

The ABCs of Asthma: Asthma Action Plans, Bronchodilators & Controllers

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Outline

- Asthma statistics
- Asthma research: future directions
- Review of asthma medications
 - Controller
 - Bronchodilators
 - Use of MDI with and without spacers
- Managing asthma in schools
 - Guideline based care
 - Why asthma action plans in the school health office?
 - How to measure asthma control at school
- Innovative school asthma programs

Asthma: Epidemiology*



- Affects 6.8 million American children < age 18
 - 9.3% overall
 - 16% non-Hispanic black children
 - 9% Hispanic
 - 8% white
- Children in poor families – 13% with current asthma
- Asthma results in 14 million missed school days

Asthma: Wisconsin



Annually*:

- Affects 100,000 children** (7.6%)
- Disproportionately higher in lower SES adults & children (16.6%)
- >36% middle & high school students reported having an asthma “attack” in the prior year
- 4,746 hospitalizations in 2011
 - Children < 5 years: highest rates both ED & Hosp.
 - AA hospitalization rates 5 X higher than white
 - Highest % rates in Menominee & Milwaukee counties
- Deaths: average 65 annually (AA 4 X more likely to die from asthma)

NAEPP Guidelines → Asthma Research

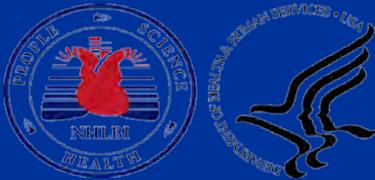
- Research driven by best practice as outlined in guidelines
 - Age ranges:
 - < 4 years
 - 5-11 years
 - 12 and >
- Focus on asthma control & outcomes
 - Decreased healthcare utilization
 - Improved quality of life
 - Asthma symptom free days
 - No missed school

The **BADGER** Protocol Best



ADd-on Therapy
Giving
Effective
Responses

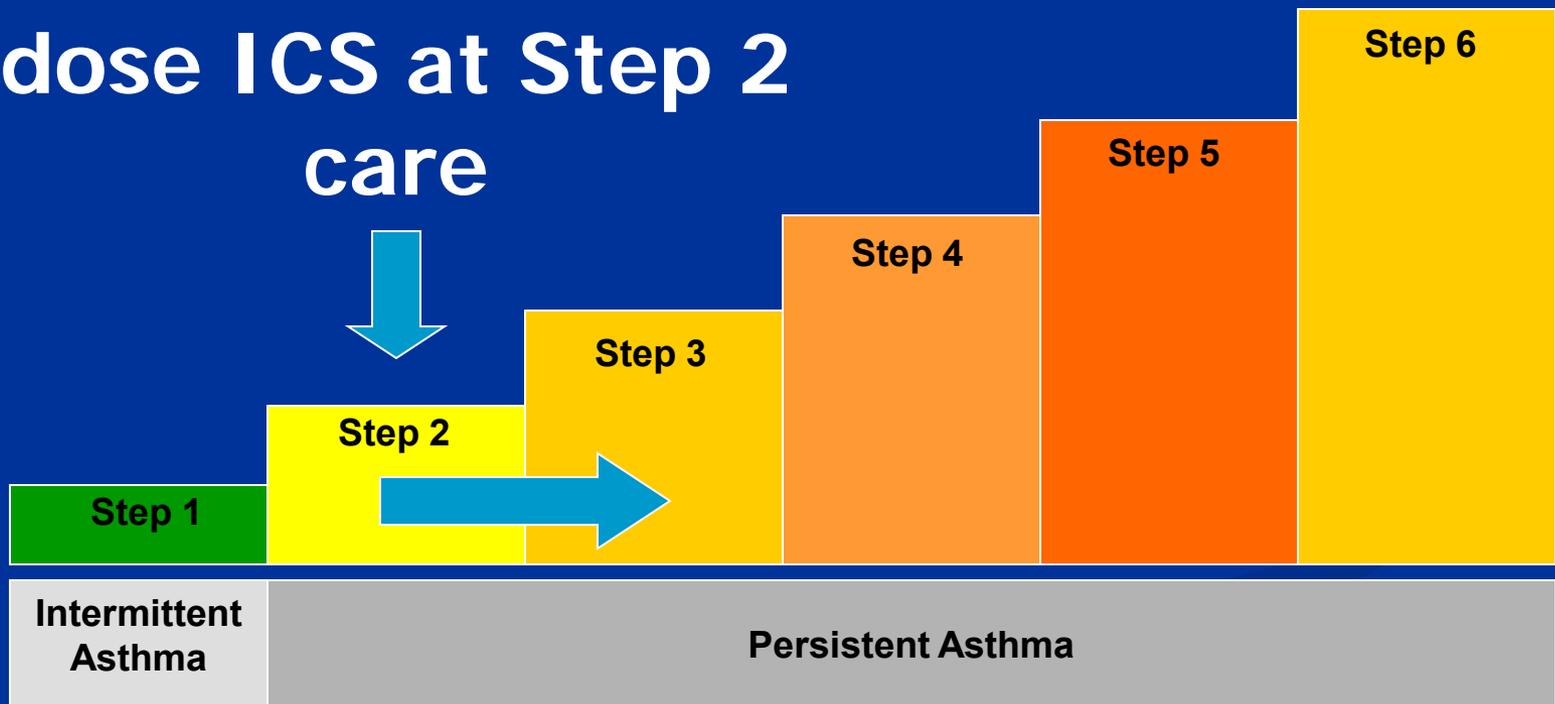
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Unanswered Questions in Childhood Asthma



Uncontrolled on low
dose ICS at Step 2
care

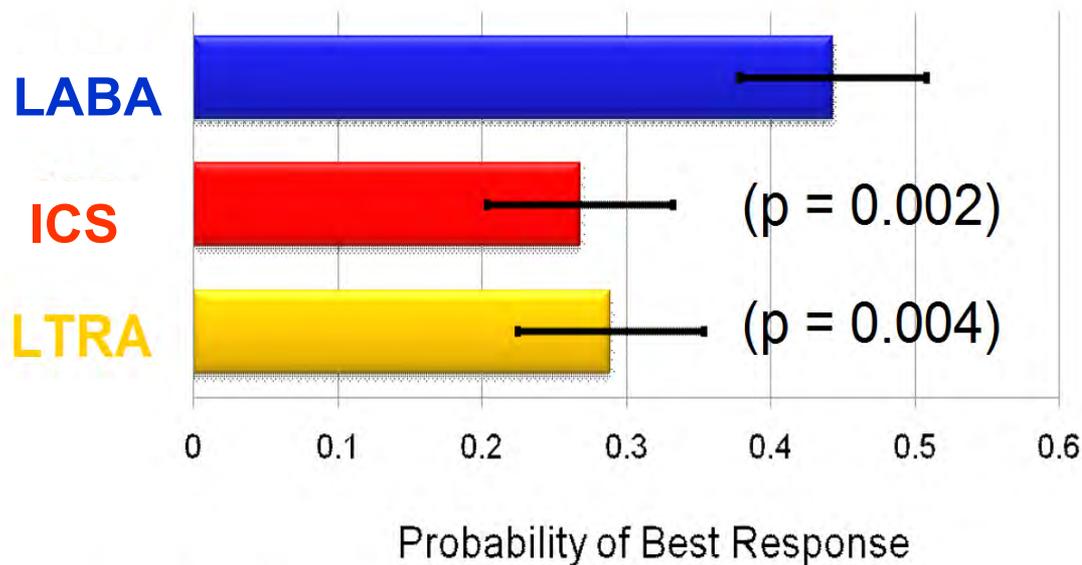


BADGER: Research Question

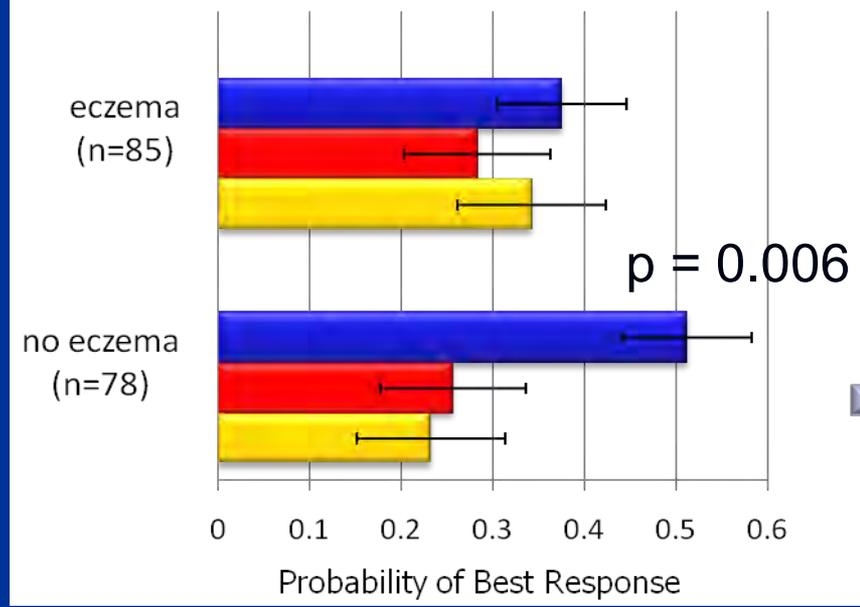
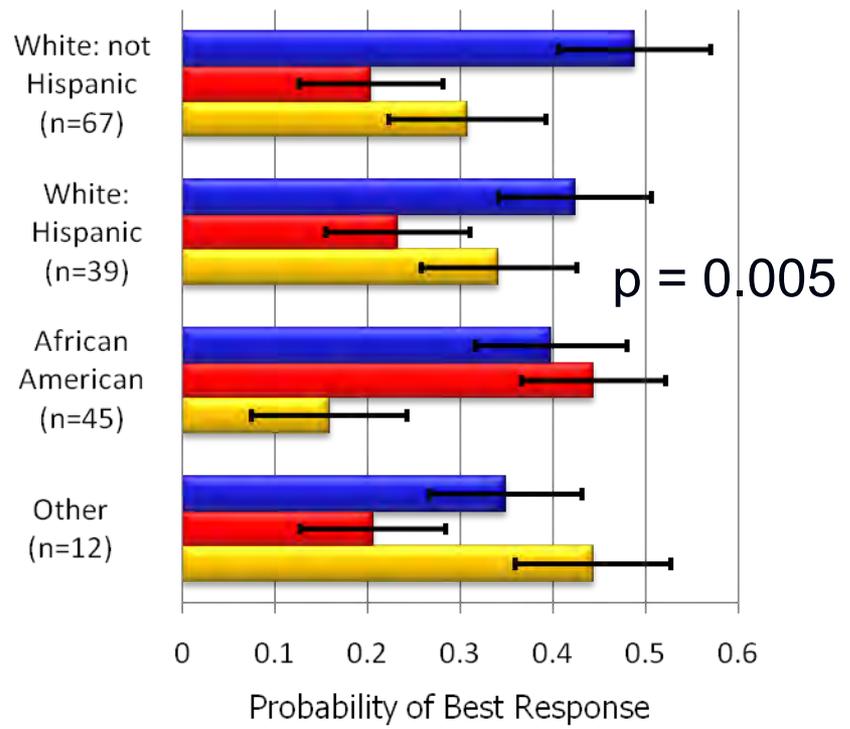
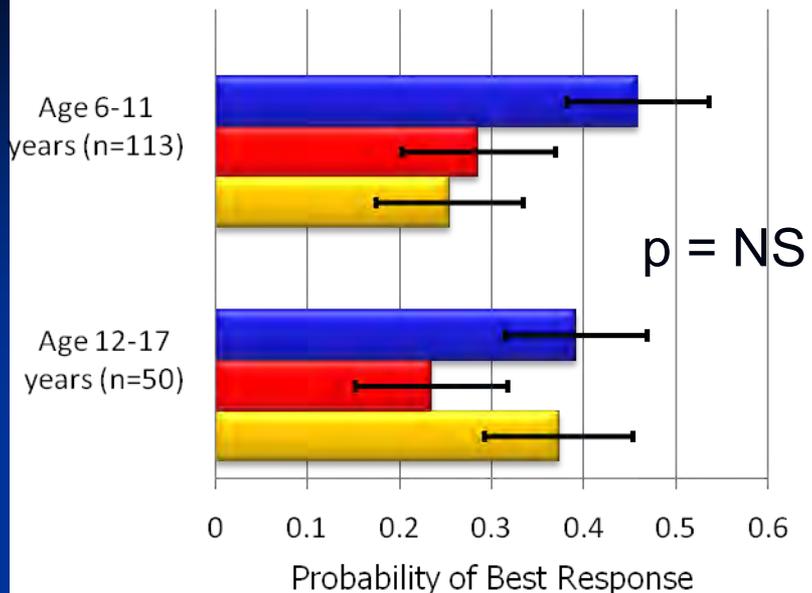
- In children not satisfactorily controlled on low dose ICS (fluticasone 100 µg BID) therapy, what is the next best treatment approach?
 - Increased doses of ICS (fluticasone 250 µg BID)?
 - Add a LABA (salmeterol/fluticasone combination)?
 - Add a LTRA (montelukast)?

Primary Outcome: Probability of BEST Response Based on Composite Outcome*

LABA step-up was more than 1.5 times as likely to produce the best response



*Covariate adjusted model



■ LABA
 ■ ICS
 ■ LTRA

New research question based on BADGER results

- What is the best add on therapy for AA children and adults with persistent asthma?
- “BARD” Best AAfrican American Responses to Asthma Drugs (NIH funded study)
 - Will look at 2 groups following asthma guidelines
 - Ages 5-11
 - >12 years
 - 4 study treatment arms looking at different step up therapy
 - Medications, cab transportation & \$ incentive
- Questions about enrolling in BARD: 608-263-3360 (or other asthma research studies)

Asthma Medications



Delivery Devices:

- Nebulizer
- Spacer with face mask
- Spacer with mouth piece
- Metered dose inhalers
- Dry powder inhalers
 - Diskus
 - Flexhaler
 - Twisthaler
- Aerolizer



Asthma Medications

Delivery Devices:

- Age must be taken in consideration
- Observation of technique crucial
- Develop asthma action plan based on these findings



Asthma Medications

- Controllers

- Rescue



Asthma Medications

Controllers:

- Anti-inflammatories:
 - Corticosteroids (oral & inhaled)
 - Leukotriene modifiers
- Combination products



Asthma Medications



Inhaled Corticosteroids:

- Flovent[®] (fluticasone): ≥ 4 years
- Pulmicort[®] Flexhaler: ≥ 6 years
- Pulmicort Respules[®] (budesonide): ≥ 1 year
- QVAR[®] (beclomethasone): ≥ 5 years
- Asmanex 220[®] (mometasone) Twisthaler: ≥ 12 years (110 mcg pediatric: 4-11)
- Alvesco[®] (ciclesonide): ≥ 12 years



Asthma Medications

Leukotriene modifiers:

- Singulair[®] (montelukast): ≥ 1 year
- Accolate[®] (zafirlukast): ≥ 5 years

Asthma Medications

Combination products:

- Advair Diskus[®] (fluticasone & salmeterol): ≥ 4 years
- Advair HFA[®]: ≥ 4 years
- Symbicort HFA[®] (budesonide & formoterol): ≥ 12 years
- Dulera HFA[®] (mometasone & formoterol): ≥ 12 years



Asthma Medications

Rescue:

- Albuterol (R & S isomers)
 - HFA MDI: ProAir[®], Proventil[®], & Ventolin[®]
 - Nebulized: 2.5 mg
- Levalbuterol (no S isomer)
 - HFA MDI: Xopenex[®]
 - Nebulized: 0.63 mg & 1.25 mg
- Albuterol and ipratropium combined
 - Combivent Respimat[®]
 - Nebulized: Duoneb[®] (albuterol 2.5 mg & ipratropium 500 mcg)



Asthma Medications

Rescue as Preventative:

- Taken prior to exercise or exposure to a known allergen
 - Albuterol HFA MDI
 - Consider addition of Atrovent[®] or ipratropium
 - If not controlled on albuterol alone



Asthma Medications

- Major reasons why there is loss of asthma control:
 - Adherence to medication regimen
 - No written asthma action plan
 - Limited education/poor understanding
 - Hectic life styles
 - Improper use of medications
 - Poor technique
 - Confusion about inhalers:
 - Rescue vs. controller

Priming of Asthma Inhalers

Asthma medications -

		Expiration after opening (when dose counter reaches 0 or ...)	Priming
Albuterol	• When using MDI/HFA, shake canister for 5 seconds prior to each actuation (including priming)		
	ProAir®	per canister	Initial: 3 sprays; after 2 weeks of non-use, 3 sprays
	Proventil®	per canister	Initial: 4 sprays; after 2 weeks of non-use, 4 sprays
	Ventolin®	12 months	Initial: 4 sprays; after 2 weeks of non-use, or if dropped, 4 sprays
Levalbuterol	Xopenex®	per canister	Initial: 4 sprays, after 3 days of non-use, 4 sprays
Ipratropium	Atrovent®	per canister	Initial: 2 sprays, after 3 days of non-use, 2 sprays
Ipratropium/albuterol	Combivent® Respimat®	3 months	Initial: after "cloud" is seen, 3 more sprays; after 3 days of non-use, 1 spray; after 21 days of non-use, as in initial priming
Beclomethasone	Qvar®	per canister	Initial: 2 sprays, after 10 days of non-use, 2 sprays
Budesonide	Pulmicort®	per canister	Initial: 2 clicks
Ciclesonide	Alvesco®	per canister	Initial: 3 sprays, after 10 days of non-use, 3 sprays
Fluticasone	Flovent HFA®	per canister	Initial: 4 sprays; after 7 days of non-use, or if dropped, 2 sprays
	Diskus	50mcg - 6 weeks 100, 250 mcg - 2 months	N/A
Mometasone	Asmanex®	45 days	N/A
Fluticasone/Salmeterol	Advair® HFA	per canister	Initial: 4 sprays; after 4 weeks of non-use, or if dropped, 2 sprays
	Advair® Diskus	1 month	N/A
mometasone/formoterol	Dulera®	per canister	Initial: 4 sprays, after 5 days of non-use, 4 sprays
Budesonide/Formoterol	Symbicort®	3 months	Initial: 2 sprays, after 7 days of non-use, or if dropped 2 sprays

Clinical Pearls:

- When using MDI/HFA, shake canister for 5 seconds prior to each actuation (including priming)

Classifying Asthma Severity in Well-Controlled Patients (All Ages)

Classify Severity by Lowest Level of Treatment Required to Maintain Control

Intermittent	Persistent		
	Mild	Moderate	Severe
Step 1	Step 2	Step 3 or 4	Step 5 or 6

Stepwise Approach for Managing Asthma in Children 5-11 Years of Age

Intermittent Asthma

Persistent Asthma: Daily Medication

Consult with asthma specialist if step 4 care or higher is required.
Consider consultation at step 3.

Step 1
Preferred:
SABA PRN

Step 2
Preferred:
Low-dose ICS (A)
Alternative:
Cromolyn (B),
LTRA (B),
Nedocromil (B),
or
Theophylline (B)

Step 3
Preferred:
EITHER
Low-dose ICS +
either LABA (B),
LTRA (B), or
Theophylline (B)
OR
Medium-dose
ICS (B)

Step 4
Preferred:
Medium-dose
ICS + LABA (B)
Alternative:
Medium-dose
ICS + either
LTRA (B)
or
Theophylline (B)

Step 5
Preferred:
High-dose ICS +
LABA (B)
Alternative:
High-dose ICS +
either LTRA (B)
or
Theophylline (B)

Step 6
Preferred:
High-dose ICS +
LABA +
Oral Systemic
Corticosteroid (D)
Alternative:
High-dose ICS +
either LTRA or
Theophylline
and
Oral Systemic
Corticosteroid (D)

Step Up if Needed
(first, check adherence, inhaler technique, environmental control, and comorbid conditionals)

Assess Control

Step Down if Possible
(and asthma is well-controlled at least 3 months)

Each Step: Patient education, environmental control, and management of comorbidities

Steps 2-4: Consider subcutaneous allergen immunotherapy for patients who have allergic asthma

Quick-Relief Medication for All Patients

- SABA as needed for symptoms. Intensity of treatment depends on severity of symptoms: up to 3 treatments at 20-minute intervals as needed. Short course of oral systemic corticosteroids may be needed
- Caution: Increasing of use of SABA or use >2 days a week for symptom relief (not prevention of EIB) indicates inadequate control and the need to step up treatment

Stepwise Approach for Managing Asthma in Children ≥ 12 Years of Age and Adults

Intermittent Asthma

Persistent Asthma: Daily Medication

Consult with asthma specialist if step 4 care or higher is required.
Consider consultation at step 3.

Step 1

Preferred:
SABA PRN

Step 2

Preferred:
Low-dose ICS (A)

Alternative:
Cromolyn (A),
LTRA (A),
Nedocromil (A),
or
Theophylline (B)

Step 3

Preferred:
Low-dose ICS +
LABA (A)
OR
Medium-dose ICS
(A)

Alternative:
Low-dose ICS +
either LTRA (A),
Theophylline (B),
or Zileuton (D)

Step 4

Preferred:
Medium-dose
ICS + LABA (B)

Alternative:
Medium-dose
ICS +
either
LTRA (B),
Theophylline (B),
or Zileuton (D)

Step 5

Preferred:
High-dose ICS +
LABA (B)

AND
Consider
Omalizumab
for Patients
Who Have
Allergies (B)

Step 6

Preferred:
High-dose ICS +
LABA + Oral
Corticosteroid

AND
Consider
Omalizumab for
Patients Who
Have Allergies

Step Up if Needed

(first, check adherence, environmental control and comorbid conditions)

Assess Control

Step Down if Possible

(and asthma is well-controlled at least 3 months)

Each Step: Patient education, environmental control, and management of comorbidities

Steps 2-4: Consider subcutaneous allergen immunotherapy for patients who have allergic asthma

Quick-Relief Medication for All Patients

- SABA as needed for symptoms. Intensity of treatment depends on severity of symptoms: up to 3 treatments at 20-minute intervals as needed. Short course of systemic oral corticosteroids may be needed
- Use of SABA >2 days a week for symptom relief (not prevention of EIB) generally indicates inadequate control and the need to step up treatment

Managing Asthma



The NAEPP Asthma Guidelines:

- Follow an individualized asthma action plan
- Avoid or control exposure to things that make asthma worse (triggers)
- Use medication appropriately
- Monitor response to treatment
 - Symptoms & *peak flows*?
 - Asthma Control test (ACT)
- Regular follow-up visits with ongoing education at *each point of care!*



NAEPP School Education Materials



MANAGEMENT OF ASTHMA EXACERBATIONS: School Treatment

Steps to Follow for an Asthma Episode in the School Setting When a Nurse is Not Available

Be prepared. Know which students have asthma and where their medicine is kept.

If a student has asthma symptoms or complaints and needs your help, take these steps.

- » **Quickly evaluate** the situation. **Call 911** if the student is **struggling to breathe, talk, stay awake, has blue lips, or asks for an ambulance.**
- » **NEVER LEAVE A STUDENT ALONE.**
- » **Stop the student's activity.**
- » **Help the student locate and take his/her prescribed quick-relief inhaler medicine.**
- » **Contact the parent/guardian.**
- » **Repeat quick-relief inhaler medicine in 20 minutes** if student is still having trouble breathing.

Call 911 if any of the following occur:

- » If the student is **struggling to breathe, talk, stay awake, has blue lips, or asks for an ambulance.**
- » If the **student doesn't improve** after two administrations of quick-relief medicine, and nurse/designee or parent/guardian is not available.
- » If no quick-relief medicine is available, **the student's symptoms have not improved** spontaneously, and nurse/designee or parent/guardian is not available.
- » If you are unsure what to do.



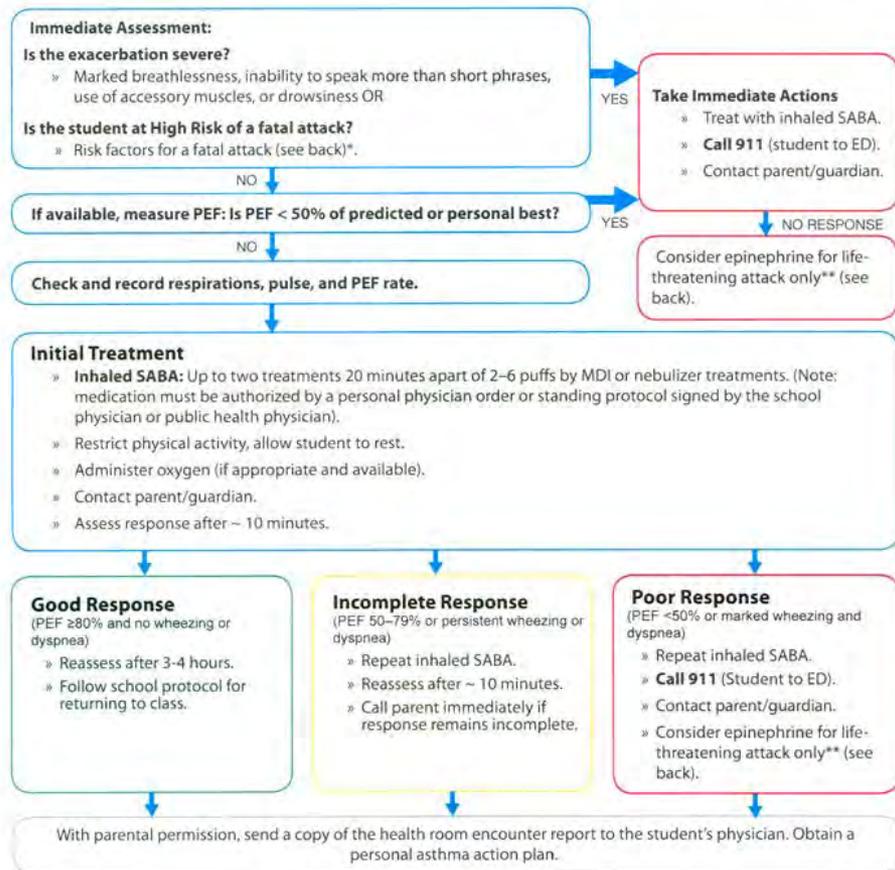
MANAGEMENT OF ASTHMA EXACERBATIONS: *School Treatment*

Suggested Emergency Nursing Protocol for Students with Asthma Symptoms Who Don't Have a Personal Asthma Action Plan

National Asthma Education and Prevention Program

A student with asthma symptoms should be placed in an area where he/she can be closely observed. Never send a student to the health room alone or leave a student alone. Limit moving a student who is in severe distress. Go to the student instead.

See list of Possible Observations/Symptoms on back.



Possible Observations/Symptoms (May include one or more of the following):

- Coughing, wheezing, noisy breathing, whistling in the chest.
- Difficulty or discomfort when breathing, tightness in chest, shortness of breath, chest pain, breathing hard and/or fast.
- Nasal flaring (nostril opens wide to get in more air).
- Can only speak in short phrases or not able to speak.
- Blueness around the lips or fingernails.

*Risk Factors for Death from Asthma

Asthma history

- Previous severe exacerbation (e.g., intubation or ICU admission for asthma).
- Two or more hospitalizations for asthma in the past year.
- Three or more ED visits for asthma in the past year.
- Hospitalization or ED visit for asthma in the past month.
- Using >2 canisters of SABA per month.
- Difficulty perceiving asthma symptoms or severity of exacerbations.
- Other risk factors: lack of a written asthma action plan, sensitivity to Alternaria.

Social history

- Low socioeconomic status or inner-city residence.
- Illicit drug use.
- Major psychosocial problems.

Comorbidities

- Cardiovascular disease.
- Other chronic lung disease.
- Chronic psychiatric disease.

**** Consider administering epinephrine** if the student is unable to use SABA because respiratory distress or agitation prevents adequate inhalation from the SABA inhaler device and nebulized albuterol is not available and the exacerbation is **life-threatening**. Administer epinephrine auto-injector in lateral thigh as per local or state epinephrine protocol. Epinephrine is NOT first line treatment for asthma. Albuterol is the treatment of choice. Administration of epinephrine should be rare and is intended to prevent a death at school from a severe asthma attack. Most school nurses will never need to administer epinephrine.

ED: emergency department
PEF: peak expiratory flow

MDI: metered dose inhaler
SABA: short-acting beta₂-agonist (bronchodilator) inhaler

AUGUST 2011

PEF: emergency department

MDI: metered dose inhaler

AUGUST 2011

First Aid For Asthma

What to look for:

- Shortness of Breath
- Coughing or Wheezing
- Chest Tightness
- Difficulty Walking, Talking or Breathing
- Tightly-pulled skin around neck or chest area



What to do:

STAY CALM, SPEAK REASSURINGLY, PROVIDE PRIVACY AND DO NOT LEAVE THE CHILD ALONE.



SEAT CHILD UPRIGHT,
DO NOT LET CHILD LIE DOWN.

USE QUICK RELIEF MEDICATION AS INDICATED
IN ASTHMA ACTION PLAN OR MEDICATION
AUTHORIZATION FORM.



IF NO IMPROVEMENT AFTER
5 MINUTES CALL 911.

CALL 911 IMMEDIATELY IF:

- ✓ LIPS AND/OR NAILS ARE BLUE
- ✓ SKIN IS PULLED TIGHTLY AROUND
NECK OR CHEST
- ✓ CHILD CANNOT WALK OR TALK



Primer Auxilio Para El Asma

Que observa:

- Silbido al respirar
- Dificultad de respirar
- Dificultad de caminar
- Piel apretada alrededor del cuello
- Dificultad de hablar
- Tensión del pecho
- Tos Persistente
- Insuficiencia de respiración



Que Hacer:

QUÉDESE TRANQUILO, HABLE DE MODO
TRANQUILIZADOR, PROPORCIONA UN LUGAR
AISLADO, NO DEJE EL NIÑO SOLO



SIENTE EL NIÑO DERECHO.
NO DEJE QUE EL NIÑO SE ACUESTE

USE UNA MEDICINA DE ALIVIO RÁPIDO COMO
INDICADO EN EL PLAN DE ACCIÓN CONTRA EL
ASMA O UNA FORMA AUTORIZANDO TRATAMIENTO



SI NO HAY MEJORAMIENTO DESPUÉS DE
CINCO MINUTOS, LLAME AL 911

LLAME AL 911 INMEDIATAMENTE SI:

- ✓ LOS LABIOS Y/O UÑAS SE PONEN AZULES
- ✓ LA PIEL ESTA DEMASIADA APRETADA
ALREDEDOR DEL CUELLO O DEL PECHO
- ✓ EL NIÑO NO PUEDE CAMINAR O HABLAR



Why asthma action plans in schools?

- Best practice as reflected in asthma guidelines
- Provides essential information about the child's asthma:
 - Asthma medications:
 - Establish severity (controller medications)
 - Understand step up care plan for worsening asthma symptoms
 - Triggers
 - Health care provider contact information
 - Empowers School Nurse to facilitate collaboration:
 - Home → schools → health care system
 - Whether the child is routinely receiving asthma care

Asthma Action Plans: Barriers

- Need for standardized form
 - ? Individualize for family, school, referring MD
- Content
 - Language
 - Health literacy
- Ease of development and updating
 - EMR vs paper
 - Time to create plan in busy practice setting
 - MOC

Date: _____

RE: Student _____ DOB: _____

Dear Healthcare Provider,

Asthma is the most common chronic disease of children and is one of the leading causes of school absences. Asthma can be managed in the school setting so that children can be active, healthy and available to learn. Addressing asthma in the school setting is a collaborative effort.

Per recommendations of the National Asthma Education and Prevention Program (NAEPP), the Centers for Disease Control (CDC), and the American Lung Association (ALA), all students with asthma should have a written Asthma Action Plan in place in the school setting. This plan should provide information about the child's medications, symptoms, and triggers, including when to step up treatment for worsening asthma symptoms or special considerations (such as pre-exercise).

I am writing this letter to request an Asthma Action Plan for this student. I have enclosed a blank Asthma Action Plan if you do not have one available.

Please FAX the completed plan to me at _____.

Your help in providing this plan will help me better manage this child's asthma in the school setting.

Sincerely,

School Nurse

School

Phone number

Washburn University
1000 East 17th Street
Topeka, KS 66606
785.326.2200

Managing Asthma in Schools

- Asthma action plans (aaps)
 - In Wisconsin (per principal report)*:
 - % of schools with asthma action plans in place for ALL children diagnosed with asthma:
 - 2008: 37.3%
 - 2012: 61%
 - Madison Metro School District: 1% of children have aap in place
 - Per provider report in WI*:
 - 31% of adults are provided an aap
 - 47% of children are provided an aap

Managing Asthma in Schools

- Locally:
 - UW Health Dept of Pediatrics initiative
- Nationally:
 - AAAAI initiative: aaps in school health offices

Asthma Action Plans in Schools

- *New Mexico Council on Asthma (NMCOA)*
 - *Mission: Reduce asthma disparities and improve the quality of life for all people with asthma in New Mexico by coordinating statewide efforts, bringing together community organizations and others to achieve sustainable statewide changes, in the environment, education and quality of health care as they relate to asthma.*
 - Diverse group of experts working to improve asthma management
- Created an asthma action plan for school nurses, health care providers and families

NEW MEXICO ASTHMA ACTION PLAN FOR SCHOOLS

Date _____

School District _____ School Name _____
 School Nurse / Health Asst. _____ School Phone # / FAX # _____

PARENT/GUARDIAN: Please complete the information in the top sections and sign consent at bottom of the page.

Student Name	Date of Birth	Student #
*Health Care Provider Name/Title	Provider's Office Phone / FAX #	
Parent/Guardian	Parent's Phone #s	
Emergency Contact	Contact Phone #s	



GREEN means Go!
Use CONTROL medicine daily

YELLOW means Caution!
Add Rescue medicine

RED means EMERGENCY!
Get help from a provider now!

Allergies to Medications:

Asthma Triggers Identified (Things that make your asthma worse): <input type="checkbox"/> Exercise <input type="checkbox"/> Colds <input type="checkbox"/> Smoke (tobacco, fires, incense) <input type="checkbox"/> Pollen <input type="checkbox"/> Dust <input type="checkbox"/> Strong Odors <input type="checkbox"/> Mold/moisture <input type="checkbox"/> Stress/Emotions <input type="checkbox"/> Pests (rodents, cockroaches) <input type="checkbox"/> Gastroesophageal reflux <input type="checkbox"/> Season: Fall, Winter, Spring, Summer <input type="checkbox"/> Animals <input type="checkbox"/> Other (food allergies): _____	Date of student's last visit to medical provider: _____	Date of Last Flu Shot: _____	Inhaler is kept: <input type="checkbox"/> With Student <input type="checkbox"/> In Classroom <input type="checkbox"/> Health Office <input type="checkbox"/> Other
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HEALTH CARE PROVIDER: Please complete Severity Level, Zone Information and Medical Order Below

Asthma Severity: Intermittent or Persistent: Mild Moderate Severe

Green Zone: Go! Take Control Medications EVERY DAY

You have **ALL** of these:

- Breathing is easy
- No cough or wheeze
- Can work and play
- No symptoms at night

Peak flow (optional):
Greater than \geq _____
(More than 80% of Personal Best)

Personal best peak flow: _____

No controller medication is prescribed. Always rinse mouth after using your daily inhaled medication.

_____ puff(s) MDI with spacer _____ times a day
Inhaled corticosteroid or inhaled corticosteroid/long acting β_2 -agonist

_____ nebulizer treatment(s) _____ times a day
Inhaled corticosteroid

_____, take _____ by mouth once daily at bedtime
Leukotriene antagonist

For asthma with exercise, ADD:
 _____ puff(s) MDI with spacer 5 to 15 minutes before exercise

For nasal/environmental allergy, ADD:

Yellow Zone: Caution! Continue CONTROL Medicine & ADD RESCUE Medicines-

You have **ANY** of these:

- Cough or mild wheeze
- Tight chest
- First signs of a cold
- Problems sleeping, Playing or working

Peak flow (optional):
to _____
(50% - 80% of Personal Best)

DO NOT LEAVE STUDENT ALONE! Call Parent/Guardian when rescue medication is given.

_____ puff(s) MDI with spacer & every _____ hours as needed
Fast acting inhaled β_2 -agonist

OR

_____ nebulizer treatment(s) & every _____ hours as needed
Fast acting inhaled β_2 -agonist

Other _____

Call your MEDICAL PROVIDER if you have these signs more than two times a week, or if your rescue medicine does not work! If symptoms are NOT better OR peak flow is NOT improved, go to RED ZONE ↓

Red Zone: EMERGENCY! Continue CONTROL Medicine & ADD RESCUE Medicines and GET HELP!

You have **ANY** of these:

- Cannot talk, eat, or walk well
- Medicine is not helping or
- Getting worse, not better
- Breathing hard & fast
- Blue lips & fingernails

Peak flow (optional):
Less than $<$ _____
(Less than 50% of Personal Best)

DO NOT LEAVE STUDENT ALONE! → Call for emergency 911 and start treatment

_____ puff(s) MDI with spacer & every 20 minutes until paramedics arrive
Fast acting inhaled β_2 -agonist

OR

_____ nebulizer treatment(s) every 20 minutes until paramedics arrive
Fast acting inhaled β_2 -agonist

Call 911 and start treatment immediately. Then call Parent/Guardian.

Use only if Oxygen and Pulse Oximeter available:
Administer Oxygen _____ l/min for O2 Sat. \leq _____ % and measure O2 Sat. every _____ minutes

HEALTH CARE PROVIDER ORDER AND SCHOOL MEDICATION CONSENT

Check all that apply:

____ Student has been instructed in the proper use of his/her asthma medications and IS ABLE TO CARRY AND SELF-ADMINISTER his/her INHALER AT SCHOOL.

____ Student is to notify designated school health personnel after using inhaler at school.

____ Student needs supervision or assistance when using inhaler.

____ Student is unable to carry his/her inhaler while at school.

*SIGNATURE/TITLE _____ DATE _____

Parent/Guardian:

I approve of this asthma action plan. I give my permission for the school nurse and trained school personnel to follow this plan, administer medication(s), and contact my provider, if necessary. I assume full responsibility for providing the school with the prescribed medications and delivery and monitoring devices. I give my permission for the school to share the above information with school staff that need to know and permission for my child to participate in any asthma educational learning opportunities at school.

SIGNATURE: _____ DATE: _____

SCHOOL NURSE: _____ DATE: _____

California Dept of Public Health

- Materials developed jointly by health professionals in the California Department of Education and the California Asthma Public Health Initiative, in statewide collaboration with asthma experts and stakeholders:
 - *Guidelines for the Management of Asthma in California Schools*
 - *Asthma Action Plan for Schools and Families*

Asthma Action Plan

ENGLISH

PROVIDER INSTRUCTIONS

At initial presentation, determine the level of asthma severity

- Level of severity is determined by both impairment and risk and is assigned to the most severe category in which any feature occurs.

At subsequent visits, assess control to adjust therapy

- Level of control is determined by both impairment and risk and is assigned to the most severe category in which any feature occurs.
- Address adherence to medication, inhaler technique, and environmental control measures.
- Sample patient self-assessment tools for asthma control can be found at <http://www.asthmacontrol.com/index.html> <http://www.asthmacontrolcheck.com>

Stepwise approach for managing asthma:

- Therapy is increased (stepped up) if necessary and decreased (stepped down) when possible as determined by the level of asthma severity or asthma control.

Asthma severity and asthma control include the domains of current impairment and future risk.

Impairment: frequency and intensity of symptoms and functional limitations the patient is currently experiencing or has recently experienced.

Risk: the likelihood of either asthma exacerbations, progressive decline in lung function (or, for children, reduced lung growth), or risk of adverse effects from medication.

ASTHMA MANAGEMENT RECOMMENDATIONS:

- Ensure that patient/family receive education about asthma and how to use spacers and other medication delivery devices.
- Assess asthma control at every visit by self-administered standardized test or verbal history.
- Perform spirometry at baseline and at least every 1 to 2 years for patients ≥ 5 years of age.
- Update or review the Asthma Action Plan every 6 to 12 months.
- Perform skin or blood allergy tests for all patients with persistent asthma.
- Encourage patient/family to continue follow-up with their clinician every 1 to 6 months even if asthma is well controlled.
- Refer patient to a specialist if:
 - there are difficulties achieving or maintaining control OR
 - step 4 care or higher is required (step 3 care or higher for children 0-4 years of age) OR
 - immunotherapy or omalizumab is considered OR
 - additional testing is indicated OR
 - if the patient required 2 bursts of oral systemic corticosteroids in the past year or a hospitalization.

HOW TO USE THE ASTHMA ACTION PLAN:

Top copy (for patient):

- Enter specific medication information and review the instructions with the patient and/or family.
- Educate patient and/or family about factors that make asthma worse and the remediation steps on the back of this form.
- Complete and sign the bottom of the form and give this copy of the form to the patient.**

Middle copy (for school, childcare, work, etc):

- Educate the parent/guardian on the need for their signature on the back of the form in order to authorize student self-carry and self-administration of asthma medications at school and also to authorize sharing student health information with school staff.
- Provide this copy of the form to the school/childcare center/work/caretaker or other involved third party. (This copy may also be faxed to the school, etc.)**

Bottom copy (for chart):

- File this copy in the patient's medical chart.**

FOR MORE INFORMATION:

To access the August 2007 full version of the NHLBI Guidelines for the Diagnosis and Treatment of Asthma (EPR-3) or the October 2007 Summary Report, visit <http://www.nhlbi.nih.gov/guidelines/asthma/index.htm>.

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My Asthma Plan

ENGLISH

Patient Name: _____

Medical Record #: _____

Provider's Name: _____ DOB: _____

Provider's Phone #: _____ Completed by: _____ Date: _____

Controller Medicines	How Much to Take	How Often	Other Instructions
		_____ times per day EVERY DAY!	<input type="checkbox"/> Gargle or rinse mouth after use
		_____ times per day EVERY DAY!	
		_____ times per day EVERY DAY!	
		_____ times per day EVERY DAY!	
Quick-Relief Medicines	How Much to Take	How Often	Other Instructions
<input type="checkbox"/> Albuterol (ProAir, Ventolin, Proventil) <input type="checkbox"/> Levalbuterol (Xopenex)	<input type="checkbox"/> 2 puffs <input type="checkbox"/> 4 puffs <input type="checkbox"/> 1 nebulizer treatment	Take ONLY as needed (see below — starting in Yellow Zone or before exercise)	NOTE: If you need this medicine more than two days a week, call physician to consider increasing controller medications and discuss your treatment plan.

Special instructions when I am **doing well**, **getting worse**, **having a medical alert.**

Doing well.

- No cough, wheeze, chest tightness, or shortness of breath during the day or night.
- Can do usual activities.

Peak Flow (for ages 5 and up):
is _____ or more (80% or more of personal best)
Personal Best Peak Flow (for ages 5 and up): _____

PREVENT asthma symptoms every day:

- Take my controller medicines (above) every day.
- Before exercise, take _____ puff(s) of _____
- Avoid things that make my asthma worse. (See back of form.)

Getting worse.

- Cough, wheeze, chest tightness, shortness of breath, or
- Waking at night due to asthma symptoms, or
- Can do some, but not all, usual activities.

Peak Flow (for ages 5 and up):
_____ to _____ (50 to 79% of personal best)

CAUTION. Continue taking every day controller medicines, AND:
 Take _____ puffs or _____ one nebulizer treatment of quick relief medicine. If I am not back in the **Green Zone** within 20-30 minutes take _____ more puffs or nebulizer treatments. If I am not back in the **Green Zone** within one hour, then I should:

- Increase _____
- Add _____
- Call _____
- Continue using quick relief medicine every 4 hours as needed. Call provider if not improving in _____ days.

Medical Alert

- Very short of breath, or
- Quick-relief medicines have not helped, or
- Cannot do usual activities, or
- Symptoms are same or get worse after 24 hours in Yellow Zone.

Peak Flow (for ages 5 and up):
less than _____ (50% of personal best)

MEDICAL ALERT! Get help!

- Take quick relief medicine: _____ puffs every _____ minutes and get help immediately.
- Take _____
- Call _____

Danger! Get help immediately! Call 911 if trouble walking or talking due to shortness of breath or if lips or fingernails are gray or blue. For child, call 911 if skin is sucked in around neck and ribs during breaths or child doesn't respond normally.

Health Care Provider: My signature provides authorization for the above written orders. I understand that all procedures will be implemented in accordance with state laws and regulations. Student may self carry asthma medications: Yes No self administer asthma medications: Yes No (This authorization is for a maximum of one year from signature date.)

Healthcare Provider Signature _____

Date _____

ORIGINAL (Patient) / CANARY (School/Child Care/Work/Other Support Systems) / PINK (Chart)

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Controlling Things That Make Asthma Worse

SMOKE

- Do not smoke. Attend classes to help stop smoking.
- Do not allow smoking in the home or car. Remaining smoke smell can trigger asthma.
- Stay away from people who are smoking.
- If you smoke, smoke outside.

DUST

- Vacuum weekly with a vacuum with a high efficiency filter or a central vacuum. Try to make sure people with asthma are not home during vacuuming.
- Remove carpet if possible. Wet carpet before removing and then dry floor completely.
- Damp mop floors weekly.
- Wash bedding and stuffed toys in hot water every 1-2 weeks. Freeze stuffed toys that aren't washable for 24 hours.
- Cover mattresses and pillows in dust-mite proof zippered covers.
- Reduce clutter and remove stuffed animals, especially around the bed.
- Replace heating system filters regularly.



PESTS

- Do not leave food or garbage out. Store food in airtight containers.
- Try using traps and poison baits, such as boric acid for cockroaches. Instead of sprays/bombs, use baits placed away from children, such as behind refrigerator.
- Vacuum up cockroach bodies and fill holes in with caulking or copper wool.
- Fix leaky plumbing, roof, and other sources of water.



MOLD

- Use exhaust fans or open windows for cross ventilation when showering or cooking.
- Clean mold off hard surfaces with detergent in hot water and scrub with stiff brush or cleaning pad, then rinse clean with water. Absorbent materials with mold may need to be replaced.
- Make sure people with asthma are not in the room when cleaning.
- Fix leaky plumbing or other sources of water or moisture.



ANIMALS

- Consider not having pets. Avoid pets with fur or feathers.
- Keep pets out of the bedroom of the person with asthma.
- Wash your hands and the hands of the person with asthma after petting animals.



ODORS/SPRAYS

- Avoid using strongly scented products, such as home deodorizers and incense, and perfumed laundry products and personal care products.
- Do not use oven/stove for heating.
- When cleaning, keep person with asthma away and don't use strong smelling cleaning products.
- Avoid aerosol products.
- Avoid strong or extra strength cleaning products.
- Avoid ammonia, bleach, and disinfectants.



POLLEN AND OUTDOOR MOLDS

- Try to stay indoors when pollen and mold counts are high.
- Keep windows closed during pollen season.
- Avoid using fans; use air conditioners.



COLDS/FLU

- Keep your body healthy with enough exercise and sleep.
- Avoid close contact with people who have colds.
- Wash your hands frequently and avoid touching your hands to your face.
- Get an annual flu shot.



WEATHER AND AIR POLLUTION

- If cold air is a problem, try breathing through your nose rather than your mouth and covering up with a scarf.
- Check for Spare the Air days and nights and avoid strenuous exercise at those times.
- On very bad pollution days, stay indoors with windows closed.

EXERCISE

- Warm up before exercising.
- Plan alternate indoor activities on high pollen or pollution days.
- If directed by physician, take medication before exercise. (See Green Zone of Asthma Action Plan.)

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SCHOOL AUTHORIZATION FORM

ENGLISH

To be completed by Parent/Guardian and turned in to the school

AUTHORIZATION AND DISCLAIMER FROM PARENT/GUARDIAN: I request that the school assist my child with the asthma medications listed on this form, and the Asthma Action Plan, in accordance with state laws and regulations.

Yes No

My child may carry and self-administer asthma medications and I agree to release the school district and school personnel from all claims of liability if my child suffers any adverse reactions from self-administration of asthma medications:

Yes No

Parent/Guardian Signature _____

Date _____

AUTHORIZATION FOR USE OR DISCLOSURE OF HEALTH INFORMATION TO SCHOOL DISTRICTS

Completion of this document authorizes the disclosure and/or use of individually identifiable health information, as set forth below, consistent with Federal laws (including HIPAA) concerning the privacy of such information. Failure to provide all information requested may invalidate this authorization.

USE AND DISCLOSURE INFORMATION:

Patient/Student Name: _____ / _____
Last First MI Date of Birth

I, the undersigned, do hereby authorize (name of agency and/or health care providers):

(1) _____ (2) _____ to provide health information from the above-named child's medical record to and from:

School or school district to which disclosure is made _____

Address / City and State / Zip Code _____

Contact person at school or school district _____

Area Code and Telephone Number _____

The disclosure of health information is required for the following purpose: _____

Requested information shall be limited to the following: All health information; or Disease-specific information as described: _____

DURATION:

This authorization shall become effective immediately and shall remain in effect until _____ (enter date) or for one year from the date of signature, if no date entered.

RESTRICTIONS:

Law prohibits the Requestor from making further disclosure of my health information unless the Requestor obtains another authorization form from me or unless such disclosure is specifically required or permitted by law.

YOUR RIGHTS:

I understand that I have the following rights with respect to this Authorization: I may revoke this Authorization at any time. My revocation must be in writing, signed by me or on my behalf, and delivered to the health care agencies/persons listed above. My revocation will be effective upon receipt, but will not be effective to the extent that the Requestor or others have acted in reliance to this Authorization.

RE-DISCLOSURE:

I understand that the Requestor (School District) will protect this information as prescribed by the Family Equal Rights Protection Act (FERPA) and that the information becomes part of the student's educational record. The information will be shared with individuals working at or with the School District for the purpose of providing safe, appropriate, and least restrictive educational settings and school health services and programs.

I have a right to receive a copy of this Authorization. Signing this Authorization may be required in order for this student to obtain appropriate services in the educational setting.

APPROVAL:

Printed Name _____

Signature _____

Date _____

Relationship to Patient/Student _____

Area Code and Telephone Number _____

Plan de Acción para el Asma

Nombre:
 Fecha:
 Doctor: Kathleen K Shanovich, NP
 Número de teléfono: 608-263-6180

Alergias/Desencadenadores: infección respiratoria (respiratory infection) and polen del pasto (grass pollens), ácaros del polvo (dust mites), gatos (cats), perros (dogs) and cockroaches



Zona Verde

- Respira con facilidad
- No tiene tos ni sibilancia al respirar
- Puede caminar, jugar y dormir a lo largo de la noche



Tome este(os) medicamento(s) para seguir respirando con facilidad:

- Nombre del/de los medicamento(s): Loratadine (Claritin o Alavert) 10 mg una vez al día
- Para los inhaladores, use un espaciador
- Para la tos y wheezing, toma Inhalador de Albuterol (Ventolin) 2 bocanadas (puffs) con espaciador cada 4 horas según sea necesario.

Zona Amarilla

- No se siente bien
- Primeros signos de un resfriado
- Tose o tiene sibilancia por la noche o al trabajar o jugar



Cuando no se sienta bien, añada medicamento(s) para el alivio rápido y aumente el/los medicamento(s) de control para evitar que el asma empeore:

- Tome el medicamento para el alivio rápido cada 4 horas para los síntomas del asma: Inhalador de Albuterol 2-4 bocanadas (puffs) con espaciador cada 4 horas según sea necesario.
- Si no mejora o si permanece en la Zona Amarilla durante más de 2 días, llame a la clínica al 608-263-6180.

Zona Roja

- Se siente muy mal
- El medicamento no le está ayudando
- Respira con dificultad y de forma rápida
- No puede dormir, trabajar, ni jugar debido a la tos o sibilancia



Cuando se sienta muy mal, tome el/los medicamento(s) para el alivio rápido, añada o aumente los esteroides, y llame ahora a su doctor/proveedor:

- Tome el medicamento para el alivio rápido cada 4 horas para los síntomas del asma: Inhalador de Albuterol 2-4 bocanadas (puffs) con espaciador cada 4 horas según sea necesario.
- Llame a nuestra clínica al 608-263-6180 para hablar sobre cómo empezar a tomar esteroides orales.

Si observa alguno de los siguientes, llame al 911 o vaya ahora a la Sala de Emergencia:

- Retracción del cuello y las costillas cuando respira
- Problemas para caminar o hablar debido al asma
- No hay resultados con el medicamento para el alivio rápido
- Los labios o las uñas tienen un color morado o gris

Fecha de la Próxima Visita: Seguimiento con Kathleen K Shanovich en 3 mes(es).

Asthma Action Plan

Name:
 Date:
 Doctor/Provider: Kathleen K Shanovich, NP
 Phone Number: 608-263-6180

Allergies/Triggers: common cold and mold, grass pollens, tree pollens, dust mites, cats and dogs



Green Zone

- Breathing is easy
- No cough or wheeze
- Can walk, play and sleep through the night



Take these controller medication(s) to keep breathing easy:

- Name of medicine(s):
- Asmanex 220 mcg/inh 1 inhalation once a day. Rinse mouth after use.
- Fluticasone furoate (Veramyst) nasal susp 1 squirt each nostril once a day
- Cetirizine (Zyrtec) 10 mg once a day
- For inhalers use a spacer
- 5-15 minutes before exercise you can take
- Albuterol inhaler 2 puffs with spacer every 3-4 hours as needed or Combivent HFA using a spacer, 2 puffs every 6 hours as needed

Yellow Zone

- Not feeling Well
- First signs of a cold
- Cough or wheeze at night or with work or play



When not feeling well, add quick relief medicine(s) and step up controller medicine(s) to keep asthma from getting worse:

- Take quick-relief medicine every 4 hours for asthma symptoms: Albuterol inhaler 2 puffs with spacer every 3-4 hours as needed or Combivent HFA using a spacer, 2 puffs every 6 hours as needed
- Add/Change to the following medicines: Asmanex 220 mcg 2 inhalations one time a day. Rinse mouth after use.
- Continue yellow zone medicines for 5-7 days then go back to green zone medicines.
- If not better or if remain in yellow zone for more than 2 days, call the clinic at 608-263-6180.

Red Zone

- Feeling Awful
- Medicine not helping
- Breathing is hard and fast
- Can't sleep, work or play because of cough or wheeze



When feeling awful, take quick relief medicine(s), and call your doctor/provider now:

- Take quick-relief medicine: (repeat in 15 minutes if needed) Albuterol inhaler 2 puffs with spacer every 3-4 hours as needed or Combivent HFA using a spacer, 2 puffs every 6 hours as needed
- Continue green zone medicines.
- Call our office at 608-263-6180 to talk about starting oral steroids.

If you see any of the following call 911 or go to the **EMERGENCY ROOM** now:

- Pulling in neck and ribs during breaths
- Trouble walking or talking because of asthma
- No response to quick relief medicine
- Lips or finger nails look blue or grey

Date of Next Visit: Follow up with Kathleen K Shanovich in 3 month(s).

Asthma Action Plan for Home and School

Name: _____ DOB: _____ Allergies/triggers: _____

Green Zone (doing well)

- Breathing is easy
- No cough or wheeze, or only occasionally
- Can walk and play
- Sleeps well at night



1. Use these asthma & allergy controller medicines:

Medicine	Dose	Time to Take	Give at School? (check box)

2. Add rescue medicine every 4 hours as needed for asthma symptoms (frequent cough, wheezing, chest tightness, shortness of breath):

take at school

Should rescue medicine be given 10 minutes before gym, recess or sports (though not more often than every 4 hours)? Yes No

Yellow Zone (getting worse)

- Not feeling well – some problems breathing
- Cough or wheeze at night, or with activity/play
- Has a cold



1. Continue controller medicines, same or new dose as noted here:

» same controller medicine(s) and dose listed in Green Zone

» change from this: _____ take at school
to this: _____

2. Use rescue medicine every 4 hours for asthma symptoms:

» Same as green zone

» Change or add: _____ take at school

3. Notify parent/guardian when child starts yellow zone.

4. Parent/guardian to call provider if the student is not better in 5 days or sooner if symptoms are getting worse.

Red Zone (medical alert)

- Feeling awful – breathing is hard and fast
- Medicine not helping
- Can't sleep, work or play because of cough or wheeze



1. Continue Yellow Zone controller medicines.

2. Continue Yellow Zone rescue medicine: repeat in 15 minutes if needed and continue every 4 hours. take at school

3. Parent/guardian should call the child's provider to talk about starting oral steroids (such as prednisone pills or liquid prednisolone).

4. Call 911 or go to the emergency room if any of these:

- » Not better after rescue medicine
- » Pulling in neck and ribs during breaths
- » Trouble walking or talking
- » Lips or finger nails blue or grey

Signature of Health Care Provider Date Phone Clinic

I give my permission to the nurse or delegate(S) to administer medication to my child and to follow the written instructions provided by the Health Care Provider as indicated on my child's Asthma Action Plan. I also give my permission to the school nurse to communicate with my child's Health Care Provider regarding health and safety in the school environment as it relates to his/her asthma/allergies.

Signature of Parent/Legal Guardian Date Phone Alternate Phone

Emergency contact name and relationship Emergency contact phone

Education for a Partnership in Asthma Care

Teach & reinforce at every opportunity:

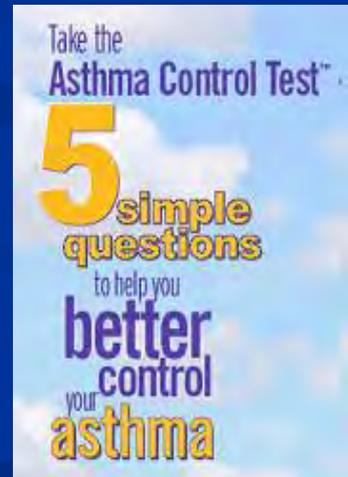
- Basic facts about asthma
- Role of medications: controller, quick-relief & preventative
- Patient skills
 - Taking meds correctly
 - Environmental exposures
 - Self-monitoring (symptoms; asthma control)
 - Using a written asthma action plan
 - Seeking medical care when needed



Monitoring Asthma Control

Asthma Control Test (ACT):

- Brief asthma symptom monitoring tool
- 5 questions for teens ≥ 12 years
- 7 questions for kids 4 – 11 years
- Score > 19 reflects control
- Available in English and Spanish



Childhood Asthma Control Test

Questions Completed by Child Age 4-11 Years

1. How is your asthma today?

SCORE



0

Very bad



1

Bad



2

Good



3

Very Good



2. How much of a problem is your asthma when you run, exercise or play sports?



0

It's a big problem, I can't do what I want to do.



1

It's a problem and I don't like it.



2

It's a little problem but it's okay.



3

It's not a problem.



3. Do you cough because of your asthma?



0

Yes, all of the time.



1

Yes, most of the time.



2

Yes, some of the time.



3

No, none of the time.



4. Do you wake up during the night because of your asthma?



0

Yes, all of the time.



1

Yes, most of the time.



2

Yes, some of the time.



3

No, none of the time.



Childhood Asthma Control Test

Questions Completed by Parent/Caregiver

5. During the last 4 weeks, on average, how many days per month did your child have any daytime asthma symptoms?

5

4

3

2

1

0



6. During the last 4 weeks, on average, how many days per month did your child wheeze during the day because of asthma?

5

4

3

2

1

0



7. During the last 4 weeks, on average, how many days per month did your child wake up during the night because of asthma?

5

4

3

2

1

0



TOTAL



Asthma Control Test™ (ACT)

for Patients 12 Years and Older

1. In the past 4 weeks, how much of the time did your asthma keep you from getting as much done at work, school or at home?

Score

All of the time	1	Most of the time	2	Some of the time	3	A little of the time	4	None of the time	5
-----------------	----------	------------------	----------	------------------	----------	----------------------	----------	------------------	----------

2. During the past 4 weeks, how often have you had shortness of breath?

More than once a day	1	Once a day	2	3 to 6 times a week	3	Once or twice a week	4	Not at all	5
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3. During the past 4 weeks, how often did your asthma symptoms (wheezing, coughing, shortness of breath, chest tightness or pain) wake you up at night, or earlier than usual in the morning?

4 or more nights a week	1	2 or 3 nights a week	2	Once a week	3	Once or twice	4	Not at all	5
-------------------------	----------	----------------------	----------	-------------	----------	---------------	----------	------------	----------

4. During the past 4 weeks, how often have you used your rescue inhaler or nebulizer medication (such as albuterol)?

3 or more times per day	1	1 or 2 times per day	2	2 or 3 times per week	3	Once a week or less	4	Not at all	5
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5. How would you rate your asthma control during the past 4 weeks?

Not controlled at all	1	Poorly controlled	2	Somewhat controlled	3	Well controlled	4	Completely controlled	5
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Monitoring Asthma Control

Baylor Rule of Two's®*:

- Using rescue MDI > 2 times a week (not related to exercise)
- Having night time asthma symptoms > 2 times/month
- > 2 times/year:
 - Refilling rescue MDI
 - Oral PDN burst
 - Unscheduled acute asthma care

* Baylor Health Care System



Asthma ≠ Controlled

- Review at visit:
 - Adherence to medications
 - MDI/spacer technique
 - Environmental measures
 - Co morbid conditions
- Consider step-up in therapy if review of above list adequate
- Short course oral CS should be considered
- Consider alternative dx if lack of control persists
- Monitor side effects of medications
- Re-evaluate patient in 2-6 weeks



Innovative Strategies for Managing Asthma in Schools

- Healthy Learner Model
 - Minneapolis Public Schools
- Healthy Learner Collaborative of Wisconsin
- *eSchoolCare*
- UW AFCH School Asthma Clinic

MPS Healthy Learner Model

- Definition:
 - A comprehensive, school-community initiative to improve asthma management and produce healthy learners.

MPS Healthy Learner Model

- Partnering with health care providers
 - Goals:
 - improve the quality of asthma care
 - increase the use of asthma action plans
 - streamline mechanisms to transmit aaps to schools
 - Asthma action plan developed:
 - Acted as a medication order when signed by both PCP & parent/legal guardian
 - Provided parent authorization to exchange health information between school and PCP

MPS Healthy Learner Model

- Students: central focus of model
 - Increase in pre exercise medications
 - Controller medications given at school (adherence)
- Family as a partner
- Asthma resource nurse (ARN)
 - Expert in asthma management
 - Resource/support for school nurses
- School nurse

Minnesota Dept. of Public Health: Asthma Program

- Asthma inhaler pictures:
<http://www.health.state.mn.us/asthma/documents/MedsLetterSized.pdf>

Relievers / Rescue / Bronchodilators

Short-acting Beta₂ agonists



ProAir
albuterol sulfate
90 mcg
Teva



Proventil
albuterol sulfate
90 mcg
Merck



Ventolin
albuterol sulfate
90 mcg
GlaxoSmithKline



Xopenex
levolbuterol tartrate
45 mcg
Sunovion



Nebulized Albuterol
2.5 mg/3mL
generic



Xopenex Inhalation Solution
levolbuterol HCl
0.31mg/3mL
Sunovion



Xopenex Inhalation Solution
levolbuterol HCl
0.63mg/3mL
Sunovion



Xopenex Inhalation Solution
levolbuterol HCl
1.25mg/3mL
Sunovion

Asthma Medications

Ipratropium bromide



Atrovent*
ipratropium bromide
17 mcg
Boehringer Ingelheim



Combivent Respimat*
ipratropium bromide 20 mcg,
albuterol sulfate 100 mcg
Boehringer Ingelheim

* Ipratropium bromide is not a recommended rescue inhaler outside of use in the emergency room or urgent care but may, on occasion, be prescribed to supplement short-acting Beta₂ agonists.

Controllers

Inhaled Corticosteroids (ICS): Metered-Dose Inhalers (MDI)



Alvesco
ciclesonide
80 mcg
Sunovion



Alvesco
ciclesonide
160 mcg
Sunovion



Flovent
fluticasone propionate
44 mcg
GlaxoSmithKline



Flovent
fluticasone propionate
110 mcg
GlaxoSmithKline



Flovent
fluticasone propionate
220 mcg
GlaxoSmithKline



QVAR
beclomethasone
dipropionate
40 mcg
Teva



QVAR
beclomethasone
dipropionate
80 mcg
Teva

Controllers continued on next page...

Inhaled Corticosteroids (ICS) : Dry Powder Inhalers



Asmanex Twisthaler
mometasone furoate
110 mcg
Merck



Asmanex Twisthaler
mometasone furoate
220 mcg
Merck



Flovent Diskus
fluticasone propionate
50 mcg
GlaxoSmithKline



Flovent Diskus
fluticasone propionate
100 mcg
GlaxoSmithKline



Flovent Diskus
fluticasone propionate
250 mcg
GlaxoSmithKline



Pulmicort Flexhaler
budesonide
90 mcg
AstraZeneca



Pulmicort Flexhaler
budesonide
180 mcg
AstraZeneca

Combination Therapies



Advair Diskus
fluticasone propionate, salmeterol
100/50 mcg
GlaxoSmithKline



Advair Diskus
fluticasone propionate, salmeterol
250/50 mcg
GlaxoSmithKline



Advair Diskus
fluticasone propionate, salmeterol
500/50 mcg
GlaxoSmithKline



Advair
fluticasone propionate, salmeterol
45/21 mcg
GlaxoSmithKline



Advair
fluticasone propionate, salmeterol
115/21 mcg
GlaxoSmithKline



Advair
fluticasone propionate, salmeterol
230/21 mcg
GlaxoSmithKline



Dulera
mometasone furoate, formoterol fumarate
100/5 mcg
Merck



Dulera
mometasone furoate, formoterol fumarate
200/5 mcg
Merck



Symbicort
budesonide, formoterol fumarate
80/4.5 mcg
AstraZeneca



Symbicort
budesonide, formoterol fumarate
160/4.5 mcg
AstraZeneca

Long-acting Beta₂ agonists



Foradil Aerolizer
formoterol fumarate
12 mcg (capsules)
Merck



Serevent Diskus
salmeterol xinafoate
50 mcg
GlaxoSmithKline

Inhaled Corticosteroids (ICS): Nebulized



Pulmicort Respules
budesonide
0.25mg/2mL
AstraZeneca



Pulmicort Respules
budesonide
0.5mg/2mL
AstraZeneca



Pulmicort Respules
budesonide
1mg/2mL
AstraZeneca

Asthma Program

Health Promotion and Chronic Disease Division
Minnesota Department of Health
PO Box 64882
St. Paul, MN 55164-0882
651-201-5909, Toll free 1-877-925-4189
www.health.state.mn.us/asthma

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Healthy Learner Collaborative of Wisconsin

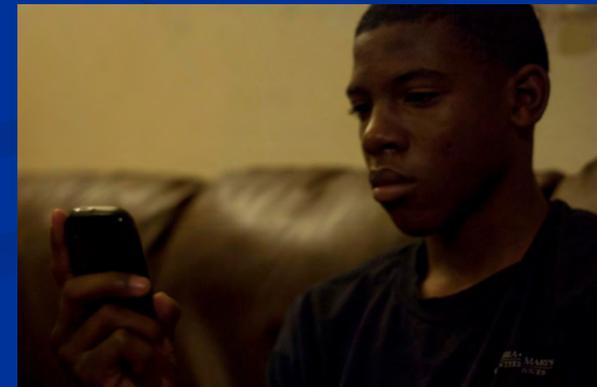
- Community nurses:
 - Madison & Portage School Districts, AFCH, UW SON
- Ensure students with chronic conditions will achieve optimal:
 - health, school attendance & readiness to learn
- Activities:
 - Education about the Healthy Learner Model
 - “Curb side consults”
 - Mental Health
 - Pediatrics Grand Rounds:
 - School nursing & caring for children with chronic health conditions: collaborative efforts

EschoolCare

- An evidence based online resource for school nurses
- Chronic diseases:
 - Asthma
 - Food allergies, atopic dermatitis
 - Cancer
 - Diabetes
 - Mental Health
- <https://www.eschoolcare.org/>

The School Asthma Clinic

- Developed based on the perceived asthma needs of children attending the Madison Metro School District
- Funding support provided by AFCH
- Children referred by School Nurses
 - Medicaid
 - Uninsured
- Held every Thursday



The School Asthma Clinic

- Services provided by clinic:
 - Lung function
 - Health history focusing on asthma & allergic disease
 - Skin testing for aeroallergens
 - Developing a plan of care
 - Education
 - ROI – with dictation to PCP and School Nurse
 - Cab transportation
 - Medications

The School Asthma Clinic

- Services provided by School Nurse
 - Referral to Clinic and contacting family
 - Arranging cab transportation
 - Case management of the child's asthma/allergies
 - Medication administration (when indicated)
 - Asthma controllers & allergy meds
 - Consult with Allergy Clinic prn
 - Assist in follow up

The School Asthma Clinic

■ Challenges:

- Targeted population: poverty
 - Transient, homelessness
- “No-shows” for clinic appointments
- Insurance issues
- Severity of disease

■ Benefits:

- Access to asthma care for “at risk” children
- School nurses as case managers
- 1:1 asthma education

Questions?

