Asthma and Anaphylaxis

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Outline

* Definition of food allergic conditions
  * Epidemiology
  * Management in Schools

* Asthma
  * Epidemiology
  * Pathophysiology
  * Medications and devices
  * Management in Schools

* Resources
Anaphylaxis
Prevalence of Food Allergy

- Patient/Parent self report: 12-14%
- Based upon history & testing: 3%
- Data from CDC (children < 18 years): 5.1%

Why are food allergies increasing?

- Hygiene hypothesis?
  - Affluence
  - Western culture
- Food genetics/chemicals/processing?
- Unknown
IgE-mediated Food Allergy

- Hypersensitivity reaction that occurs quickly (seconds/minutes to 1-2 hrs) following food ingestion
- Can be life-threatening
- Occurs reproducibly
- Can occur with tiny amounts of food protein exposure (250 mcg)
- Demonstrable food-specific IgE (via skin prick testing or serum IgE)
Symptoms of Food Allergic Reaction

* **Skin**
  - hives, angioedema, atopic dermatitis

* **Gastrointestinal**
  - oral itching & swelling, nausea, vomiting, diarrhea

* **Respiratory**
  - laryngeal edema, wheezing, cough

* **Cardiovascular**
  - tachycardia, hypotension

* **Ocular & rhinitis symptoms**
  - rare as isolated symptoms
Natural History of Food Allergy

- **Dependent on allergen**
  - Most children outgrow milk, egg, soy & wheat allergy
  - Less common to outgrow peanut or tree nuts (seafood, seeds)

- **Age**
  - Food allergy that starts in adults is unlikely to resolve
Diagnosis of Food Allergy

* Medical History
  • Anaphylaxis
    o Timing (seconds to minutes)
    o Organ systems: Skin - GI - respiratory - shock
  • Identify specific food
    o Base on history and reproducibility
    o Screening panels should not be done

* Physical Exam (urticaria, AD)
Risk Factors For Severe Reactions

- Asthma
- Delayed epinephrine administration
- Prior anaphylaxis
- Peanut & Tree Nut allergy
- Level of food specific IgE
- Amount of food ingested
- Cardiovascular disease
- β-blocker or ACE inhibitor use
Management of Food Allergy

- Avoidance
- Extensive education
- Nutrition monitoring
- Reading food labels
- For accidental ingestion & reaction:
  1) Injectable epinephrine IM
  2) Antihistamines
  3) Emergency care
- Allergy evaluation with long-term follow up
Treatment of Reactions

* For reactions isolated to the skin ("mild reactions"):  
  • Antihistamine (cetirizine or diphenhydramine - syrup)  
  • Close monitoring for additional symptoms

* For signs of anaphylaxis:  
  • Epinephrine IM  
    ○ Switch to 0.3 mg at 66 # or 30 kg (due to underdosing: ~55#)  
    **Delayed epi administration is a risk factor for death**  
  • Seek immediate care  
  • Late phase reactions occur up to 20% of the time  
    (at least 4 hrs of observation recommended in ED)
EpiPen4Schools™ Program

- Online form needs to be completed by school staff person
- Need to submit a prescription
- Can obtain two 2 packs:
  - Junior or 0.3 mg
- Each school can obtain 4 Epi Pens: not for any specific child
Injectable Epinephrine

- Epi Pen®
- Auvi-Q®
- Adrenaclick® generic
Summary: IgE Mediated Food Allergy

* Potentially life-threatening condition affecting ~3-5% of the US population
* Diagnosis is based on multiple factors including:
  • Reproducible history
  • Food-specific IgE
* Treatment:
  • Avoidance & education
  • Early administration of epinephrine IM for systemic reactions
  • Long-term follow-up as many children outgrow food allergies
Asthma
Asthma
Morbidity & Mortality – Wisconsin

Annually*:

* 19,548 ED visits (6,000 for children** in 2011)
* 4,746 hospitalizations (1,246 for children** in 2011)
  * Children < 5 years: highest rates both ED & Hosp.
  * AA hospitalization rates highest
  * seasonal variability

* Charges:
  * $63 million (Hospitalizations)
  * $24.5 million (ED visits)

* Deaths: average 65 annually
  * AA four times more likely to die from asthma

* Burden of Asthma in Wisconsin 2013.  ** ages 0-14 years
Asthma
Morbidity & Mortality

* Affects 25 million Americans*
  * 7 million children or 9.4%
* 17 million asthma related outpatient visits to private physicians' offices annually *
* 13 million missed school days
* 10 million missed workdays
* Affects 300 million people world wide

*CDC, National Center for Health Statistics. 2010*
Pathophysiology

- Occurs in acute episodes
- Characterized by reversible airflow obstruction caused by:
  - Smooth muscle contraction
  - Mucus resulting in bronchial plugging
  - Inflammatory changes in the bronchial walls
Pathophysiology

* With an acute attack, bronchioles are obstructed on expiration
* With a severe attack, bronchioles are obstructed during both inspiration AND expiration

BE VERY AFRAID OF THE SILENT ASTHMA PATIENT!!
Classifying Asthma Severity in Well-Controlled Patients (All Ages)

Classify Severity by Lowest Level of Treatment Required to Maintain Control

<table>
<thead>
<tr>
<th>Intermittent</th>
<th>Persistent</th>
</tr>
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<tbody>
<tr>
<td>Step 1</td>
<td>Step 2</td>
</tr>
<tr>
<td>Mild</td>
<td>Step 3 or 4</td>
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<tr>
<td>Moderate</td>
<td>Severe</td>
</tr>
<tr>
<td>Step 5 or 6</td>
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</tr>
</tbody>
</table>

• Increased work of breathing
  • Cough, wheezing
  • Respiratory rate
  • Color changes
  • Grunting
  • Nasal flaring
  • Retractions/neck muscle use
  • Stridor or drooling
  • Sweating
**Signs of Respiratory Distress**

- Prolonged expiratory phase
- ↑’d heart rate
- Abdominal accessory muscle use
- Tripod position
- $O_2$ sats < 91% (cyanosis is a late sign)
Severe Asthma
Risk Factors Asthma-Related Death

* Past history of sudden, severe exacerbations
* Prior intubation or ICU admission
* Current systemic CS (corticosteroid) use or just completed CS burst
* ≥ 2 hospitalizations/year
* ≥ 3 ER visits/year
* Hospitalization/ER visit in the past month

Severe Asthma
Risk Factors for Asthma-Related Death

* Use of > 2 short acting beta_2 agonist MDI’s/month
* Difficulty perceiving asthma severity
* Low SES or inner-city residence
* Serious psychiatric/psychological problems
* Illicit drug use
* Co-morbid conditions (CV disease, COPD)

Asthma Triggers

* Allergens
* Infections (upper respiratory & sinusitis)
* Irritants (pollution, tobacco smoke)
* Exercise
* Emotions
* Gastroesophageal reflux
* Weather (humidity, temperature extremes)
Asthma Medications
Controller and Rescue
Asthma Medications

Controllers:

* **Anti-inflammatories**: reduce swelling and mucus production in the airways
  - As a result, airways are less sensitive and less likely to react to triggers
    - Corticosteroids (oral & inhaled)
    - Leukotriene modifiers

* **Long-acting beta-agonists (LABA)**: relax the muscle bands that surround the airways

* **Combination products**: contain both an anti-inflammatory and LABA
Rescue Medications: Dilate the bronchioles

- Short-acting bronchodilators are used as a "quick relief" or "rescue" medication
  - Albuterol (R & S isomers)
  - Levalbuterol (no S isomer)
- Albuterol and ipratropium combined:
  - Duoneb (nebulized)
  - Combivent Respimat (inhaler)
Asthma Medications

Delivery Devices:
* Nebulizer
* Spacer with face mask
* Spacer with mouth piece
* Dry powder diskus
* Flexhaler
* TwisthalerAerolizer
Asthma Medications: HFA

HFA inhaler facts:

* Shake for 5 seconds before use
* Need to check information about priming and cleaning for each MDI
  - Ventolin® & Proventil®: not used for 2 weeks, re-prime 4 sprays; wash actuator once a week under warm water (not the canister)
  - Flovent HFA®: not used in 1 week, re-prime with 1 spray; clean mouthpiece with cotton swab weekly
<table>
<thead>
<tr>
<th>Generic</th>
<th>Brand</th>
<th>Expiration</th>
<th>Priming puffs/repeat</th>
<th>Actuations/ inhaler</th>
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<tr>
<td>albuterol</td>
<td>ProAir</td>
<td>as labeled (24 months)</td>
<td>3/2 weeks</td>
<td>200</td>
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<tr>
<td></td>
<td>Proventil</td>
<td>as labeled (24 months)</td>
<td>4/2 weeks</td>
<td>200</td>
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<tr>
<td></td>
<td>Ventolin</td>
<td>12 months after removing from foil pouch</td>
<td>4/2 weeks or after dropping</td>
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<tr>
<td>levalbuterol</td>
<td>Xopenex</td>
<td>as labeled (18 months)</td>
<td>4/3 days</td>
<td>200</td>
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<td>Maxair</td>
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<td>2/48 hours</td>
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<td>90mcg/60 doses</td>
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<td></td>
<td>Pulmicort Respules</td>
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<td>180mcg/120 doses</td>
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<td>Flovent HFA</td>
<td>as labeled</td>
<td>4/7 days or after dropping</td>
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<td>60 doses</td>
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<td>Asmanex</td>
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<td>110mcg/30 doses</td>
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<td>triamcinolone</td>
<td>Azmacort</td>
<td>as labeled</td>
<td>2/3 days</td>
<td>220mcg/30,60 doses</td>
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<td>100/50, 250/50 or 500/50</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>60 doses</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>45/21, 115/21 or 230/21 doses</td>
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<td>Symbicort HFA</td>
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<td>2/7 days</td>
<td>80/4.5, 160/4.5</td>
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<td>Spireva</td>
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Caring for Students Who Have Asthma and Allergies
What Every School Should Have:

* A confidential list of students with medically diagnosed chronic health conditions including asthma and allergies
* Policies and procedures for administering medications
  * Including protocols for emergency response to a severe asthma episode or anaphylaxis
* A written action plan for every student with asthma and allergies
* Yearly education for staff and students about asthma and allergies
Role of the School Nurse

* Identify students with asthma and allergies
  * Evaluate the severity of the condition
    * Was the asthma or allergy diagnosed as a healthcare provider
    * Did they have an inhaler once because of a cold
    * Do they use a daily controller medication and prn albuterol
    * Have they had a previous anaphylactic reaction
    * Do certain foods give them a rash
Role of the School Nurse

- Ensure that students who require medication administration at school have the proper orders from a healthcare provider on file
- Ensure that students have their required medication(s) at school
  - Including emergency medications
- Develop an individualized health plan (IHP) for each student
- Inform school personnel who have a “need to know” about the IHP and plan of care
Action Plans
Asthma Action Plan

Zones:

* **Green**: doing well

* **Yellow**: worsening asthma symptoms/viral respiratory infection

* **Red**: significant asthma symptoms
Plan de Acción para el Asma

**Alergias/Desencadenadores:** infección respiratoria (respiratory infection) y polen del pasto (grass pollen), ácaros del polvo (dust mites), gatos (cats), perros (dogs) y cucarachas

**Zona Amarilla**
- 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 de/los medicamento(s): Loratadina (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 bien**
- 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 en forma rápida
- No puede dormir, trabajar o 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 respiratoria
- 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

**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 mg/1 inhalation once a day. Rinse mouth after use.
  - Fluticasone furoate (Veramyst) nasal spray 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 once 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).
Food Allergy Action Plans

SCHOOL EMERGENCY PLAN - INSECT STING / FOOD ALLERGY

Name: Jane Doe
DOB: 3/5/0000
Allergy: egg, milk (cow's), soybean, wheat, peanut, shell fish, fish, tree nuts and sesame

In this student, an insect sting or ingestion of an allergy producing food(s), even in small amounts, could lead to a severe, life-threatening reaction. Any suspected or known reaction requires close monitoring and immediate treatment of symptoms as set forth below.

DO NOT HESITATE TO GIVE EMERGENCY TREATMENT IF UNCERTAIN OF SYMPTOMS OR SEVERITY.

SEVERE SYMPTOMS (one or more):
- LUNG: short of breath, wheezing, repetitive cough
- HEART: pale, blue, faint, weak pulse, confused
- THROAT: tight, hoarse, trouble breathing or swallowing
- MOUTH: swelling of tongue or lips
- SKIN: many hives over body, facial swelling
- GUT: vomiting, cramping pain, nausea

1. INJECT EPINEPHRINE IMMEDIATELY (outer thigh)
   - Epipen 0.3 mg or Auvi-Q 0.3 mg
   - (See label) on auto-injector for directions
   - Always call 911 after giving epinephrine.
   - Have child lie on back with feet raised.
   - Stay with student and monitor closely.
   - Alert parents.
   - If symptoms progress, give second dose after 5 minutes. For persistent symptoms, give second dose of epinephrine after 10 minutes.

MILD SYMPTOMS ONLY (one or more):
- MOUTH: itchy mouth
- SKIN: a few hives* around mouth/face; mild itch
- GUT: mild nausea/discomfort

*raised, itchy bumps that appear suddenly

1. GIVE AND ANTIHISTAMINE: cetirizine (ZYRTEC) 10 mg or 10 ml
   - Contact parent to pick up student. Monitor closely until parent arrives.
   - IF SYMPTOMS PROGRESS, INJECT EPINEPHRINE: (see above)

This student had a previous life-threatening allergic reaction: Yes
☐ Give EPINEPHRINE immediately for any symptom following ingestion of her food allergens

This student also has asthma: Yes
☐ In addition to emergency medication: Give rescue medication albuterol inhaler (PROAIR, VENTOLIN, PROVENTIL) 4 puffs with spacer.

MEDICATION(S) MUST BE AVAILABLE TO STUDENT AT ALL TIMES, INCLUDING OFF CAMPUS ACTIVITIES

Kathleen K Shanovich, NP
Dept: 608-263-5190
08/23/2013

School Use Only:
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 Providers as indicated on my child's School Emergency Plan - Insect Sting / Food Allergy. 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 allergies.

Signature of Parent/Legal Guardian: ____________________________ Date: ______ Phone: ______ Alternate: ______

Emergency contact name / relationship / phone: ____________________________ Emergency contact name / relationship / phone: ____________________________
Food Allergy Action Plans

FARE FOOD ALLERGY & ANAPHYLAXIS EMERGENCY CARE PLAN

Name: ____________________________

D.O.B.: ___________________________

Allergy to: _______________________

Weight: ___________________________

Extremely reactive to the following foods:

Lung

Heart

Throat

Mouth

Skin

Gut

Nose

Mouth

Skull

Gut

Other

Severe Symptoms

Lung

Heart

Throat

Mouth

Skin

Gut

Nose

Mouth

Skull

Gut

Other

Mild Symptoms

FOR MILD SYMPTOMS FROM MORE THAN ONE SYSTEM AREA, GIVE EPINEPHRINE.

1. INJECT EPINEPHRINE IMMEDIATELY.

2. CALL 911. 

3. TREAT THE PERSON BEFORE CALLING EMERGENCY CONTACTS. THE FIRST SIGNS OF A REACTION CAN BE MILD, BUT SYMPTOMS CAN GET WORSE QUICKLY.

EMERGENCY CONTACTS — CALL 911

OTHER EMERGENCY CONTACTS

DATE: ___________________________

SIGNATURE: ______________________

FARE FOOD ALLERGY & ANAPHYLAXIS EMERGENCY CARE PLAN

EPINEPHRINE AUTO-INJECTOR DIRECTIONS

1. Remove the EpiPen auto-injector from the plastic carrying case.
2. Pull off the blue safety release cap.
3. Swing and firmly push orange tip against mid-outer thigh.
4. Hold for approximately 10 seconds.
5. Remove and manage the area for 10 seconds.

EPINEPHRINE INJECTION, USP DIRECTIONS

1. Remove the outer case of Avan-Q. This will automatically activate the voice instructions.
2. Pull off red safety guard.
3. Place black end against mid-outer thigh.
4. Press firmly and hold for 5 seconds.
5. Remove from thigh.

ADRENACLIK/ADRENALINE GENERIC DIRECTIONS

1. Remove the outer case.
2. Remove grey caps labeled “1” and “2”.
3. Press down hard until needle penetrates.

OTHER DIRECTIONS: INFORMATION (may self-carry epinephrine, may self-administer epinephrine, etc.)

DATE: ___________________________

SIGNATURE: ______________________

FARE FOOD ALLERGY & ANAPHYLAXIS EMERGENCY CARE PLAN

FORM PRINTED COURTESY OF FOOD ALLERGY RESEARCH & EDUCATION (FARE) (INTERNATIONAL PROJECT) 2016-17

FORM PRINTED COURTESY OF FOOD ALLERGY RESEARCH & EDUCATION (FARE) (INTERNATIONAL PROJECT) 2016-17
25% of anaphylaxis occurs in schools without previous diagnosis
- RX for unassigned Epi should be considered

Emergency action plans:
- PCP → Parent → School Health → School Staff

Antihistamines: “adjunctive therapy” – not to treat anaphylaxis

Epinephrine safe: “when in doubt, inject”

Medical alert ID (young children)

*Clinical Report – Management of Food Allergy in the School Setting, AAP 2010
Individualized Health Plan

Asthma

Assessment Data: (check or circle if applicable)

Signs/symptoms
___ wheezing
___ difficulty breathing
___ chest tightness
___ cough
___ other (describe)

Triggers
___ exercise
___ cold air
___ dust
___ stress
___ infection
___ allergies
___ chalk/markers
___ perfumes
___ smoke
___ air fresheners
___ animals

Attendance Issues
Y/N school
Y/N physical ed.
Y/N classroom
Y/N recess

Student’s Strengths
___ has developed age appropriate self management skills
___ good problem solving ability
___ communicates needs
___ accepts diagnosis
___ effective coping skills
___ good social skills
___ other ____________________________
Medication Administration
Role of the School Nurse

* In collaboration with administrator, identify who will be administering daily and/or as needed medications
* Provide training on medication administration
  • Ensure competency and willingness of staff
* Ensure that all school staff who will have contact with the student understand the plan of care and have been trained and are **competent and willing** to administer emergency medications

http://docs.legis.wisconsin.gov/statutes/statutes/118/29
Case Management and Education
Role of the School Nurse

- Provide case management for students with chronic health conditions
  - Evaluate a student’s ability to self-carry and administer medications
    - Albuterol, Epinephrine
  - Determine where emergency meds will be stored
  - Alert school personnel to monitor for increased symptoms and absences
    - Evaluate students who may be having increased symptoms and absences
Role of the School Nurse

- Outreach to families to encourage participation in managing students’ asthma and allergies at school
- Professional development for teachers and staff to enhance their effectiveness in asthma and allergy management and their skills in communicating with families
- Good communication among physicians, school staff, and families, such as an ongoing exchange of information, agreement on goals and strategies, and a sharing of responsibilities
Education for a Partnership in Asthma Care

Teach & reinforce at every opportunity:

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

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<th>Student Education</th>
<th>Date</th>
<th>Date</th>
<th>Date</th>
<th>Date</th>
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<td>Asthma Action Plan – knows zones and action</td>
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<tr>
<td>Signs and symptoms, warning signs</td>
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<tr>
<td>Correct inhaler technique</td>
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<tr>
<td>Knowledge of Triggers</td>
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</tbody>
</table>

http://www.health.state.mn.us/asthma/documents/FormsF1-F34/f17.pdf
IS THE ASTHMA ACTION PLAN WORKING?
A Tool for School Nurse Assessment

Assessment for: ____________________________ Completed by: ____________________________ Date: __________

(Student) (Nurse or Parent)

This tool assists the school nurse in assessing if students are achieving good control of their asthma. Its use is particularly indicated for students receiving intensive case management services at school.

With good asthma management, students should:
- Be free from asthma symptoms or have only minor symptoms.
  - no coughing or wheezing
  - no difficulty breathing or chest tightness
  - no waking at night due to asthma symptoms.
- Be able to go to school every day, unhampered by asthma.

- Be able to participate fully in regular school and daycare activities, including play, sports, and exercise.
- Have no bothersome side effects from medications.
- Have no emergency room or hospital visits.
- Have no missed class time for asthma-related interventions or missed class time is minimized.

Signs that a student’s asthma is not under good control:
Indicate by checking the appropriate box whether any of the signs or symptoms listed below have been observed or reported by parents or children within the past 6 months. If any boxes are marked, this suggests difficulty with following the treatment plan or need for a change in treatment or intervention (e.g., different or additional medications, better identification or avoidance of triggers).

- Asthma symptoms more than twice a week that require quick-relief medicine (short-acting beta-agonists, e.g., albuterol)
- Waking up at night because of coughing or wheezing
- Frequent or irregular heartbeat, headache, upset stomach, irritability, feeling shaky or dizzy
- Missing school or classroom time because of asthma symptoms
- Having to stop and rest at PE, recess, or during activities at home because of symptoms
- Symptoms require unscheduled visit to doctor, emergency room, or hospitalization
- 911 call required

If “yes” to any of the above, use the following questions to more specifically ascertain areas where intervention may be needed.

<table>
<thead>
<tr>
<th>Probes</th>
<th>Responsible Person/site</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Medications:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Are appropriate forms completed and on file for permitting medication administration at school?</td>
<td>By school staff</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>* Has a daily long-term-control medication(s) (controller*) been prescribed?</td>
<td>Self-carry</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>* Is controller medication available to use as ordered?</td>
<td>Home</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
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<tr>
<td></td>
<td>School</td>
<td>[ ]</td>
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<tr>
<td>* Is the student taking the controller medication(s) as ordered?</td>
<td>Home</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td></td>
<td>School</td>
<td>[ ]</td>
<td>[ ]</td>
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</tr>
<tr>
<td>* Has a quick-relief (short-acting β2-agonist) medication been prescribed?</td>
<td>Home</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>* Is quick-relief medication easily accessible?</td>
<td>Personal inhaler(s) at school health office</td>
<td>[ ]</td>
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<td>[ ]</td>
</tr>
<tr>
<td></td>
<td>Self-carry</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>* Is the student using quick-relief medication(s) as ordered...</td>
<td>Home</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>o Before exercise?</td>
<td>School</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>o Immediately when symptoms occur?</td>
<td>School</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td><strong>Medication Administration:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Does the student use correct technique when taking medication?</td>
<td></td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>* Does the person administering the medication use correct technique?</td>
<td></td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>
Policy and Procedure
Management in Schools*

* Reducing risk of accidental exposure:
  - No food sharing
  - Education of parents/staff
    - (injectable epinephrine use, when to call EMS/911)
  - Plans for field trips
  - Label-reading
  - No eating on school bus

* Harassment/bullying

*Clinical Report – Management of Food Allergy in the School Setting, AAP 2010
Peanut butter vapors ≠ protein
Foods can be vaporized through heating → respiratory symptoms
Cleaning in classroom: soap/water; NOT antibacterial gels
  “standard cleaning & lack of visible contamination should suffice…”
Care not to ostracize/physically separate FA child

*Clinical Report – Management of Food Allergy in the School Setting, AAP 2010
Stock Epinephrine

- Wisconsin State Legislature: 2013 WISCONSIN ACT 239
- School plan
  - The governing body of a school may adopt a plan for the management of pupils attending the school who have life-threatening allergies
  - Governing body shall specify in the plan the training necessary
  - Plan must be approved by a physician
  - Plan must be available on the governing body's Internet site or the Internet site of each school under its jurisdiction or, if an Internet site does not exist, give a copy of the plan to any person upon request

https://docs.legis.wisconsin.gov/2013/related/acts/239
Resources
Food Allergy Resources

* Voluntary Guidelines for Managing Food Allergies In Schools and Early Care and Education Programs
  http://www.cdc.gov/healthyyouth/foodallergies/pdf/13_243135_A_Food_Allergy_Web_508.pdf
* Food Allergy Research & Education (FARE) http://www.foodallergy.org/
* Consortium of Food Allergy Research (CoFAR)
  https://web.emmes.com/study/cofar/
* American Academy of Allergy Asthma & Immunology (AAAAI)
  www.aaaaai.org
* Clinical Report – Management of Food Allergy in the School Setting. AAP. 2010
Food Allergies: Managing and Preventing Acute Reactions in the School Setting

Recommendations

- Staffing
- Preparedness
- Policy
- Medication
- Training and Education
- Food Management
- Classroom Management
1. Emergency medications should be stored in a reasonably accessible location:
   a. Medication should be kept in a secure but unlocked area that is clearly labeled “EpiPens for “Severe Allergic Reactions”
   b. Staff should be aware of the storage locations, and of any back-up supply, and all of these should be labeled as above.
   c. Students may be allowed to carry their own emergency medication (injectable epinephrine) when appropriate* and school-provided back-up epinephrine should always be available.
   d. Students should have access to emergency medications (injectable epinephrine) during field trips, school sponsored events (sporting, before and after school, summer school) and school-provided back-up epinephrine should be available.

(2,4,5,7,8,9,10,12,13,14,15,19,20,21,23,25,26,28,35,39,41,43,45,47,49,51)
Preparedness:

1. Implement a process to collect health related information from students on at least a yearly basis (such as registration form) \(^{(2,7,9,10,25)}\)

2. Students with known food/insect or anaphylactic allergy should have individualized health plan (IHP) which includes prevention (allergen avoidance) and emergency preparedness (anaphylactic plan developed by student’s healthcare provider including field trip management) \(^{(2,3,4,5,7,9,10,12,13,14,15,19,20,21,22,23,24,25,26,27,33,34,35,37,39,41,43,44,45,46,47,48,49,50)}\).
Sample Policies and Procedures

- Administering Medications to Students
- Staff Administration of Non-Student Specific Epinephrine
- Student Self-Administration of Emergency Medications
Resources

**WISHeS Resources:**
* Nebulizer Procedure
* [http://schoolnurseresources.wordpress.com/asthma-resources/](http://schoolnurseresources.wordpress.com/asthma-resources/)

**Other Resources:**
* [http://www.cdc.gov/asthma/tools_for_control.htm](http://www.cdc.gov/asthma/tools_for_control.htm)
* [https://www.nasn.org/ToolsResources/Asthma](https://www.nasn.org/ToolsResources/Asthma)
1. Healthy Learners Asthma Initiative / Minneapolis Public Schools. Asthma Individual Health Plan. Available at: http://www.health.state.mn.us/asthma/documents/FormsF1-F34/f17.pdf

Asthma Medications
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: 2.5mg
* Levalbuterol (no S isomer)
  - HFA MDI: Xopenex®
  - Nebulized: .31mg, 0.63mg & 1.25mg
* Albuterol and ipratropium combined:
  - Combivent Respimat®
  - Nebulized: Duoneb® (albuterol 2.5mg & ipratropium 500mcg)