

Teaching Respiratory Inhaler Techniques to Patients with Acute Asthma: Towards a Performance Measure?

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Disclosure of Conflict of Interest Information

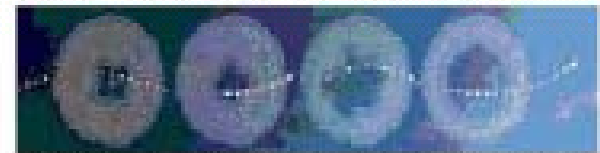
I have no existing conflict of information to disclose

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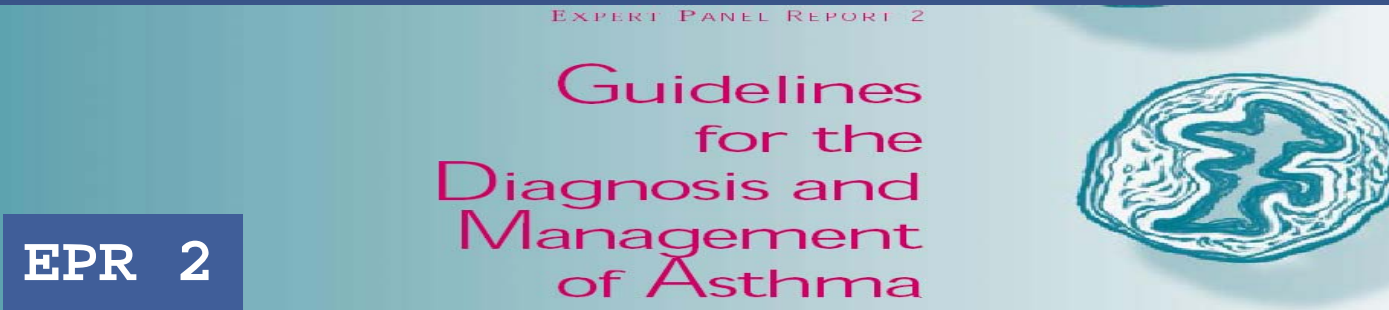
1991

NHLBI-sponsored National Asthma Education and Prevention Program; Expert Panel Report (EPR)

1997

EXPERT PANEL REPORT 2

Guidelines for the Diagnosis and Management of Asthma



EPR 2

2002

Expert Panel Report: Guidelines for the Diagnosis and Management of Asthma

Update on Selected Topics 2002

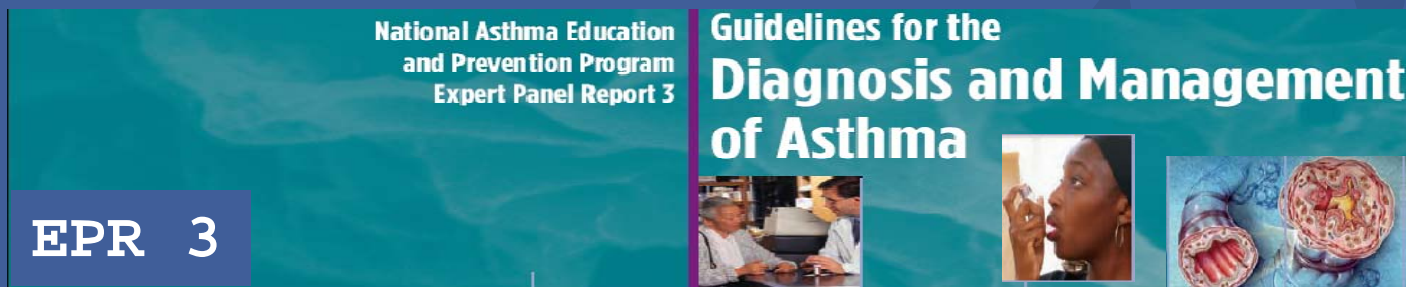


EPR 2 update

2007

National Asthma Education and Prevention Program Expert Panel Report 3

Guidelines for the Diagnosis and Management of Asthma



EPR 3

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
Alternative:
Cromolyn, LTRA, Nedocromil, or Theophylline

Step 3
Preferred:
Low-dose ICS + LABA
OR
Medium-dose ICS
Alternative:
Low-dose ICS + either LTRA, Theophylline, or Zileuton

Step 4
Preferred:
Medium-dose ICS + LABA
Alternative:
Medium-dose ICS + either LTRA, Theophylline, or Zileuton

Step 5
Preferred:
High-dose ICS + LABA

AND

Consider Omalizumab for patients who have allergies

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 (see notes).

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.
- 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.



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- Acute asthma results in about 500,000 hospitalizations annually¹
- Respiratory inhaler medications critical to treat these conditions

- Effective therapies
- Decreased side effect profile over oral medications
- Multiple respiratory inhalers often used



1. CDC: <http://www.cdc.gov/asthma/default.htm>

- Respiratory inhalers often used incorrectly
 - Patients at risk for under-treatment & worse health outcomes
- Several factors may contribute to poor self-management
 - inadequate patient education at healthcare encounters
 - inadequate patient health literacy



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ASSESSMENT - ABILITY TO USE

Pre-instruction

Post-instruction

- | | | |
|---------------|--|--|
| • Medicine #1 | <input type="checkbox"/> Good <input type="checkbox"/> Fair <input checked="" type="checkbox"/> Poor | <input checked="" type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor |
| • Medicine #2 | <input type="checkbox"/> Good <input type="checkbox"/> Fair <input checked="" type="checkbox"/> Poor | <input checked="" type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor |
| • Medicine #3 | <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor | <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor |
| • Medicine #4 | <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor | <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor |
| • PFM | <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor | <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor |

COMMENTS: Pt. received asthma education today. Pt was put on Diskus protocol.
Technique: Inhaled before changing Diskus. Inhalation slow/steady. Held Diskus
adequately horizontal (all prior to education). Post education - deficits were
-corrected. Albuterol MDI - doesn't own/use spacer. Pt. received education and new
spacer.

PLAN: Pt to return in 2 wks for PFTS and turn in BP Diskus. Pt to f/u
with Dr. Krishnan in 4-6 weeks.

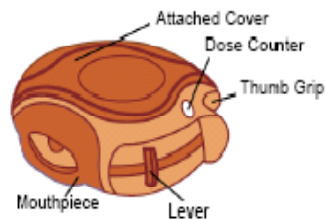
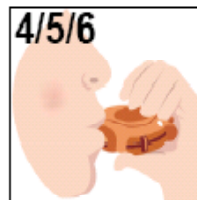
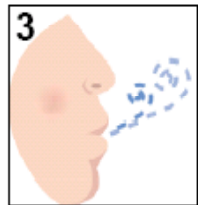
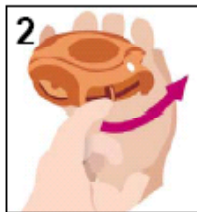
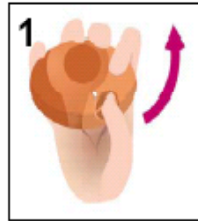
Ethan Israelsohn LCSW, AE-C
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Using your Diskus® (e.g., fluticasone/salmeterol, Advair®): Steps 1 to 10



Adapted From: <http://www.advair.com>.
Illustration Adapted From: <http://www.asthma.ca>.

1. Place your thumb on the thumb grip and push the thumb grip until it clicks into place and the mouthpiece appears.

2. Hold the Diskus® horizontal and upright (through step #6). Slide the lever away from you until it clicks.

3. **Breathe OUT normally** and away from the Diskus®. Don't breathe in until step #5.

4. Put the Diskus® in your mouth with lips tight around the mouthpiece. **Keep Diskus® horizontal.**

5. **Breathe IN quickly to fill your lungs full of medicine.**

6. **Hold your breath for 5 to 10 seconds** and then take the Diskus® out of your mouth. We want to keep your lungs filled with medicine for 5 to 10 seconds.

7. **Breathe normally.**

8. Close the Diskus® by placing your thumb in the thumb grip and clicking it closed.

9. Store in a cool, dry place. If moisture and steam get into the Diskus® you may not get enough medicine.

10. Gargle your mouth and throat with water to reduce the risk of side effects.

'charging
Diskus'

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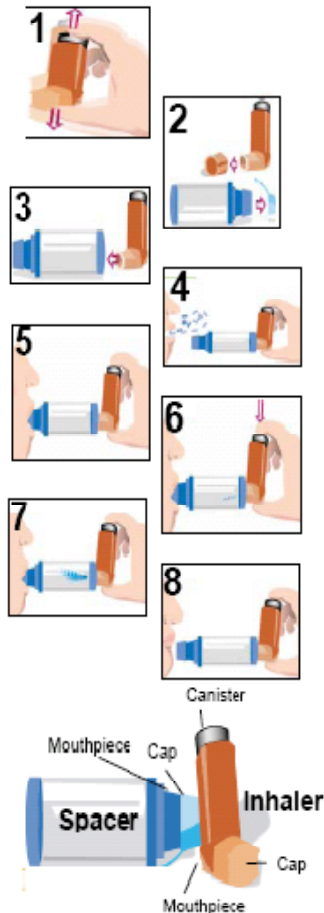
Ethan Israelsohn LCSW, AE-C
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Using your Metered Dose Inhaler and Spacer (e.g., albuterol, Proventil®): Steps 1 to 10



Adapted from: <<http://www.gsk.com>>.
Illustration Adapted From: <<http://www.asthma.ca/>>.

1. Shake the inhaler hard up and down **5 times**.
2. Uncap inhaler and spacer mouthpieces and look for loose objects in the devices.
3. Push the inhaler mouthpiece into the spacer so that it fits snugly.
4. **Breathe OUT normally** and away from the spacer. Don't breathe in until step #7.
5. Put the spacer mouthpiece in your mouth in between your teeth. Close your lips around the spacer mouthpiece and keep your tongue out of the way of the mouthpiece.
6. Press down on the inhaler canister **1 time**.
7. **Breathe IN slowly to fill your lungs full of medicine.** If you hear a whistling sound, you are breathing in too fast and need to slow down.
8. **Hold your breath for 5 to 10 seconds.** We want to keep your lungs filled with medicine for 5 to 10 seconds.
9. **Take spacer out of your mouth and breathe normally.**
10. Wait **15 to 30 seconds** before repeating steps 1-9 for the **second puff**.

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Using your Symbicort[®] Metered Dose Inhaler (Budesonide/Formoterol): Steps 1 to 10



*Note: The manufacturer of Symbicort[®] does not at this time recommend the use of a spacer with the Symbicort[®] metered dose inhaler.

1. Shake hard up and down for **5 seconds**.
2. Uncap mouthpiece and look for loose objects in the device.
3. **Breathe OUT normally** and away from inhaler. Don't take a breath until step #7.
4. Put inhaler mouthpiece in your mouth. Close your lips around the inhaler mouthpiece and keep tongue out of the way.
5. **Breathe IN slowly** as you **press down** on the grey top of the inhaler canister **1 time**.
6. **Continue to breathe IN slowly** to fill your lungs full of medicine.
7. **Hold your breath for 5 seconds** and then take the inhaler out of your mouth. We want to keep your lungs filled with medicine for 5 seconds.
8. **Breathe IN and OUT normally**
9. Wait at least **15 seconds** before repeating steps 1-8 for the **next puff**.

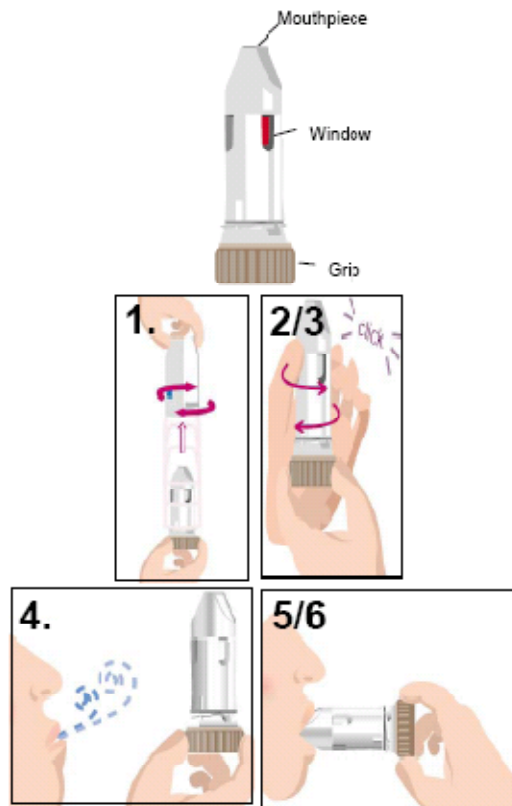
Adapted From:<<http://mysymbicort.com>>.

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Using your Pulmicort® Turbuhaler® (budesonide): Steps 1 to 10



1. Twist and remove cover.
2. Hold the inhaler upright with mouthpiece facing up.
3. Twist grip to **right then left** until it clicks. This gets the medicine ready for breathing in.
4. **Breathe OUT normally** and away from the inhaler. Don't take a breath until step #6.
5. Put the inhaler in mouth with lips tight around mouthpiece. Inhaler may be held upright or horizontal.
6. **Breathe IN quickly to fill you lungs full of medicine.**
7. **Hold your breath for 5 seconds** and then take the device out of your mouth. We want to keep your lungs filled with medicine for 5 seconds.
8. **Breathe IN and OUT normally.**
9. Replace cover and twist to close, and store device in a cool, dry place.
10. Gargle your mouth and throat with water.

Adapted From: <<http://pulmicortrespules.com>>
Illustration Adapted From: <<http://www.asthma.ca>>.

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Guidelines

- National & international guidelines for asthma recommend ¹
 - Educating patients on self-management skills for respiratory inhalers
 - Assessing patient comprehension at all points of care

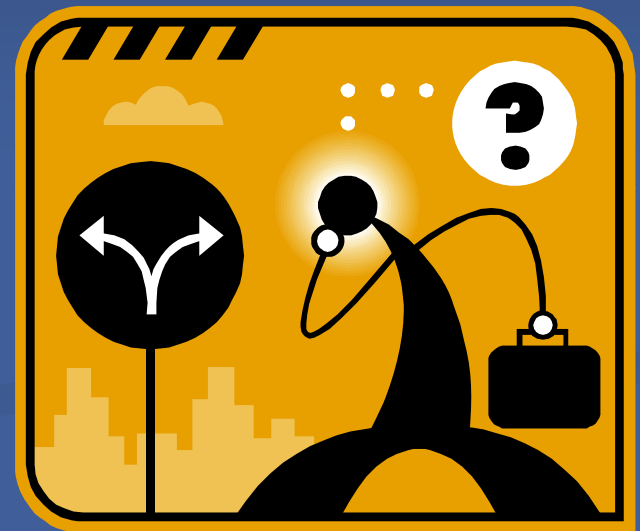


<http://www.healthline.com/images/staywell/84538.jpg>

Statement of Problem

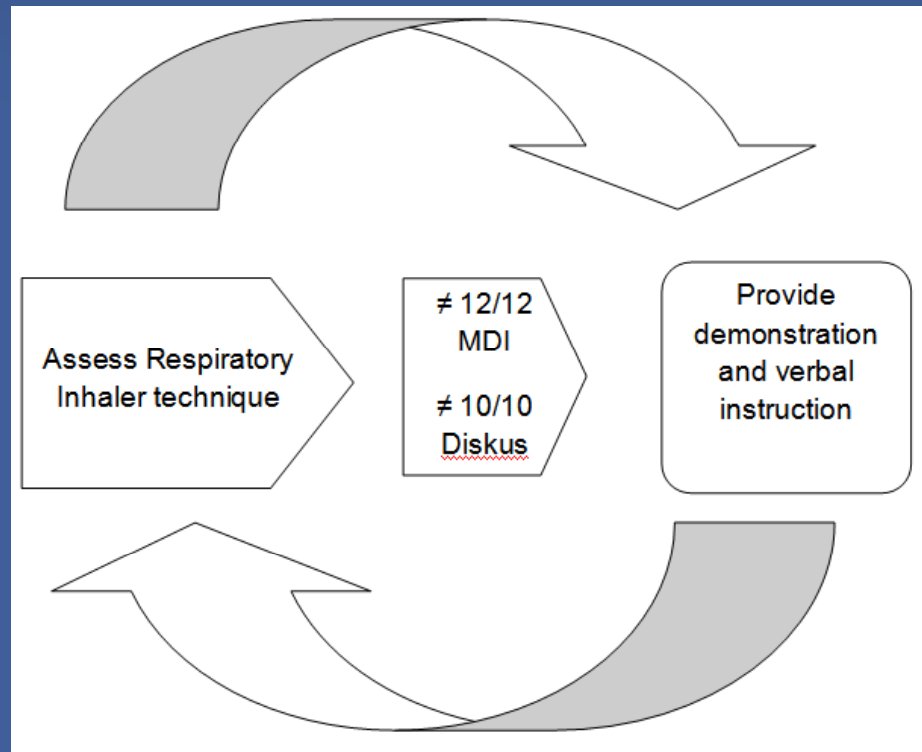
The most effective strategy to instruct patients about respiratory inhaler use in hospital settings is unclear

- particularly in populations with high frequency of low levels of health literacy



Teach-to-goal (TTG)

Assessment, instruction, and reassessment with repeated round of instruction until mastery is confirmed¹



Objectives

- To evaluate use of TTG as an educational strategy for both metered dose inhalers (MDI) and Diskus® in hospitalized patients with asthma or COPD
- To evaluate if health literacy plays a role in patients' ability to learn inhaler technique

Methods

Inclusion Criteria:

- ≥ 18 years
- hospitalized with diagnosis of asthma or COPD
- one of two urban academic medical centers
- used MDI and Diskus® devices in the past 3 months

Demographic and HL data were collected

- S-TOFHLA©
- vision assessed with Snellen©

Form 8: STOFHLA

PASSAGE A

Your doctor has sent you to have a .

You must have an _____
a. asthma
b. empty
c. incest
d. anemia

The X-ray will _____ from 1 to 3 _____ to do.
a. take
b. view
c. talk
d. look
a. beds
b. brains
c. hours
d. diets

THE DAY BEFORE THE X-RAY

For supper have only a _____ snack of fruit, _____ and jelly,
a. little
b. broth
c. attack
d. nausea
a. toes
b. throat
c. toast
d. thigh



Methods

- Detailed checklists
 - mastery defined as “perfect technique”
 - MDI: 12/12 steps
 - Diskus®: 10/10 steps
- Patients received up to two rounds of TTG instruction

Figure 1: MDI and Diskus® checklists

MDI



1. Removes cap of inhaler and spacer
2. Shakes inhaler up and down
3. Attaches inhaler to back of spacer
4. Breathes OUT fully
5. When breathing out fully, does so away from spacer/MDI
6. Puts spacer/MDI mouthpiece into mouth, closes lips around mouthpiece
7. Activates inhaler by pressing down on canister 1 time
8. Breathes IN SLOWLY, filling lungs with medicine. No whistle should be heard
9. Holds breath for at least 5 seconds
10. Removes spacer/MDI from mouth before breathing normally
11. Breathes normally for at least 30-60 seconds
12. Repeats sequence for second puff

Diskus®



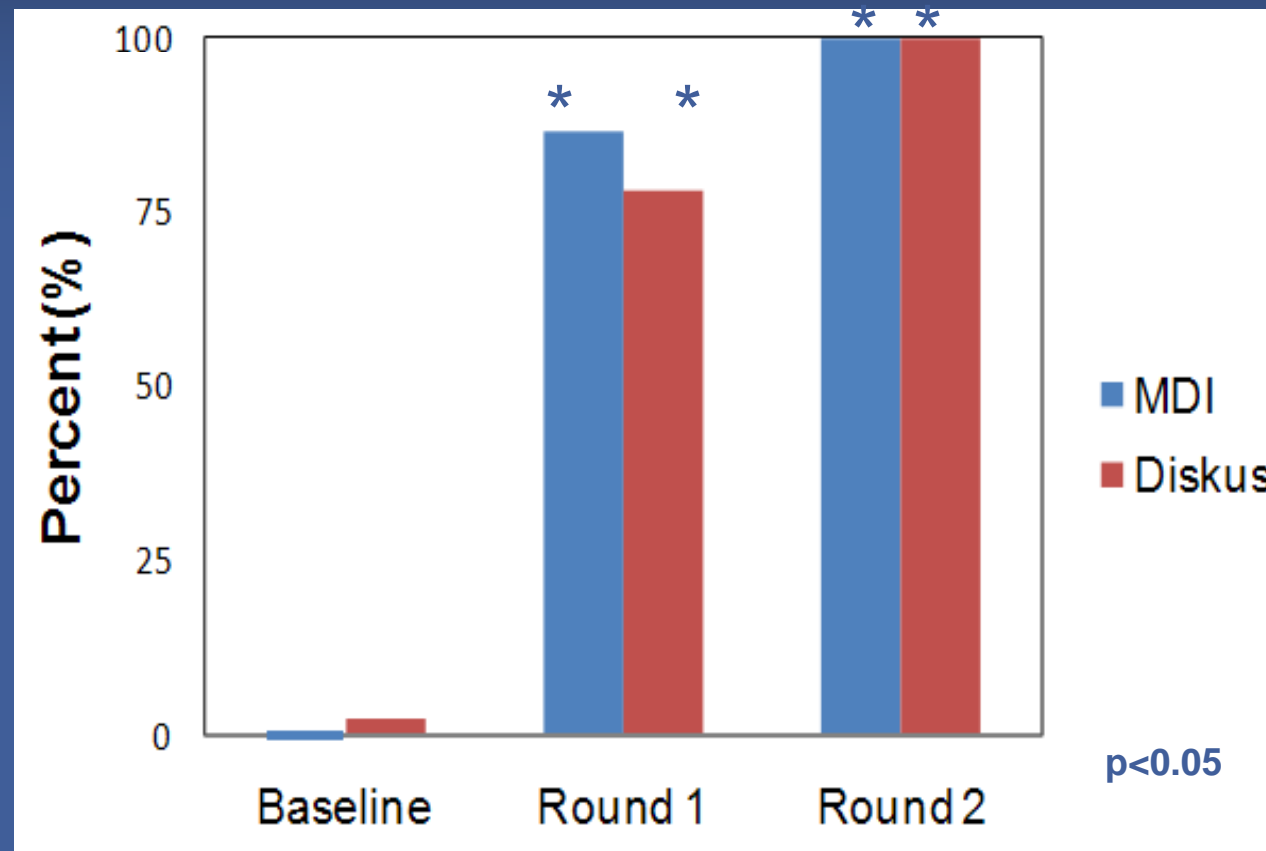
1. Uses thumb or finger in thumb grip to open
2. Keeps Diskus® horizontal prior to Step # 3 through Step #7
3. Slides lever once until it clicks
4. Breathes OUT fully
5. When breathing out fully, does so away from Diskus®
6. Presses lips tightly above and below mouthpiece opening
7. Breathes IN QUICKLY, filling lungs with medicine.
8. Holds breath for at least 5 seconds
9. Removes Diskus® before breathing normally
10. Closes Diskus® by placing thumb or finger in the thumb grip and sliding it closed

Results

n= 42	%
African-American	90
Female	74
≥ 65 years of age	71
Hospitalized ≥1 time within the past 12 months	85
Diagnosis	
Asthma	55
COPD	45

% of Patients Achieving Mastery (n=42)

All patients MDI & Diskus



Mean teaching time: 6.4 minutes

Summary

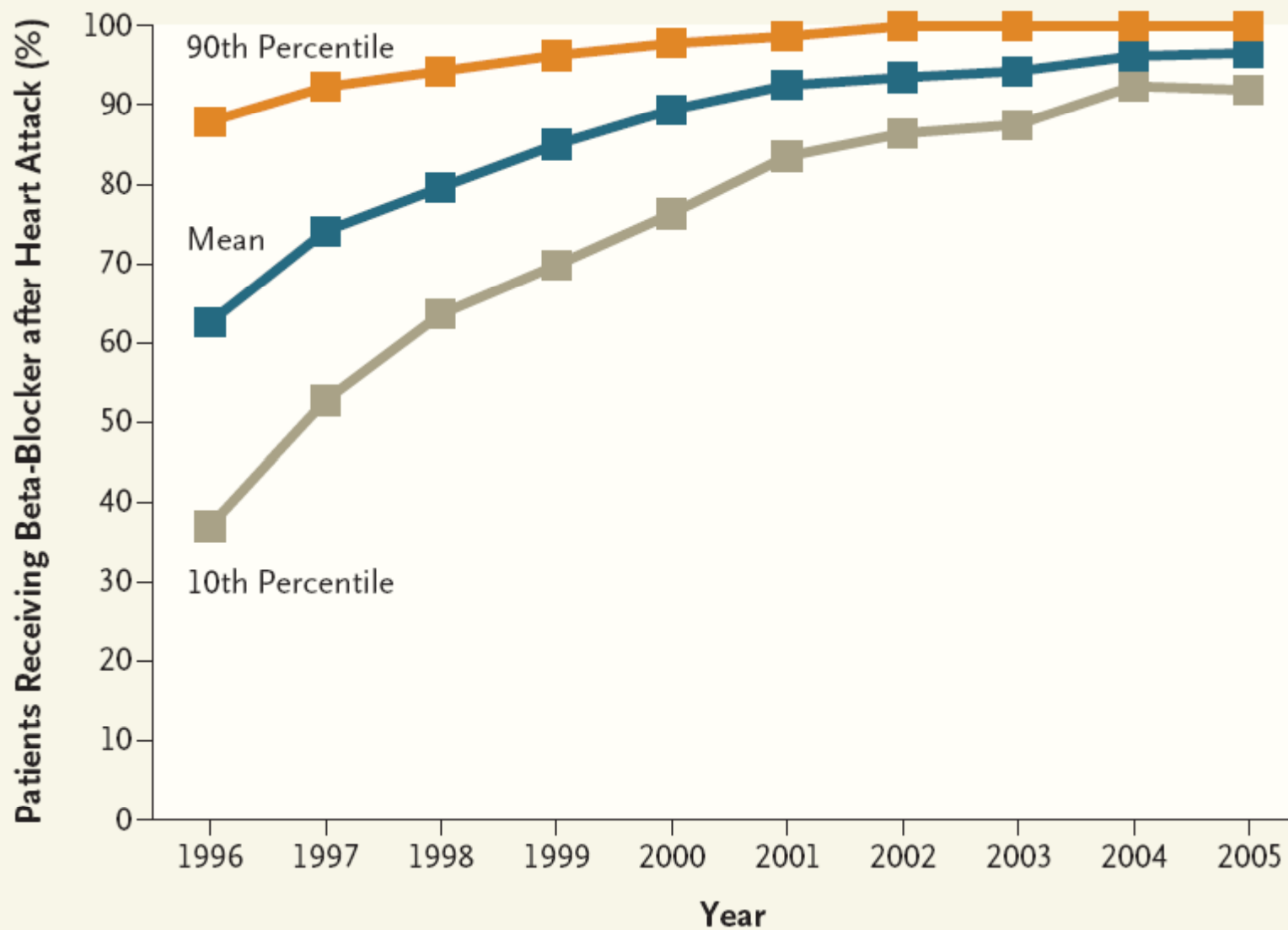
- Inappropriate use of respiratory inhaler technique is common in hospitalized patients (? Universal)
 - Teaching and re-teaching (“teach to goal”) may be needed
- Feasibility and need for intensive teaching approaches unclear
 - Is a brief intervention sufficient (“Teaching Use of Respiratory Inhalers”, TURI, a RCT is underway)
 - Inhaler technique, retention, clinical outcomes
 - Reimbursement for teaching low (none?); external incentives, such as pay-for-performance, may be needed

Eulogy for a Quality Measure

Thomas H. Lee, M.D.

On May 8, 2007, one of the best-known quality measures in health care was put to rest.....

N ENGL J MED 357;12 WWW.NEJM.ORG SEPTEMBER 20, 2007



Use of Beta-Blocker Treatment after Myocardial Infarction, 1996–2005.

Data are from the National Committee for Quality Assurance.

How did this happen?

1. Performance used to determine accreditation (1996)

- Employers used accreditation in decisions regarding use of health plans

2. Health plans

- incorporated beta-blocker 'scripts' used by case managers
- Sent patients educational materials about use of beta-blockers post-MI
- Reminder letters to physicians if claims data indicated patient did not receive beta-blocker post-MI
- Offer financial incentives as part of pay-for-performance contracts to hospitals and integrated delivery systems

How did this happen?

3. Professional societies moved beyond writing guidelines, embarked on quality improvement initiatives
 - American College of Chest Physicians: Guidelines applied in Practice
 - American Heart Association: Get with the guidelines (for hospitals)

4. Institute for Healthcare Improvement
 - Beta-blockers featured in the 100,000 Lives Campaign



*"If we don't
succeed, we run
the risk of
failure."*

