Making a Difference For Children With Asthma

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Presenter Disclosures

- We disclose the **absence** of personal financial relationships with commercial interests relevant to this educational activity within the past 12 months.

Objectives

- Identify key actions school health services staff can take for successful assessment of asthma control, medication adherence, and trigger exposure;
- Describe methods and tools to measure and monitor health outcomes of students with asthma;
- Recognize the evidence related to using peak flow meters to assess asthma and response to quick relief medicines; and
- Describe the critical steps to assess and coach inhalation technique for inhaler devices, including evidence for using a spacer with metered dose inhalers.

As You View This Program…

- Consider how many people do you know who have asthma?
- How will you use the information you receive here today?
- How can you help students prevent their asthma symptoms from appearing?
- How can you help improve asthma management at your school?

The Goal Of Asthma Management

- ***"Children should live happy, healthy, physically active lives, without asthma symptoms slowing them down"***

Adapted from For Your Good Health, http://www.foryourgoodhealth.org/play_it_safe.html

School Nurses Make a Difference

contributions to asthma care improvement

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Don't Do More.
Do What Needs to Be Done.
focus on a few essential actions

NASN Guidelines

NASN National Association of School Nurses

School Nurse Evidence-Based Clinical Guidelines: Asthma

https://portal.nasn.org/members_online/members/viewitem.asp?item=E082&catalog=EBOO&pn=1&af=NASN

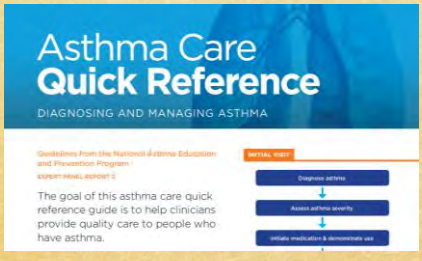
I. Best Practice Clinical Guidelines for School Nurses

Action to Complete Individual Student With Current Diagnosis Of Asthma
✓ Assess student and caregiver knowledge (observe family dynamics) of his/her asthma triggers and environmental control at home (second/hand smoke, pets, carpet). Conduct home visit if needed.
✓ Assess student ability to self-manage.
✓ Assess for student and caregiver understanding and willingness to follow AAPlan.
❑ Assess student, caregiver, and provider goals (academic, health, quality of life, environmental).
❑ Assess student and caregiver understanding of control versus rescue/ quick relief?
✓ Document all information in a retrievable format.
✓ Collect baseline data: Last PCP/ACS visit; number of exacerbations in the last 6 months; last hospitalization/last ED visit; HR,RR, BP, FEV1, peak flow; student's ability use inhaler and spacer correctly; student ability to self-medicate, self-manage care, and use inhaler; attendance and time spent out of class in the past.
❑ Obtain caregiver permission (with PCP) to carry and self-treat.

Resources/Examples
Asthma Action Plan (NHLBI)
Asthma Action Plan (AAAAI)
Authorization for Asthma Care at School
Asthma Trigger Tracker (New York State Department of Health)
Asthma Medication Self-Administration Form
Inhaler/Monitoring Techniques (p. 26).
Asthma Triggers: Gain Control

Asthma Care Quick Reference (EPR3)

http://www.nhlbi.nih.gov/guidelines/asthma/asthma_qrg.pdf



"A four component approach is effective for controlling asthma", EPR3

1) Measures of Assessment & Monitoring

2) Education for a Partnership in Care

3) Control of Environmental Factors and Comorbid Conditions that Affect Asthma

4) Medications

(p. 35)

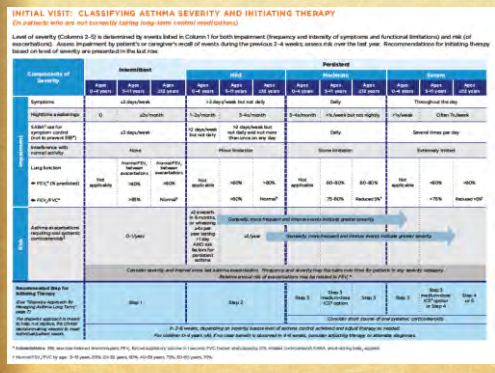
Validated Surveys - Control

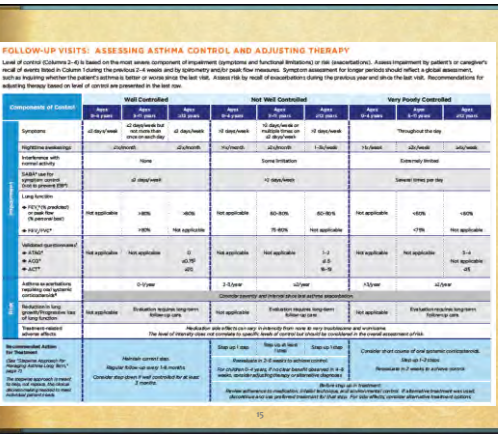
- ATAQ = Asthma Therapy Assessment Questionnaire ©
- ACQ = Asthma Control Questionnaire ©
- ACT = Asthma Control Test ©

(for more information "google" survey name)

Baylor Rule of Two

- Have asthma symptoms or take your quick-relief inhaler more than Two times a week?
- Awaken at night with asthma symptoms more than Two times a month?
- Refill your quick-relief inhaler more than Two times a year?
- Measure your peak flow at less than than Two times 10 (20%) with asthma symptoms?


INITIAL VISIT: CLASSIFYING ASTHMA SEVERITY AND INITIATING THERAPY


FOLLOW-UP VISITS: ASSESSING ASTHMA CONTROL AND ADJUSTING THERAPY

Asthma Control Assessment

nponents of Control	Classification of Asthma Con (≥12 years of age)		
	Well Controlled	Not Well Controlled	Ve C
Symptoms	≤2 days/week	>2 days/week	Through
Nighttime awakenings	≤2x/month	1–3x/week	≥4x/wee
Interference with normal activity	None	Some limitation	Extreme
Short-acting beta$_2$-agonist use for symptom control (not prevention of EIB)	≤2 days/week	>2 days/week	Several
FEV_1 or peak flow	>80% predicted/ personal best	60–80% predicted/ personal best	<60% p persona
Validated questionnaires			
ATAQ	0	1–2	3–4
ACQ	≤0.75*	≥1.5	N/A
ACT	≥20	16–19	≤15

16

Control Classifications

- Well Controlled
- Not Well Controlled
- Very Poorly Controlled

"Children's school absences and their parents' absences from work represented the greatest economic burden of impairment in children with severe asthma (observational study, 600 children).

Chest Physician, vol. 5:12, p. 21, , December 2010

Assessment of Control

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"A four component approach is effective for controlling asthma", EPR3

1) Measures of Assessment & Monitoring

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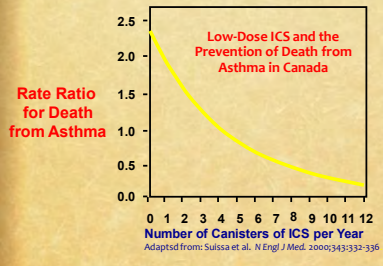
4) Medications

(p. 35)

ICS Use and Risk of Death

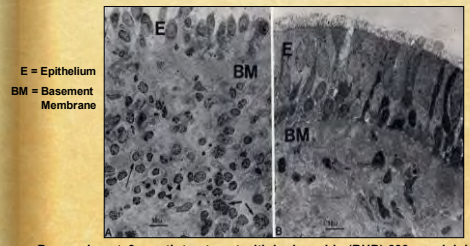


Adaptsd from: Suissa et al. *N Engl J Med.* 2000;343:332-336

AAE 2012

Slide from AAE©

Effects of Inhaled Corticosteroids on Inflammation

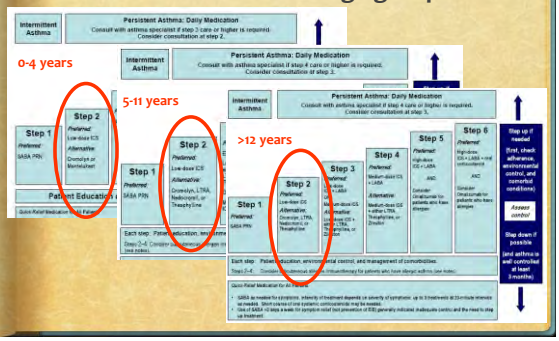


Pre– and post–3-month treatment with budesonide (BUD) 600 mcg b.i.d. n =14

Laitinen et al. *J Allergy Clin Immunol.* 1992;90:32-42.

Increase ICS Consumption!

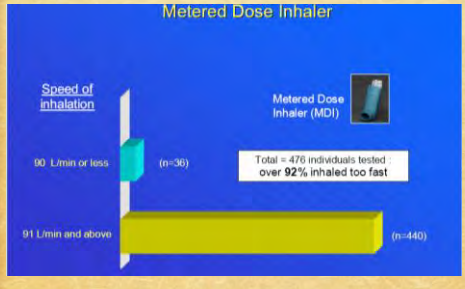
Preferred Rx for all age groups



Respiratory Inhaler Chart

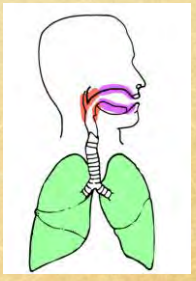
https://aanma.site-ym.com/store/ViewProduct.aspx?id=3829233

Do people with asthma know how to effectively inhale medications?



Inspiratory Flow Influences Drug Deposition

Inspiratory Flow	Drug Deposition	
Too Slow	Mouth	
Too Fast	Throat	
Correct Speed	Lungs	



EPR3 Specifies IFR and IFT

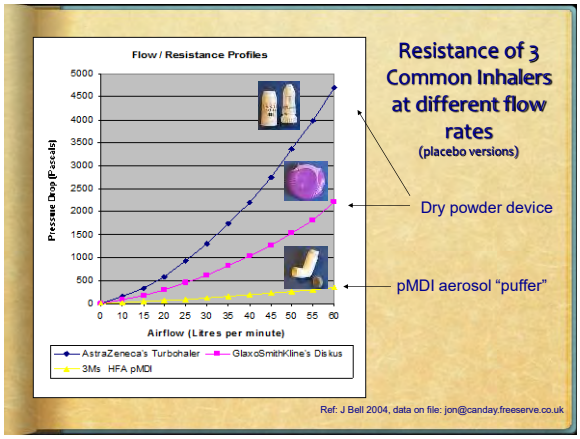
- IFR= inspiratory flow rate
- IFT= inspiratory flow time

- MDI – 30 LPM or 3-5 seconds
- DPI – 60 LPM or 1-2 seconds

How do you measure IFR & IFT?

In-Check Dial™ Device

- Only device currently marketed in the US
- Set resistance for common inhaler types
- Use disposable, one-way mouth piece, surface wipe
- Train for optimal IFR and IFT
- Coach to a "target" IFT
- Formula for **MDI** IFT= 2 seconds/L x (FEV1 in L)= target inhalation time (Example: 2 seconds/L X 3.5 L = 7 seconds)



Resistance of 3 Common Inhalers at different flow rates
(placebo versions)

Dry powder device

pMDI aerosol "puffer"

Ref: J Bell 2004, data on file: jon@canday.freeserve.co.uk

Prepare Families for Managing Life-threatening Attacks at Home

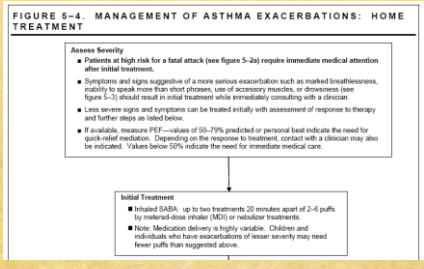


FIGURE 5–4. MANAGEMENT OF ASTHMA EXACERBATIONS: HOME TREATMENT

Assess Severity

- **Patients at high risk for a fatal attack (see figure 5-2a) require immediate medical attention after initial treatment.**
- Symptoms and signs suggestive of a more serious exacerbation such as marked breathlessness, inability to speak more than short phrases, use of accessory muscles, or drowsiness (see figure 5–3) should result in initial treatment while immediately consulting with a clinician.
- Less severe signs and symptoms can be treated initially with assessment of response to therapy and further steps as listed below.
- If available, measure PEF—values of 50–79% predicted or personal best indicate the need for quick-relief mediation. Depending on the response to treatment, contact with a clinician may also be indicated. Values below 50% indicate the need for immediate medical care.

Initial Treatment

- Inhaled SABA: up to two treatments 20 minutes apart of 2–6 puffs by metered-dose inhaler (MDI) or nebulizer treatments.
- Note: Medication delivery is highly variable. Children and individuals who have exacerbations of lesser severity may need fewer puffs than suggested above.

Environmental Assessment – Triggers

Creating Asthma-Friendly Schools
EPR-3 Recommendations and Priority Messages

Inhaled Corticosteroids

EPR-3 Recommendation: Inhaled corticosteroids (ICSs) are the most potent and consistently effective long-term control medication for asthma. ICSs should be taken on a long-term basis to achieve and maintain control of persistent asthma. www.nhlbi.nih.gov/guidelines/asthma/gip_rpt.pdf

Message for Schools

Parents of school children who have asthma should be aware and educate their children that ICSs are: 1) the preferred medication for persistent asthma, 2) safe for long-term use, 3) shown to reduce the risk of fatal asthma, 4) only effective if carefully inhaled, usually twice daily, into the lungs for several weeks, and 5) should only be discontinued under the advice of a qualified health care provider who can carefully monitor lung function in the following months.

Creating Asthma-Friendly Schools
EPR-3 Recommendations and Priority Messages

Asthma Control

EPR-3 Recommendation: Every patient with asthma should be taught to recognize symptom patterns and monitor airflow to identify poor asthma control and the need for additional therapy. Control should be routinely monitored to assess whether impairment and risk are reduced. www.nhlbi.nih.gov/guidelines/asthma/gip_rpt.pdf

Message for Schools

School nurses should routinely assess control. Monitor and report: 1) frequency of need for quick relief medications, 2) impairment related to breathing problems, 3) missed school days, and 4) diminished airflow measures (FEV$_1$ or PEF). Communicate regularly with parents and asthma care clinicians, especially when asthma is not well controlled.

Rhinitis and Sinusitis

- Hypertonic nasal rinses are 1st line
  - Nasopure®, Sinus Rinse®, AYR® etc.
- Antihistamines- intermittent symptoms
- Nasal corticosteroids- persistent
- Allergic and non-allergic causes
- Severe sinusitis- consider GERD
- Consider extended antibiotic course?

Efficacy of Daily Hypertonic Saline Nasal Irrigations Among Patients with Sinusitis, Randomized Control Trial, Rabago D, et al., Journal of Family Practice, p. 1049-1055, 2002.

1

Asthma Status Assessment
at Beginning of Every Semester

All students with asthma.

Essential components:

- FEV1 (lung function)
- ACT (symptoms)
- Medication adherence

2

Select Some Students for
for Enhanced Services

Examples of enhanced services:

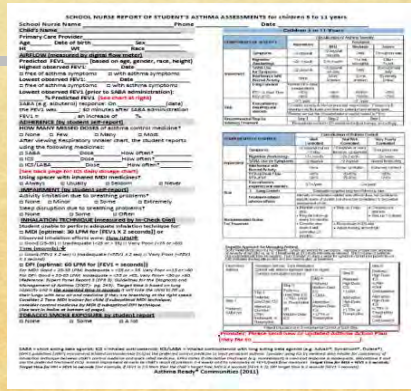
- Inhalation instruction
- Observed controller Rx use
- FEV1 tracking
- Aerochamber use
- Home environment assessment

3

Promote EPR-3 Guidelines
in Communications with
Health Care Providers

We have a special tool you can use.

School Nurse Messages PCP



Align Sustainable Intervention w/EPR3

- Educational messages & self-care coaching

Expert Panel Report 3 (EPR3)	Key messages
Assessment / monitoring	Measure airflow (FEV1)
Education for self-management	Inhaler identification / training
Control environment /co-morbidities	Avoid triggers, manage co-morbidities
Appropriate pharmacologic therapy	Inhaled corticosteroid improves control

Digital Flow Meter – FEV1 & PEF

- Asma-1/Digital Mini Wright
- Exacerbations
- Peak flow zone determination
- $60, multi-use $0.38/patient

Home Peak Flow Meters

- Home monitoring
- Poor perceivers
- Hx of severe attacks
- $25 (Internet price)
- Diurnal variability
- When Sx are present or Rx changing

FIGURE 4–2b. CLASSIFYING ASTHMA SEVERITY AND INITIATING TREATMENT IN CHILDREN 5–11 YEARS OF AGE

Assessing severity and initiating therapy in children who are not currently taking long-term control medication

Components of Severity		Classification of Asthma Severity (5–11 years of age)			
			Persistent		
		Intermittent	Mild	Moderate	Severe
Impairment	Symptoms	≤2 days/week	>2 days/week but not daily	Daily	Throughout the day
	Nighttime awakenings	≤2x/month	3–4x/month	>1x/week but not nightly	Often 7x/week
	Short-acting beta$_2$-agonist use for symptom control (not prevention of EIB)	≤2 days/week	>2 days/week but not daily	Daily	Several times per day
	Interference with normal activity	None	Minor limitation	Some limitation	Extremely limited
	Lung function	• Normal FEV_1 between exacerbations • FEV_1 >80% predicted • FEV_1/FVC >85%	• FEV_1 = >80% predicted • FEV_1/FVC >80%	• FEV_1 = 60–80% predicted • FEV_1/FVC = 75–80%	• FEV_1 <60% predicted • FEV_1/FVC <75%
Risk	Exacerbations requiring oral systemic corticosteroids	0–1/year (see note)	≥2/year (see note)		
		Consider severity and interval since last exacerbation. Frequency and severity may fluctuate over time for patients in any severity category.			
		Relative annual risk of exacerbations may be related to FEV_1.			
Recommended Step for Initiating Therapy (See figure 4–1b for treatment steps.)		Step 1	Step 2	Step 3, medium-dose ICS option and consider short course of oral systemic corticosteroids	Step 3, medium-dose ICS option, or step 4 and consider short course of oral systemic corticosteroids
		In 2–6 weeks, evaluate level of asthma control that is achieved, and adjust therapy accordingly.			

FIGURE 4–3b. ASSESSING ASTHMA CONTROL AND ADJUSTING THERAPY IN CHILDREN 5–11 YEARS OF AGE

Components of Control		Classification of Asthma Control (5–11 years of age)		
		Well Controlled	Not Well Controlled	Very Poorly Controlled
Impairment	Symptoms	≤2 days/week but not more than once on each day	>2 days/week or multiple times on ≤2 days/week	Throughout the day
	Nighttime awakenings	≤1x/month	>2x/month	≥2x/week
	Interference with normal activity	None	Some limitation	Extremely limited
	Short-acting beta$_2$-agonist use for symptom control (not prevention of EIB)	≤2 days/week	>2 days/week	Several times per day
	Lung function			
	• FEV_1 or peak flow	>80% predicted/ personal best	60–80% predicted/ personal best	<60% predicted/ personal best
	• FEV_1/FVC	>80%	75–80%	<75%
Risk	Exacerbations requiring oral systemic corticosteroids	0–1/year	≥2/year (see note)	
		Consider severity and interval since last exacerbation		
	Reduction in lung growth	Evaluation requires long-term followup.		
	Treatment-related adverse effects	Medication side effects can vary in intensity from none to very troublesome and worrisome. The level of intensity does not correlate to specific levels of control but should be considered in the overall assessment of risk.		
Recommended Action for Treatment (See figure 4–1b for treatment steps.)		• Maintain current step. • Regular followup every 1–6 months. • Consider step down if well controlled for at least 3 months.	• Step up at least 1 step and • Reevaluate in 2–6 weeks. • For side effects: consider alternative treatment options.	• Consider short course of oral systemic corticosteroids. • Step up 1–2 steps, and • Reevaluate in 2 weeks. • For side effects, consider alternative treatment options.

Conclusions

- School nurses can:
  - Improve inhalation technique
  - Increase ICS use
  - Improve airflow (FEV1)
  - Reduce impairment
  - Improve student psychosocial wellbeing

Questions or Comments?

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