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”

School Nurses Make a Difference

contributions to asthma care improvement
Don’t Do More.  
Do What Needs to Be Done.  
 focuss on a few essential actions

NASN Guidelines

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

1. Best Practice Clinical Guidelines for School Nurses
“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

(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 Two times 10 (20%) with asthma symptoms?
### Asthma Control Assessment

#### Components of Control

<table>
<thead>
<tr>
<th>Component</th>
<th>Well Controlled</th>
<th>Not Well Controlled</th>
<th>Very Poorly Controlled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptoms</td>
<td>1 d/wk</td>
<td>&gt;2 d/wk</td>
<td>Through</td>
</tr>
<tr>
<td>Nighttime awakenings</td>
<td>1/2 n/night</td>
<td>1-3 n/week</td>
<td>2+ n/week</td>
</tr>
<tr>
<td>Childhood with normal activity</td>
<td>None</td>
<td>Same limitation</td>
<td>Extreme</td>
</tr>
<tr>
<td>Shortness of breath, rapid respirations (daytime)</td>
<td>None</td>
<td>Same limitation</td>
<td>Extreme</td>
</tr>
<tr>
<td>Peak flow (%)</td>
<td>&gt;80% predicted/ personal best</td>
<td>65-80% predicted/ personal best</td>
<td>&lt;65% predicted/ personal best</td>
</tr>
<tr>
<td>Vital signs</td>
<td>0</td>
<td>1-2</td>
<td>3-4</td>
</tr>
</tbody>
</table>

### 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, p. 21, December 2010

### Assessment of Control

#### Components of Control

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“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)

ICS Use and Risk of Death

Rate Ratio for Death from Asthma

Low-Dose ICS and the Prevention of Death from Asthma in Canada

Number of Canisters of ICS per Year


Effects of Inhaled Corticosteroids on Inflammation

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


Slide from AAE©
Increase ICS Consumption!
Preferred Rx for all age groups

0-4 years
5-11 years
>12 years

Respiratory Inhaler Chart


Do people with asthma know how to effectively inhale medications?

Metered Dose Inhaler

- Tubes = 80% indicates harsh over 80% inhaled too fast
- 100% inhaled
Inspiratory Flow Influences Drug Deposition

<table>
<thead>
<tr>
<th>Inspiratory Flow</th>
<th>Drug Deposition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too Slow</td>
<td>Mouth</td>
</tr>
<tr>
<td>Too Fast</td>
<td>Throat</td>
</tr>
<tr>
<td>Correct Speed</td>
<td>Lungs</td>
</tr>
</tbody>
</table>

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

Environmental Assessment – Triggers

Allergen and Irritant Exposure Control

Develop and implement an Indoor Air Quality Management Plan to reduce triggers at school. Provide students and staff training and education to help avoid reduce their exposure to allergens and irritants while at school.
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?

11/28/2016

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 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.
### Align Sustainable Intervention w/EPR3

- **Educational messages & self-care coaching**

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

### 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.

<table>
<thead>
<tr>
<th>Components of Severity</th>
<th>Classification of Asthma Severity (5-11 years of age)</th>
<th>Persistent</th>
<th>Moderate</th>
<th>Severe</th>
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</thead>
<tbody>
<tr>
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</table>

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**Figure 4-3b. Assessing Asthma Control and Adjusting Therapy in Children 5-11 Years of Age**

Assessing control and adjusting therapy in children who are currently on long-term control medication.

<table>
<thead>
<tr>
<th>Components of Control</th>
<th>Classification of Asthma Control (5-11 years of age)</th>
<th>Well Controlled</th>
<th>Not Well Controlled</th>
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</tr>
</tbody>
</table>
Conclusions

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

Questions or Comments?
Deb Cook
dcook@kennett.k12.mo.us
(573) 344-0575

Director of Health Services; Certified Asthma Educator
Kennett Public Schools
Kennett, MO

NASN Director, Missouri
National Association of School Nurses

Member, NASN School Nurse Evidence-Based Clinical Guidelines: Asthma Committee