ASTHMA TOOLS
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OBJECTIVES

• Discuss tools available to clinicians to aid in assessing severity, risk, and control of asthma.
• Describe tools that are useful in asthma management of children and their families.
• Identify tools accessible to children and families to aid in asthma education and improved asthma control.

ASTHMA THERAPY
EXPERT PANEL REPORT-3 (2007)

New focus on monitoring asthama control as the goal of asthma therapy. Treatment should be guided by a system that assesses asthma severity to initiate therapy and asthma control to adjust therapy.

INITIAL VISIT → SEVERITY
FOLLOW-UP VISITS → CONTROL

ASTHMA THERAPY
EXPERT PANEL REPORT-3 (2007)

Assessment and monitoring are linked to the concepts of severity, control, and responsiveness to treatment.

- **Severity**: the intrinsic intensity of the disease process.
- **Control**: the degree to which the manifestations of asthma (symptoms, functional impairments, and risks of untoward events) are minimized and the goals of therapy are met.
- **Responsiveness**: the ease with which asthma control is achieved by therapy.
ASTHMA THERAPY

Asthma severity and control are defined in terms of two domains: impairment and risk.

CURRENT IMPAIRMENT: frequency and intensity of functional limitations the patient is experiencing or has recently experienced.

FUTURE RISK: the likelihood of future asthma exacerbations or decline in lung function.

ASTHMA SEVERITY

Severity: the intrinsic intensity of the disease process (Expert Panel Report-3).

- Ideally accessed at initial presentation (prior to being on therapy) to guide appropriate therapy.
- For patients already on medication, severity can be inferred from the least amount of treatment required to maintain control.

CASE

Sally Sue presents to your clinic with the following history:

- Wheezing with viral illnesses in the past
- Often requires 2 courses of oral steroids/year
- At baseline has daytime symptoms 1-2x/week
- Coughs at nighttime 2-3x/week
- Uses albuterol 2x/week
- Has to stop before her friends with activity
- Normal spirometry in the office today, FEV1 > 80%
**ASTHMA CONTROL**

**Control:** the degree to which the manifestations of asthma are minimized and the goals of therapy are met (Expert Panel Report-3)

**REDUCE IMPAIRMENT**
- Prevent chronic symptoms
- Require infrequent use of SABA
- Maintain normal lung function
- Maintain normal activity levels

**REDUCE RISK**
- Prevent exacerbations
- Minimize need for emergency care and hospitalization
- Prevent loss of lung function
- Minimize adverse effects of therapy

The keystone of asthma management is the achievement and maintenance of optimal asthma control.

**4 KEY COMPONENTS TO ASTHMA CONTROL BY EPR-3 GUIDELINES**

1. **Assessment and Monitoring.** To diagnose and assess the characteristics and severity of asthma and to monitor whether asthma control is achieved and maintained.

2. **Education.** To build a solid partnership for effective asthma self-management education among the patient, family/caregiver, and health care provider.

3. **Environmental Control.** To implement multi-faceted strategies to control environmental factors and to treat comorbid conditions that affect asthma.

4. **Pharmacologic Therapy.** To select the appropriate medications and to review the patient's technique and adherence to meet the patient's needs and circumstances.
WHY ARE STANDARDIZED TOOLS IMPORTANT?

- Providers often over-estimate the level of asthma control
- Patients and parents often under-report symptoms and the impact asthma has on their life.

(Pedersen, 2010)

PATIENT/PARENT COMPLETED QUESTIONNAIRES

EFF 3 Guidelines:
"Symptoms should be assessed at each health care visit... through appropriate questions. This is important for optimal asthma care."

- Validated questionnaires help determine how well asthma has been controlled at home.
- Patient questionnaires measure impairment.

FREQUENCY INTENSITY LIMITATION

PATIENT/PARENT COMPLETED QUESTIONNAIRES

- Asthma Therapy Assessment Questionnaire (ATAQ)
- Test for Respiratory Control in Kids (TRACK)
- Asthma Control Test (ACT)

Asthma Therapy Assessment Questionnaire (ATAQ)

- Parent completes
- Reviews symptoms over the past 4 weeks.
- Questionnaire examines:
  - Symptoms
  - Rescue inhaler use
  - Controller use
  - Perception of control
Asthma Therapy Assessment Questionnaire (ATAQ)

**ATAQ Scoring**
- 0 = well-controlled
- 1-2 = not well-controlled
- 3-4 = very poorly controlled

**Test for Respiratory and Asthma Control in Kids (TRACK)**

**Asthma Therapy Assessment Questionnaire (ATAQ)**

**ATAQ (Continued)**

1. In the past 4 weeks, did your child:
   - [ ] have wheezing or difficulty breathing when exercising? Yes (1) No (0) Unsure (1)
   - [ ] have wheezing during the day when not exercising? Yes (1) No (0) Unsure (1)
   - [ ] wake up with wheezing or difficulty breathing? Yes (1) No (0) Unsure (1)
   - [ ] miss any daily activities (such as going to a friend’s house, or any daily activity because of breathlessness)? Yes (1) No (0) Unsure (1)

2. Does your child use an inhaler or a nebulizer for quick relief from asthma symptoms?
   - [ ] yes
   - [ ] no
   - [ ] unsure

3. In the past 4 weeks, what was the greatest number of times in 1 day your child used his inhaler/nebulizer?
   - [ ] 0
   - [ ] 1-2
   - [ ] 3-4
   - [ ] 5 or more

4. Are you satisfied with any part of your child’s current asthma treatment?
   - [ ] yes
   - [ ] no
   - [ ] unsure

5. Do you believe that:
   - [ ] your child’s asthma is well controlled in the past 6 weeks?
   - [ ] your child is able to take his treatment regularly?
   - [ ] your child’s medication is useful for controlling his asthma?

6. During this office visit, would you like the doctor to discuss:
   - [ ] different types of drugs available to control asthma?
   - [ ] your child’s treatment options?
   - [ ] your child’s medication?
   - [ ] other topics?

Enter a score: Add numbers in the right blue area and enter total SCORE here. Add up to 12 on the left side area and enter total SCORE here. If either SCORE is ≥ 10 points, discuss questionnaire with your doctor.
Test for Respiratory and Asthma Control in Kids (TRACK)

1. During the past 4 months, how often did your child's breathing problems such as wheezing, coughing, or shortness of breath?
   - Not at all
   - 1 to 2 times a month
   - 3 to 4 times a week
   - 5 or more times a week

2. During the past 4 months, how often did your child's breathing problems such as wheezing, coughing, or shortness of breath make him or her up at night?
   - Not at all
   - 1 to 2 times a month
   - 3 to 4 times a week
   - 5 or more times a week

3. During the past 4 months, in what extent did your child's breathing problems such as wheezing, coughing, or shortness of breath interfere with his or her ability to play, go to school, or engage in usual activities that a child should be doing at his or her age?
   - Not at all
   - 1 to 2 times a month
   - 3 to 4 times a week
   - 5 or more times a week

TRACK Scoring

If your child's score is

80 or more
Your child's breathing problems seem to be under control
- Monitor your child's breathing problems on a regular basis and bring any concerns to the attention of his or her health care provider. Even though your child may not have breathing problems right now, these can come and go at any time, so your child should be monitored.
- Continue talking with the health care provider about your child's progress and whether treatment plan is right for your child.
- Good respiratory and asthma control can help your child sleep better, participate in everyday activities, and suffer fewer recurring flare-ups of breathing problems.

Less than 80
Your child's breathing problems may not be under control
- Make sure you're following the treatment recommendations given to you by your child's health care provider.
- Talk with your child's health care provider about reasons why your child's breathing problems may not be under control.
- Ask your child's health care provider what steps might be taken to improve your child's respiratory and asthma control in order to reduce daytime and nighttime symptoms and to reduce the need to use quick-relief medications.
Asthma Control Test

- Reviews symptoms over the past 4 weeks.
- Two versions (4-11 years of age and > 12 years)
- Questions for both parent and child to complete

**SCORING:**

- 0-19 = Uncontrolled
- 20-24 = Partly controlled
- > 24 = Controlled
ASTHMA CONTROL

RISK should also be assessed at each visit:
- Medical history, frequency of oral steroids, exacerbations
- Hospitalizations/ICU admissions
- Spirometry
- Consistent use of ICS (pharmacy refill history)

Patients who have had exacerbations requiring emergency department (ED) visits, hospitalization, or intensive care unit (ICU) admission, especially in the past year, have a great risk of exacerbations in the future (Adams et al. 2000; Eisen et al. 2001; Lieu et al. 1998; Hayes et al. 2000).

Some patients who have few current symptoms or impairment of quality of life may still be at a grave risk of severe, even life-threatening exacerbations (Adams et al. 2000; Eisen et al. 2001; Lieu et al. 1998).

SPIROMETRY

- Important objective measure
- Should be performed at least yearly; more frequent for increased severity.
- Pulmonary function measures often do not correlate directly with symptoms:
  - One study reported that one-third of the children who had moderate-to-severe asthma were reclassified to a more severe asthma category when pulmonary function was considered (Chow et al. 2003).
  - Children may have misleadingly normal spirometry results. Many asthmatic children have FEV₁ values within normal ranges despite frequent or severe symptoms (Rush et al. 2001).

Only 20% to 40% of primary care providers perform spirometry in asymptomatic patients, and up to 59% of pediatricians never perform lung function tests (Sandhu et al. 2001).

4 KEY COMPONENTS TO ASTHMA CONTROL

BY EPR-3 GUIDELINES

① Assessment and Monitoring. To diagnose and assess the characteristics and severity of asthma and to monitor whether asthma control is achieved and maintained.
② Education. To build a solid partnership for effective asthma self-management education among the patient, family/caregiver, and health care provider.
③ Environmental Control. To implement multi-faceted strategies to control environmental factors and to treat comorbid conditions that affect asthma.
④ Pharmacologic Therapy. To select the appropriate medications and to review the patient’s technique and adherence to meet the patient’s needs and circumstances.
ASTHMA EDUCATION

- Education provides patients with the skills necessary to control asthma and improve outcomes.
- Education should be integrated into all aspects of care.
- Requires REPETITION AND REINFORCEMENT.

The management of asthma depends in part on the ability of patients and families to monitor their condition on a regular basis.

TOOLS FOR FAMILIES & KIDS

- Asthma Action Plans (AAP)
- Peak Flow Meter
- Phone Apps
- Games

ASTHMA ACTION PLANS

The Expert Panel recommends that clinicians provide AAPs to all patients who have asthma with instructions that include:
- Daily management
- Recognizing and handling worsening asthma, including dose adjustments for medications.
LOW LITERACY ASTHMA ACTION PLAN

BENEFITS

Providers who used the low literacy plan were more likely to:
• Recommend a time of day for taking daily medications rather than using number of times per day
• Mention spacer use (>80% vs. <50% with regular plan)
• Reinforce need for everyday medications, even when the child is well
• Use explicit respiratory signs and symptoms (“ribs showing”) (Yin et al., 2015)

CARTOON OPTIONS:

PEAK FLOW MONITORING

EPR-3: “Consider peak flow monitoring for patients who have moderate or severe persistent asthma, patients who have a history of severe exacerbations, and patients who poorly perceive airflow obstruction and worsening asthma.”

• Peak flow meters monitor how fast air exits the lungs with one forceful exhalation
• Provide an objective measurement of airflow obstruction
PEAK FLOW: OBTAINING BASELINE

Ideally, the baseline values should be obtained when the patient is feeling well after a period of maximal asthma therapy.

1. Stand up straight
2. Make sure indicator is at “0”
3. Place mouthpiece in mouth
4. Exhale as hard and fast as you can
5. Write down # the indicator reaches
6. Move marker back to “0” and repeat two more times
7. Record highest number out of the 3 attempts
8. Repeat 2-4x/day for 2 weeks, recording highest number
9. Determine ‘personal best’ = the highest number over the 2-3 week period.

WHAT DO I DO WITH MY NUMBERS?

Once ‘personal best’ is determined, calculate your zones:

- **Green Zone**: 80 to 100% of personal best
  - You are relatively free of symptoms and can maintain your current asthma management program.
- **Yellow Zone**: 50 to 80% of personal best
  - “Caution” - your asthma is worsening.
- **Red Zone**: < 50% of personal best
  - “Danger” - your asthma management and treatment program is not controlling your symptoms.

EXAMPLE

If your personal best is 350, then:

- **Green Zone**: 280 - 350
  - 350 x 0.8
- **Yellow Zone**: 175 - 280
  - 350 x 0.5
- **Red Zone**: < 175

PEAK FLOW

When symptoms begin, check PEF 2-4x/day:

- Assists in determining how much this exacerbation is affecting lung function.
- Can use before and after use SABA to see how well SABA is helping with opening airways
- If trigger is unknown, can help in identifying new trigger
- Can help determine when to seek emergency care
PEAK FLOW MONITORING

**PROS**
- Provides objective data
- Can be good for poor symptom perceivers
- Can help identify triggers
- PEF may drop hours or even days before asthma symptoms begin
- Can help recognize when to use SABA or seek medical care.

**CONS**
- Is effort and technique dependent
- An additional task to remember
- Studies evaluating the efficacy of peak flow monitoring for improving asthma outcomes have yielded conflicting results (failed to demonstrate benefit over self-monitoring).
- PEF may drop hours or even days before asthma symptoms begin
- Can help recognize when to use SABA or seek medical care.

APPS AND GAMES

- **AsthmaMD**
  - Tracks medications, asthma triggers, and your action plan.
  - FREE
- **AsthmaBuddy**
  - Daily medication reminders, AAP, and track symptoms. Bonuses: first aid instructions that can help walk you through an emergency and videos on proper inhaler use.
  - FREE
- **AsthmaCheck**
  - Provides notifications about medicine and alerts when you're running low.
  - FREE
- **Assist me with inhalers**
  - Provides picture of asthma medications and directions on how and when to take them.
  - $0.99
- **Propeller**
  - Sends alerts to your doctor when asthma symptoms are worsening. Can track when and where inhalers are used.
  - FREE
- **AsthmaTrack**
  - Tracks symptoms & medication use. Bonus: can create multiple profiles for families with multiple asthmatics & track all the information within one app.
  - $2

APPS AND GAMES

- **Huff & Puff**
  - An asthma tale
  - FREE
- **WizdyPets**
  - Kids Asthma Game
  - Kids learn how to use their inhaler, identify triggers, and treat an asthma attack through fun games.

ASTHMA COMIC BOOKS

- **Piff & Puff: A Story About Asthma**
  - FREE
- **Aggy & the Inhalers**
  - FREE
- **Medikidz**
  - FREE
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**ASTHMA TRIGGERS**

For successful long-term management of asthma, it is essential to identify and reduce exposures to relevant allergens and irritants (EPR-3).

- For asthma patients, exposure to the sensitized allergens has been shown to increase asthma symptoms and cause asthma exacerbations.
- Reducing exposure to these allergens improves the control of asthma and reduces medication needs.

**Common triggers:**
- Respiratory viruses
- Exercise
- Tobacco Smoke
- Cockroaches
- Mold
- Pollens
- Dog/Cat Dander

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**IDENTIFYING ASTHMA TRIGGERS**

- Medical History
- Checklists
- Skin Prick Testing

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**COLORING PAGES:**

**ACTIVITY** 1: **FOLLOW THE DIRECTIONS BELOW TO ATTACK ASTHMA**

**ACTIVITY** 2: **FOLLOW THE DIRECTIONS BELOW TO ATTACK ASTHMA**

**COLORING PAGES:**
Effective allergen avoidance requires a multifaceted, comprehensive approach. Single allergen avoidance steps are generally ineffective in reducing the allergen load sufficiently to lead to clinical improvement. (EPR-3).

**ASTHMA TRIGGERS**

Avoiding and Controlling Your Asthma Triggers

**TREATMENT OF COMORBID CONDITIONS**

At every step, evaluate for comorbid conditions that could be playing a role in poorly controlled symptoms:

- Allergic rhinitis
- Gastroesophageal reflux
- Obesity
- Sinusitis
- Allergic bronchopulmonary aspergillosis
- Stress/Depression

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SPACER USE

- Decrease the amount of medication in the back of the throat
- Reduce systemic absorption of the medicine
- Increase delivery of medicine to the lungs

RECOMMENDED FOLLOW-UP

<table>
<thead>
<tr>
<th>ASTHMA SEVERITY</th>
<th>FOLLOW-UP INTERVAL</th>
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</thead>
<tbody>
<tr>
<td>Mild intermittent</td>
<td>Every 6 months</td>
</tr>
<tr>
<td>Mild persistent</td>
<td>Every 4 months</td>
</tr>
<tr>
<td>Moderate persistent</td>
<td>Every 3 months</td>
</tr>
<tr>
<td>Severe persistent</td>
<td>Every 1-2 months</td>
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THANK YOU!

ANY QUESTIONS?