inhaler in an emergency? During a medical emergency, should the school health nurse have to check the student's files for a doctor's order before treating the student with an asthma inhaler?

Please give nurses and others in the school system a way to cope with a serious life-threatening emergency.

TRAINING NON-MEDICAL SCHOOL PERSONNEL TO ADMINISTER ASTHMA EMERGENCY INHALERS

As originally written, HR0266 contains provision for training non-medical school personnel to administer an albuterol inhaler during an emergency. This provisions was removed during the subcommittee meeting to which the advocates for HB 266 were not invited Although some have expressed concern over this provision, I believe it is important. First, training non-medical personnel to administer albuterol inhalers is not new to Maryland schools. When I worked as a school nurse, it was routine to train a teacher or a coach to use an albuterol inhaler, if a student with asthma was going on a field trip or to a sporting event off campus. In fact, the Maryland State School Health Services Guideline for Management of Students with Asthma, has specific procedures for training non-medical personnel in administering rescue inhalers when the student is on a field trip. Thus, the concept of non-medical school personnel being trained to administer and, then, possibly, administering a rescue inhaler in an emergency situation, is not new.

Second, medical personnel are not always available. The health clinic closes at the end of the school day. Yet, many children stay after school for extra curricular activities such as, sports practices and events. It is vital to have a coach trained to administer an albuterol in haler in asa of respiratory distress when the school health nurse is unavailable.

In the case of HB0266, this training would be extended to designated staff. It would focus on recognizing respiratory distress in a child and administering albuterol while calling emergency medical personnel and avoiding adverse outcomes, including worsening asthma and even death. As you will hear from other advocates, albuterol is essential to treat asthma, yet, is a very safe medication to administer with only few and minor side effects.

We have proposed updating the existing EpiPen legislation, as others have in many states that have successfully passed stock albuterol legislation, because the two drugs are so similar: they are both used in life-threatening emergency situations, simple to administer, safe and effective.

COST CONCERNS

As we are all aware, the COVID-19 pandemic has wreaked havoc with budgets. Some have expressed concern about the cost of this program. But, we expect the cost to be minimal for the following reasons.

1) Each school needs only one inhaler per school year.
   Small inhalers hold 60 puffs or 30 doses (2 puffs per doses). Thus, 30 students could be treated per year with one albuterol sulfate inhaler. Inhalers have a shelf life of one year.
2) Disposable spacers with one-way valves can be attached to the emergency inhaler for each use and then discarded. The one-way valve prevents the inhaler from being contaminated. The inhaler can be safely and effectively used another time. In fact, many hospitals carry "universal inhalers" in their pharmacy department for unexpected asthma flares.
3) Forms for reporting the use of the inhaler and programs to train for non-medical school personnel in the emergency use of asthma inhalers in a one-time start-up cost. Similar resources exist in other states and have been shared with us.
4) Total cost of supplies per year: $60.00 per school
   - Average cost of an albuterol inhaler is $40.00.
   - The cost of a package of 25 disposable spacers is $18.95.
   - I suspect that bulk ordering through the school purchasing plan may reduce the cost per package.

In addition, we have included a provision to allow schools to receive donations to successfully administer the emergency bronchodilator program. I intend to offer oral testimony as well as this written testimony. I am available for questions. I encourage you to vote yes on HB 384 . Thank you for your consideration.

SAFETY OF ALBUTEROL SULFATE INHALERS

According to pharmacologists, physicians and FDA guidelines, albuterol inhalers are one of the safest mediations to use for children. Our specialists, Dr. Sara Choi, a PhD prepared pharmacist whose specialty is emergency medications in children, vouches for the safety of using albuterol as HB0266 provides. Dr Christy Saderameali, a pediatric pulmonologists who treats children with asthma daily, attests to the safety of this medication as the bill provides. These specialists who dedicate their lives to the treatment of children would not advocate for provisions that would harm children. Albuterol is safe even if given to a child who has respiratory distress from a cause other than asthma. Albuterol would not harm the child. It might not be effective against pneumonia but it would not harm the child. It would not mask symptoms of another disease. Albuterol opens the airway in cases of bronchial spasms. Thus, it is effective for children with asthma whether diagnosed or not.

I advocate for passage of this important life saving bill with the amendments I recommend .

Elaine M. Papp, RN MSN COHN-S(R), CM(R) FAAOHN

HB 266.Bronchodilator Availability and Use Policy

Uploaded by: John Woolums

Position: FWA

MABE
MARYLAND ASSOCIATION OF BOARDS OF EDUCATION

621 Ridgely Avenue, Suite 300, Annapolis, Maryland 21401
410-841-5414 · 800-841-8197 · Fax: 410-841-6580 · MABE.org

BILL: House Bill 266
TITLE: Public and Nonpublic Schools - Bronchodilator Availability and Use - Policies
DATE: March 22, 2023
POSITION: SUPPORT WITH AMENDMENTS
COMMITTEE: Education, Energy, and the Environment
CONTACT: John R. Woolums, Esq.

The Maryland Association of Boards of Education (MABE) supports House Bill 266 as amended in the House, with the exception of the reporting requirements for the use of inhalers in schools.

MABE greatly appreciates the amendments to this bill in uncodified Section 2 which will ensure that the Maryland State Department of Education (MSDE) and the Maryland Department of Health (MDH) jointly update the outdated school health service guidelines for students with asthma. Also, MABE strongly supports the amendments adopted in the House to remove from this bill the provisions regarding the emergency use of injectable epinephrin.

MABE wants to assure the legislature that local school systems are already operating in accordance with Maryland law and School Health Services Guidelines that comprehensively address routine and emergency student health services (Sections 7-401 and 7-426 of the Education Article). Under the law, MSDE and the MDH must provide technical assistance to schools to: implement the adopted guidelines, train school personnel at the local level, and develop a process to monitor the implementation of the guidelines. State law also establishes the office of the school health services program coordinator, who is responsible for implementing State and local health policies in the public schools. Key responsibilities of the school health coordinator include ensuring that public schools adhere to local health services guidelines and communicating State and local health policies to the parents and guardians of public school students.

MABE has a track record of supporting legislation in recent years to ensure that school health guidelines are updated and strengthened, including bills enacted to ensure that school health plans adequately address students with diabetes and students with sickle cell disease. These bills were crafted to ensure a high degree of care and heightened awareness among school personnel regarding the needs of students with diabetes, sickle cell disease, and other health conditions including seizure disorders.

Local boards of education place a very high priority on student health, by ensuring that schools are operating in accordance with adopted state school health guidelines and local policies and procedures intended to provide a health and safe school environment conducive to student learning. As amended, Senate Bill 266 should ensure that the well-intended policy changes underlying this legislation will be addressed through updating the State guidelines regarding asthma and the use of inhalers.

For these reasons, MABE requests a favorable report on House Bill 266, with an amendment to strike lines 6 through 14 on page 9 of the bill.

Written Testimony- Micaela Fritz.pdf
Uploaded by: Micaela Fritz
Position: FWA

Micaela Fritz
Nurse Practitioner
Johns Hopkins Hospital
Department of Pediatrics- Pediatric Complex Care
1800 Orleans Street
Baltimore, Maryland 21287
(410) 955-5000

Testimony for House Bill 266
March 22, 2023
Public and Nonpublic Schools – Bronchodilator Availability and Use – Policy
(Bronchodilator Rescue Inhaler Law)
Favorable with Amendments

Thank you for the opportunity to provide this testimony today. My name is Micaela Fritz, and I am a pediatric nurse practitioner at Johns Hopkins Hospital. Prior to my role as a nurse practitioner at Johns Hopkins Children's Center, I was a school nurse for Howard County Public School System through December 2021. I am testifying today in support of this bill with amendments that would provide emergency albuterol in schools to all children.

I would like to note that the views expressed here are my own and do not necessarily reflect the policies or positions of my employer, Johns Hopkins Hospital.

In my previous experience as a school nurse, I was responsible for the medical care of over 800 middle school students at a public school. Many of the students I cared for had chronic medical conditions, including asthma. I had an incident in Fall of 2021 where a student who was a known asthmatic needed albuterol. I administered albuterol as prescribed, his cough subsided, and he returned to class. Approximately 4 hours later, he returned with audible wheezing and a violent cough that caused him to vomit continuously. I tried to administer his albuterol inhaler again, however, the pump stopped working. The student had an extra albuterol inhaler in his pocket that his mom had given him that morning. Under the guidelines, I should have confiscated this medication and not allowed him to use it. Instead, he self-administered the albuterol from home and 911 was called. Fortunately- the medicine helped. By the time EMS arrived, his vomiting and wheezing had subsided.

This experience had a profound impact on me professionally and personally. I was thankful that his mother had enough foresight to have him carry another albuterol inhaler just in case, even though he was not supposed to have it. The implications for what would have happened to this student are vast. What would have helped me in this case would be a law like House Bill 266 in its original format. Not only would I have had my own albuterol inhaler supply, but I would also have had permission to use it in emergency situations much like the other medications school's stock.

Unfortunately, the bill has been amended in a way that changes the original intent. I am asking the committee to consider further amending the bill to ensure pediatric asthma specialists are required to be involved in the drafting of the guidelines by Maryland Department of Health and Maryland Department of Education. As a former school nurse and as a Pediatric Nurse

Practitioner, I would also encourage the committee to amend the bill back to the original draft which would allow for the stock albuterol to be used for all children in respiratory distress, and not restricting it to those with diagnosed documented asthma. By broadening the law, it allows much greater access to this lifesaving tool, albuterol which is the standard of care for respiratory distress.

I strongly urge you to amend this bill, which will help to ensure that all children with asthma in Maryland have access to life-saving medication at school in an emergency. Thank you.

Senate MD HB 266 written S.Choi.pdf
Uploaded by: Sara Choi
Position: FWA

Testimony for House Bill 226

March 22, 2023

Public and Nonpublic Schools – Bronchodilator and Epinephrine Availability and Use – Policies

Dear Committee Members:

Thank you for allowing me to provide my testimony in support of this bill but with amendments. My name is Sara Choi, and I am a pediatric pharmacist at the Johns Hopkins Pediatric Emergency Department. As a health care provider who sees first hand many children presenting to the emergency department due to respiratory distress, I am testifying today to the safety and efficacy of albuterol inhalers and to the necessity of this legislation.

In the event of an asthma attack, inflammation and constriction of the small, microscopic airways in the lungs can lead to difficulty breathing, wheezing, and respiratory distress. Albuterol is a medication that works quickly to relax the smooth muscles in these small airways, which opens them up and makes it easier for a person to breathe. Patients with asthma refer to this medication as their "rescue inhaler," and it is an essential medication for them to have access to at all times. Immediate interventions are necessary in anyone presenting with severe respiratory distress because, if untreated, an asthma attack can lead to cardiorespiratory arrest and potentially death. Albuterol was first approved by the FDA in 1981**,** so it is a familiar medication to the health care community and the general population[1]. There is inaccurate information that albuterol can kill a patient. This is false information as albuterol is extremely effective and one of the safest medications we use. Albuterol has a quick onset of action of less than 5 minutes and has minor adverse effects including tremor, increased heart rate (tachycardia), and nervousness. The only contraindication to administering albuterol is a previous anaphylactic reaction to albuterol, which is extremely rare.

This bill should add language that the Maryland Department of Health and the Maryland Department of Education must consult pediatric asthma specialists to develop an updated guideline for the use of bronchodilators in public and nonpublic schools. There has been constant discussion of allowing an EpiPen as the first line of treatment when children present with respiratory distress, but this is inappropriate therapy. There is patient harm in providing epinephrine which is the drug in an EpiPen to someone who does not present with anaphylaxis. Epinephrine can cause heart arrythmias and has far greater adverse effects than albuterol. Anaphylaxis and asthma exacerbations are very different presentations and disease states that are not treated in the same way. Providing albuterol to someone in anaphylaxis will not cause harm, but administering epinephrine to someone in an asthma exacerbation may cause harm. Additionally, epinephrine is not within the national asthma treatment guidelines and is not FDA approved as a treatment for asthma exacerbations. Anaphylaxis and asthma exacerbations present differently, and health care providers teach guardians and patients how to differentiate between the two, so school personnel can too.

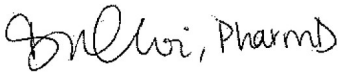
Interventions for a child in respiratory distress from asthma is time sensitive, vital, and directly impacts medical outcomes. Although albuterol will be most effective if the breathing emergency is due to asthma, it is important that this law is written in a way that any child presenting with respiratory distress can be treated with albuterol which includes children that are not yet diagnosed with asthma. Albuterol should not be limited to specific indications as some children have undiagnosed asthma. A child's first asthma attack may occur at school or perhaps the child may have experienced an asthma attack but not yet received the appropriate diagnosis of asthma by a healthcare provider. Additionally, a child may have a past medical history of asthma, but for some reason, the school

is not aware. A diverse number of other examples can be imagined, but the bottom line is that the vast majority of children exhibiting respiratory distress at school will be having these symptoms due to asthma. To require a student to have paperwork to prove that he/she has been diagnosed with asthma is unfair and an equity issue as not all children have the resources and privilege to have this on record. If this bill only supports albuterol for diagnosed children, we are missing a large portion of the pediatric population which is likely the most vulnerable children.

Working in the pediatric emergency department, I frequently see children presenting with difficulty breathing throughout all seasons of the year. Sometimes these children are not yet diagnosed with asthma but present with the typical symptoms of asthma including, but not limited to, wheezing, coughing, shortness of breath, and/or chest tightness. Some children, whether they are known asthmatics or newly diagnosed with asthma, present in extreme respiratory distress leading to intubation and mechanical ventilator use due to the severity of the asthma exacerbation. Thankfully, the pediatric emergency department is a well-equipped environment and has the abundant resources a child needs to receive necessary treatment as well as physicians and nurses who are able to appropriately prescribe and administer therapy. Although a school environment has minimal resources, the provision to administer albuterol can be a life-saving treatment when a physician assessment is delayed. Additionally, in a school setting, there are multiple factors that can further delay the medical care for a child such as the wait for an ambulance to arrive and the transportation time to the hospital. The time between when a child shows respiratory distress and to when the child arrives to a hospital are critical moments that must be taken advantage of.

Thank you again for the opportunity to testify in support of this bill with amendments. I urge you as a pediatric pharmacist and a healthcare advocate for children, to please be in favor of this legislation with amendments in order to provide a safe medical plan in schools for our vulnerable pediatric population. Albuterol is a safe, effective, and necessary tool for all children, whether diagnosed or not yet diagnosed with asthma, to have access to in schools.

Sincerely,



Sara Choi, PharmD, BCPPS
Pediatric Emergency Medicine Clinical Pharmacy Specialist
The Johns Hopkins Hospital
Department of Pharmacy
1800 Orleans St., Bloomberg 7234
Baltimore, MD 21287

Disclosure: The views expressed in this testimony are my own and do not necessarily reflect the policies or positions of my employer, Johns Hopkins Hospital.

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final Sadreameli HB266 Senate testimony stock albu

Uploaded by: Sara Christina Sadreameli

Position: FWA

S. Christy Sadreameli, MD, MHS
Assistant Professor of Pediatrics
Johns Hopkins University
Eudowood Division of Pediatric Respiratory Sciences
200 North Wolfe Street
Baltimore, Maryland 21287-2533
(410) 955-2035
(410) 955-1030 (fax)

Senate Testimony for House Bill 266
March 21, 2023

Public and Nonpublic Schools - Bronchodilator and Epinephrine Availability and Use – Policies.

Dear Chair Feldman, Vice-chair Kagan, and members of the Education, Energy, and the Environment Committee:

Thank you for the opportunity to provide this written testimony. My name is Dr. Christy Sadreameli, and I am a pediatric pulmonologist, researcher, and faculty member at Johns Hopkins University in Baltimore City. Asthma is the most common chronic disease in childhood, and I take care of many children with asthma in my clinic and the hospital. I care for children who live all over the state of Maryland, including many who live and attend school in Baltimore City. I am testifying today in support of this bill that would provide emergency albuterol in schools. I am here as a pediatrician, and asthma specialist, and a citizen of the State of Maryland. I am one of the top asthma experts in the state and a national authority on the subject of stock albuterol in schools. I helped write the national stock albuterol policy guidelines referenced later in this testimony and have advised stakeholder groups in other states, including Iowa, Texas, Montana, Hawaii, and Pennsylvania who have either already passed or are working on passing or updating their legislation.

I have worked with Delegate Boyce and our group of advocates (all health professionals) for the past four years on this legislation and strongly support HB266 in its original form without amendments. Unfortunately, stakeholders who opposed our bill have introduced these amendments, which will create equity issues and severe limit the benefits to vulnerable children.

The prevalence of asthma in Baltimore City in children under 18 is more than twice the national average (20% in Baltimore City compared with 9.4% nationally), and asthma morbidity (including hospitalizations) is very high in Maryland, including Baltimore City. Asthma is a disease of the small airways in the lungs. Acute asthma symptoms, sometimes called asthma attacks, can be life-threatening. Asthma attacks are caused by bronchospasm, or inappropriate tightening of the muscles around the small airways of the lungs, resulting in wheezing, coughing, chest tightness, and difficulty breathing. An asthma attack may be triggered by a respiratory virus, allergens, smoke, poor air quality, certain weather conditions, physical activity, and more. Because asthma attacks can occur suddenly and without warning, children with asthma should always have access to emergency medication that can quickly reverse their symptoms. The gold standard for this is albuterol, supported by all U.S. and international asthma guidelines. Albuterol, a short-acting bronchodilator, is given by inhaler with an attached spacer, and works right away to relax the smooth muscles around the small airways. This provides quick relief of asthma symptoms and can help prevent the onset of sudden respiratory decompensation.

Albuterol is very safe, easy to administer, effective, and well-tolerated-- its side effects are very mild (increased heart rate, jitteriness).

Despite the need for albuterol, 80% of children with asthma do not have it at school. This problem affects all children—whether they are rich or poor, attend private school or public school, and living in urban settings or in rural settings. There are many reasons why a child might not have albuterol at school. They may have run out, may not have turned in the required forms, may have forgotten it (especially relevant with older teens who often have the responsibility to self-carry albuterol), it may have expired, it may be locked away in a locker or office. Some parents do not realize their child's condition is even called asthma, and still other children experience their first-ever asthma attack at school. Under the current system, many children are at risk of life-threatening asthma at school. Without access to albuterol, a life-saving medication, vulnerable children may suffer from severe, sudden asthma attacks and even die at school. Unfortunately, many children do not have the proper medication and documentation at school. There are schools in Baltimore City where no asthmatics have turned in their forms, for example. There are many barriers to getting the proper forms and medication, which may require a parent taking off work, making an appointment with the doctor, going to the pharmacy, and parents obtaining an additional supply of medication. Parents may experience many barriers during this process (including those of paperwork, finances, comfort navigating the healthcare system, transportation, and discrimination). Children whose parents experience barriers to medical care and paperwork are unfortunately often some of the most at-risk asthmatics, such as urban minority children. These circumstances can also apply to any child who is impacted by poverty and a lack of medical resources anywhere in our state, including rural areas. This is an equity issue.

It is important that the law contains language that enables children exhibiting respiratory distress suggestive of an asthma attack to receive emergency albuterol, even if they do not have proper documentation of asthma diagnosis. The amendment that was added in the House to limit albuterol to children with confirmed, documented diagnosis of asthma at school is a mistake, puts our bill out of step with national guidelines, and severely limits the bill. In our state, advocates have created a lot of fear and confusion between asthma and anaphylaxis (food allergy), and the preferred treatments for each. The preferred treatment for asthma is a bronchodilator (albuterol) and the preferred treatment for food allergy is Epi-Pen- period. School staff, parents, students themselves, and some teachers are currently trained to differentiate between the two diagnoses. This is basic first aid and emergency training that school nurses already receive. All we are trying to do is to provide an emergency medication (albuterol) so that schools can use it when they recognize an asthma attack. Anyone who tells you that Epi-Pen is first line for asthma, or a preferred alternative for asthma, is not being honest with you. Unfortunately, this misinformation has been shared with state lawmakers repeatedly during this legislative session by the Maryland Nurse Association. The fact of the matter is, this concern about confusion between food allergy/anaphylaxis and asthma has not come up in any other state with a stock albuterol law, either in the legislative side or the implementation side. All states with a stock albuterol law also have an Epi-Pen law.

Though this will occasionally result in a child without asthma being given albuterol for non-asthma symptoms (e.g., a child that is having difficulty breathing because of an anxiety

attack, or a child with pneumonia), it is important to realize that this is still safe. Albuterol will not "mask" another diagnosis, like pneumonia, or food allergy/anaphylaxis, because it does not treat pneumonia or anaphylaxis. Albuterol is one of the safest medicines I prescribe. The risk of *not* giving this medication to children with an asthma attack is much higher, as it can result in ambulance transfer, serious illness, and even death. It is straightforward to train staff how to recognize respiratory distress and administer albuterol. In states with a stricter administration requirement (e.g., in Texas, where the student must have a documented diagnosis of asthma to receive stock albuterol), the law has not been very effective, and their law was amended this year so that children do not have to prove to the school they have asthma (with paperwork)- thank goodness, their amendment, which will no longer restrict albuterol to those with paperwork/documented diagnosis, is about to pass both houses.

There is also no current alternative policy or law in Maryland that will cover these children. For example, the Epi-Pen legislation and implementation policies are meant to cover food allergy/anaphylaxis and cannot, and should not, be viewed as an alternative to this legislation. Rather, this bronchodilator (albuterol) legislation should co-exist with the existing Epi-Pen legislation, as each covers a different situation. This is the case in other states with stock albuterol laws, which co-exist with Epi-Pen laws. Again, school personnel in Maryland can, should, and already are being trained to differentiate between respiratory distress indicative of asthma and anaphylaxis, just as they are in other states.

In September of 2021, a policy statement was published in the *American Journal of Respiratory and Critical Care Medicine* in support of school stock albuterol legislation. The coauthors included physicians, including myself, school nurses, pharmacists, and parents on behalf of cosponsoring organizations: the American Thoracic Society, the American Lung Association, Allergy & Asthma Network Mothers of Asthmatics, and the National Association of School Nurses. HB226, which you are considering today, contains the essential elements of a successful law that this group of experts recommended, including the general respiratory distress requirement, which was strongly recommended in the policy statement.

Stock albuterol programs have been found to be effective at preventing adverse asthma events at school and are cost effective. Data from a stock inhaler project in the urban Sunnyside Unified School District in Arizona showed that a stock albuterol inhaler was given 222 times to 55 children in 20 schools over one year. This resulted in a 20% reduction in emergency calls and a 40% reduction in ambulance transports in that year (Pappalardo, AA and Gerald LB, *Pediatrics*, 2019). The cost per school was $155, which included albuterol, educational and training materials, and disposable spacers (holding chambers).

Sixteen states have already passed laws or have guidelines providing stock emergency albuterol inhalers at school. Many existing laws were created by amending the existing EpiPen legislation. The rationale is similar, as EpiPens and albuterol are both life-saving medications that must be given quickly in an emergency situation to halt rapid decompensation. In our state, we allow Epi-Pen to be given if it seems like the child is having a food allergy (regardless of paperwork/documented diagnosis). We allow Narcan to be given if it seems like someone has an opioid overdose (without requiring proof or documentation of drug use). Albuterol needs to be applied in the same way- to those who are exhibiting respiratory symptoms consistent with an

asthma attack (cough, chest tightness, and wheezing). It would be strange if we only want to restrict albuterol, as it is an extremely safe medication- safer than Epi-Pen. This bill is meant to be pragmatic and to work in the current situation, even when a school nurse is not present (which is, unfortunately, often the case in our schools today).

Because our state has had so much discussion about food allergy and Epi Pen that has created confusion for people, I want to make sure the guidelines aspect of the bill is done properly. We cannot recommend schools give Epi Pen for asthma. I recommend an amendment requiring an asthma expert takes part in the guideline writing process to ensure international and national asthma guidelines as well as FDA guidelines for albuterol and Epi Pen are followed.

I often tell my young patients with asthma (and their parents) that asthma does not have to control their life. However, we must consider the vulnerable children with asthma who are currently at risk for life-threatening asthma events in school. We are requesting the committee further amend HB226 to include a requirement that a pediatric asthma specialist be included in the guideline updating process and that the bill allow for the administration of asthma rescue medication to all children in respiratory distress in the case of emergency regardless of documented diagnosis. By amending the bill it will help to ensure that all children with asthma have access to life-saving medication in school and help protect them so that they can go on to enjoy a happy and healthy future. Thank you again for the opportunity to testify today.

Information sources

1. Baltimore City Health Department **https://health.baltimorecity.gov/node/454**
2. Pappalardo AA, Gerald LB. Let Them Breathe: A Plea to Pediatricians to Advocate for Stock Inhaler Policies at School. Pediatrics. 2019 Jul;144(1).
3. Papp EM, Gerald JK, Sadreameli SC, Gerald LB. Why Every School Should Have a Stock Inhaler: One Nurse's Experience. Am J Public Health. 2019 Nov;109(11):1528-1529
4. Asthma and Allergy Foundation of America. Updated October 2021. Accessed February 7, 2022. https://www.aafa.org/albuterol-in-schools/
5. Volerman A, Lowe AA, Pappalardo AA, Anderson CMC, Blake KV, Bryant-Stephens T, Carr T, Carter H, Cicutto L, Gerald JK, Miller T, Moore NS, Phan H, **Sadreameli SC**, Tanner A, Winders TA, Gerald LB. Ensuring Access to Albuterol in Schools: From Policy to Implementation. An Official ATS/AANMA/ALA/NASN Policy Statement. Am J Respir Crit Care Med. 2021 Sep 1;204(5):508-522.

Disclaimer: The views expressed here are my own and do not necessarily reflect the policies or positions of my employer, Johns Hopkins University.

Sincerely,

S. Christy Sadreameli, MD, MHS
Assistant Professor of Pediatrics
Eudowood Division of Pediatric
Respiratory Sciences

Johns Hopkins University
Baltimore, MD, USA
Chair, American Thoracic Society
Pediatric Advocacy Subcommittee
Office: (410) 955-2035
Fax: (410) 955-1030
Email: ssadrea1@jhmi.edu

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Maryland
DEPARTMENT OF HEALTH

Wes Moore, Governor · Aruna Miller, Lt. Governor · Laura Herrera Scott, M.D., M.P.H., Acting Secretary

March 22, 2023

The Honorable Vanessa E. Atterbeary
Chair, Ways and Means Committee
Room 131 House Office Building
Annapolis, MD 21401-1991

RE: HB 266 - Public and Nonpublic Schools - Bronchodilator and Epinephrine Availability and Use – Policies – Letter of Support with Amendments

Dear Chair Atterbeary and Committee Members:

The Maryland Department of Health (MDH) respectfully submits this letter of support with amendments for House Bill (HB) 266 - Public and Nonpublic Schools - Bronchodilator and Epinephrine Availability and Use - Policies. MDH appreciates the House sponsor and House Committee's consideration of stakeholder concerns and the amendments presented in this third reader version.

As amended, HB 266 will establish a stock bronchodilator program in Maryland public schools. Such a program will ensure that students with asthma without their own bronchodilator will have access to medication to treat their asthma symptoms and prevent adverse events, such as hospitalization. HB 266 will also ensure safe administration of bronchodilators to students by school nurses and other trained school staff.

Upon review of HB 266 as amended, MDH respectfully recommends three technical amendments to strengthen the bill and ensure its successful implementation. First, MDH recommends defining the reporting requirement to be only for when a "stock" bronchodilator is administered, compared to instances where a prescribed bronchodilator is administered. This will ensure that reporting is focused on the stock bronchodilator program. Secondly, as currently drafted, HB 266 will require each jurisdiction to develop their own reporting form. This has the potential to create different data sets across jurisdictions which may pose challenges for statewide data review and analysis. Currently, the administration of stock Epinephrine and Naloxone to students is tracked on a standard reporting form across jurisdictions. MDH recommends the development of a singular form to be used statewide similar to stock Epinephrine and Naloxone. Finally, MDH recommends the extension of the deadline to revise the Maryland school health services guidelines from August 1, 2023 to December 31, 2023. This additional time will allow MDH and MSDE time to consult with asthma experts and other states with stock bronchodilators programs.

Thank you for considering these additional amendments to strengthen HB 266. If you would like further information please contact Megan Peters, Acting Director of Governmental Affairs at megan.peters@maryland.gov or (410) 260-3190.

Sincerely,

Laura Herrera Scott, M.D., M.P.H.
Secretary

MDH Amendments
HB 266 - Third Reader

Amendment # 1

On page 9 line 9 insert “STOCK” after “A” and before “BRONCHODILATOR”, and insert “STOCK” after “A” and before “BRONCHODILATOR” on line 13.

Amendment # 2

On page 9 strike“IN’ through “SECTION” on lines 9 and 10 and strike“IN’ through “SECTION” on lines 13 and 14.

Amendment # 3

On page 12 line 4 strike “August 1” and substitute “December 31”

HB0266 Howard Co BOE Testimony 032223 for EEE - Br

Uploaded by: Staff Howard County

Position: UNF

Board of Education of Howard County
Testimony Submitted to the Maryland Senate,
Education, Energy, and the Environment Committee
March 22, 2023

HB0266: UNFAVORABLE
Public and Nonpublic Schools - Bronchodilator Availability and Use – Policies

The Board of Education of Howard County (the Board) opposes **HB0266 Public and Nonpublic Schools - Bronchodilator Availability and Use - Policies** as a mandate on local school system policy.

As originally introduced in the House, HB0266 required county boards to establish a policy for schools to authorize school nurses or other personnel to administer a bronchodilator, if available, to a student who is determined to have asthma, is experiencing asthma-related symptoms or in respiratory distress regardless of whether the student has been diagnosed or has a prescription (unless they are a prekindergarten student). The policy must include training for nurses and school personnel on recognizing signs and symptoms, procedures for emergency administration, authorization for school nurses to obtain and store at schools, and a requirement for each public school to develop and implement a method for notifying parents of the policy at the start of each school year. Schools may accept donated bronchodilators from licensed pharmacies or manufacturers or obtain grants. Staff using the equipment in good faith cannot be held personally liable for any act or omission. Schools must notify parents of each use, make a record of the incident, and submit a report to the Maryland State Department of Education (MSDE) on the number of uses.

The most concerning provisions for the health and safety of students under the care of local school systems were the provisions of HB0266 that called for administration of a bronchodilator regardless of prescription. Howard County Public School System (HCPSS) Health Services staff indicates medication should only be administered with a physician order, especially for a steroid like a bronchodilator to someone that is "perceived" to be in distress. In schools where a health assistant is utilized, there would be a concern with conducting assessments, which include evaluation of breathing in the case of respiratory distress. Going beyond these health service positions as called for under the bill to staff who have taken training but are not health professionals would compound this concern. HCPSS health provisions already direct staff to administer epinephrine in the case of asthma-related complications and to further call 911. The removal of this section by the House before passage moves this bill in a more favorable direction.

Although in a better posture, the bill as presented to the Senate still contains a mandate on local school system policy and is an unfunded mandate. While the

amended bill calls for the limited administration of a bronchodilator to cases where a student has a prescription, the required policy including provisions for the school nurse to obtain and store bronchodilators to be used in an emergency situation implies they will be available for use at all schools. Maintaining these in all HCPSS schools would be costly as they are not interchangeable for multiple users and expire within one year.

As a legislative platform the Board supports local decision making in the development of policy that accounts for best practices, available resources, and public input, rather than legislative mandates as encompassed in HB0266. HCPSS currently works with parents and health care providers to determine case-by-case needs for student use of a prescribed bronchodilator, and trains staff members working with students with a prescription for asthma on signs and symptoms of respiratory distress for that student's individualized care and emergency management.

For these reasons, we urge a UNFAVORABLE report of HB0266 from this Committee.

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Maryland
Board of Nursing
Wes Moore, Governor · Aruna Miller, Lt. Governor · Laura Herrera Scott, M.D., M.P.H., Secretary

March 22, 2023

The Honorable Brian J. Feldman
Chair, Senate Education, Energy, and the Environment Committee
2 West Miller Senate Office Building
Annapolis, MD 21401-1991

RE: HB 266 – Public and Nonpublic Schools – Bronchodilator and Epinephrine Availability and Use – Policies – Letter of Information

Dear Chair Feldman and Committee Members:

The Maryland Board of Nursing (the Board) respectfully submits this letter of information for House Bill 266 – Public and Nonpublic Schools – Bronchodilator and Epinephrine Availability and Use – Policies. This bill requires each county board of education and authorizes non – public schools in the state, before a certain school year, to establish a policy to authorize a school nurse or other school personnel to administer in emergency situations a bronchodilator to a student who is experiencing asthma, reactive airway disease, or asthma – related symptoms; requires a policy to include certain limitations on the administration of a bronchodilator, provisions authorizing a school nurse to designate other school personnel to respond to a student who is experiencing asthma, reactive airway disease, or asthma – related symptoms; requires the State Department of Education and the Maryland Department of Health jointly to update certain asthma guidelines in a certain manner on or before a certain date; and requires each county board to make a good faith effort to adopt certain guidelines before the start of a certain school year.

The Maryland State Department of Education's (MSDE) School Health Services is responsible for developing standards and guidelines related to the safe practice and training of school nurses, the administration of medications, and the delegation of tasks to unlicensed assistive personnel. MSDE has published protocols related to the training and administration of naloxone, medical cannabis, anaphylactic reactions, epinephrine, and management of diabetes, asthma, and sickle cell disease[1]. House Bill (HB) 266 would require that the training and administration of bronchodilators follow similar processes instituted by MSDE. This ensures consistency and uniformity by allowing certain stakeholder workgroups to convene to discuss best practices for bronchodilator administration, safety measures for symptoms and contraindications, and next steps taken by either the nurse or school administrator. The guidelines for the management of students with asthma, developed by MSDE and the Maryland Department of Health, should also address what method of training the school nurse and other school personnel will receive, what school personnel will have access to the bronchodilator medication, and what methods of security will be used to store the medication.

[1] School Health Services Guidelines – Table of Contents. Maryland State Department of Education.

The Board additionally outlines the following language for the committee's review.

On page 11. Lines 13 – 18. Potential mistake in language.

(B) (1) SUBJECT TO PARAGRAPH (2) OF THIS SUBSECTION, BEFORE THE 2024 – 2025 SCHOOL YEAR, EACH NONPUBLIC SCHOOL IN THE STATE MAY ESTABLISH A POLICY FOR PUBLIC SCHOOLS WITHIN ITS JURISDICTION TO AUTHORIZE THE SCHOOL NURSE OR OTHER SCHOOL PERSONNEL…

For the reasons discussed above, the Maryland Board of Nursing respectfully submits this letter of information for HB 266.

I hope this information is useful. For more information, please contact Ms. Iman Farid, Health Planning and Development Administrator, at iman.farid@maryland.gov or Ms. Rhonda Scott, Deputy Director, at (410) 585 – 1953 (rhonda.scott2@maryland.gov).

Sincerely,

Gary N. Hicks
Board President

The opinion of the Board expressed in this document does not necessarily reflect that of the Department of Health or the Administration.