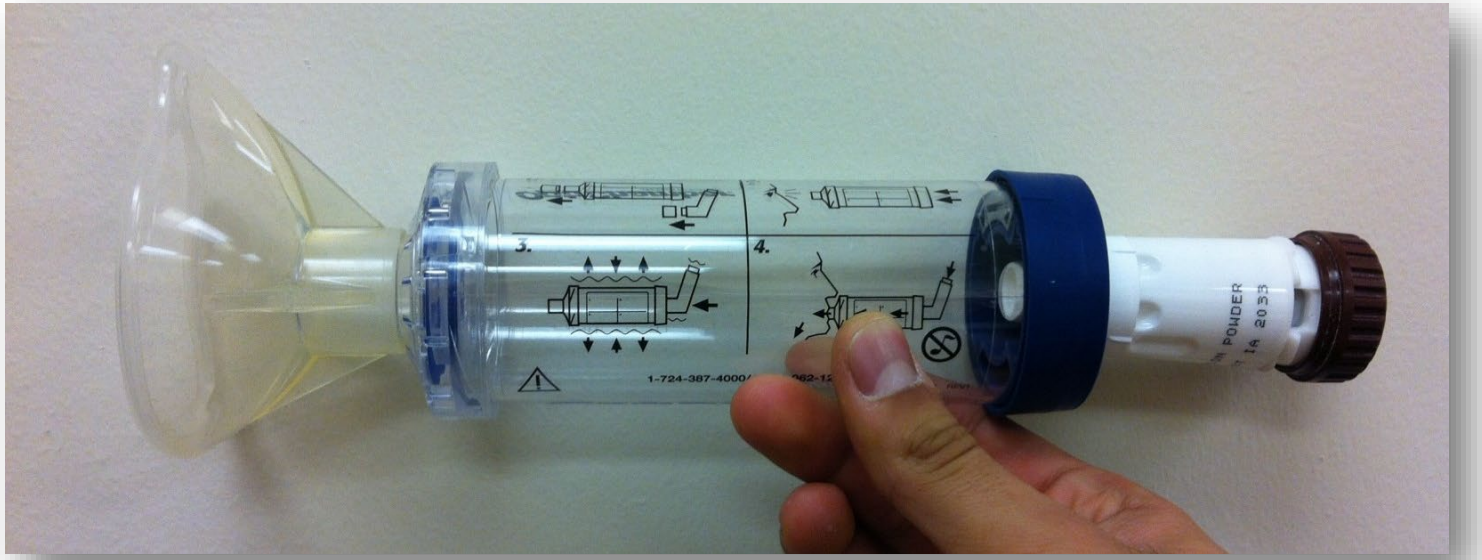


Challenge Accepted
OR…
Practical Tips, Tricks & Patient Education

Karla Stoermer Grossman, MSA, BSN, RN, AE-C
CSHCS Case Managers
May 11, 2021

Objectives

- Learners will gain basic understanding of how to use asthma medication devices, assess patient understanding of asthma medication use and rationale, and tips for obtaining better asthma control.
- Learners will be able to identify how social determinants of health can impact a patient's ability to obtain and maintaining asthma control; and create a plan to address identified issues.

You've figured out Severity…

Now what?

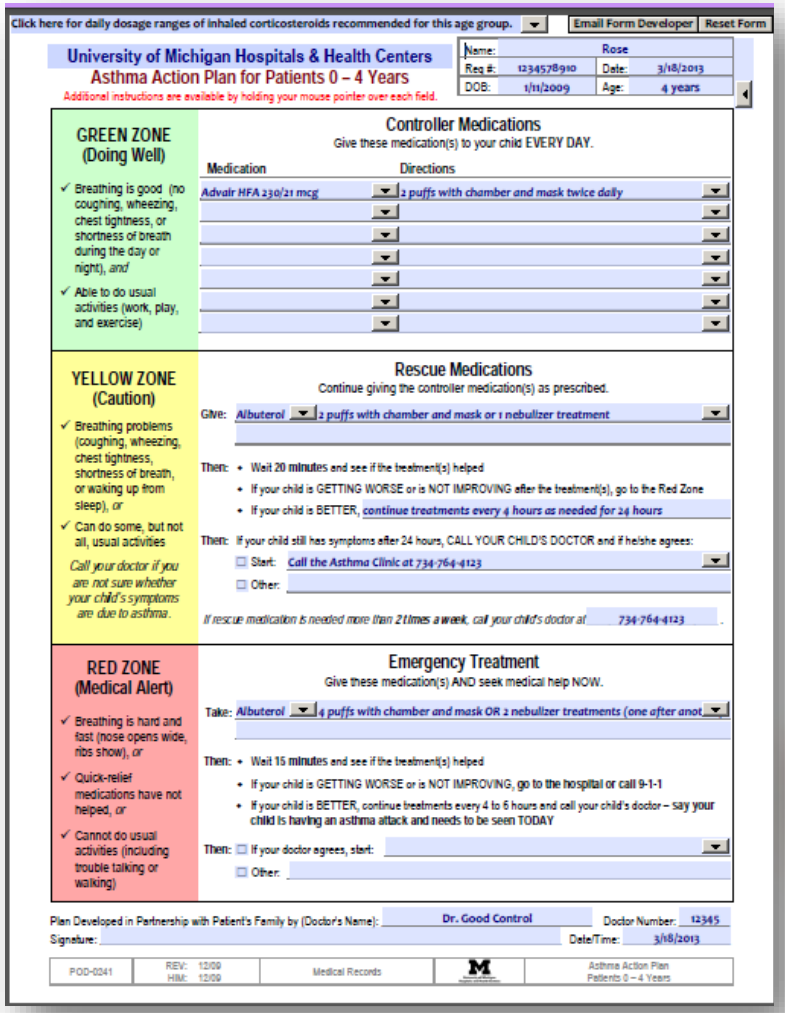
Patient perspective

It can be really, really, really, really, really, complicated….

It’s complicated….

- Complicated medication schedules
- Complicated device techniques
- Complicated histories
- Complicated family lives/adherence
- Complicated insurance issues
- It’s JUST Complicated…

Complicated Schedules



Click here for daily dosage ranges of inhaled corticosteroids recommended for this age group. | Email Form Developer | Reset Form

University of Michigan Hospitals & Health Centers
Asthma Action Plan for Patients 0 – 4 Years
Additional instructions are available by holding your mouse pointer over each field.

Name:	Rose		
Reg #:	1234578910	Date:	3/18/2013
DOB:	1/11/2009	Age:	4 years

GREEN ZONE (Doing Well)
- ✓ Breathing is good (no coughing, wheezing, chest tightness, or shortness of breath during the day or night), *and*
- ✓ Able to do usual activities (work, play, and exercise)

Controller Medications
Give these medication(s) to your child EVERY DAY.

Medication	Directions
Advair HFA 230/21 mcg	2 puffs with chamber and mask twice daily

YELLOW ZONE (Caution)
- ✓ Breathing problems (coughing, wheezing, chest tightness, shortness of breath, or waking up from sleep), *or*
- ✓ Can do some, but not all, usual activities

Call your doctor if you are not sure whether your child's symptoms are due to asthma.

Rescue Medications
Continue giving the controller medication(s) as prescribed.

Give: Albuterol — 2 puffs with chamber and mask or 1 nebulizer treatment

Then:
- Wait 20 minutes and see if the treatment(s) helped
- If your child is GETTING WORSE or is NOT IMPROVING after the treatment(s), go to the Red Zone
- If your child is BETTER, continue treatments every 4 hours as needed for 24 hours

Then: If your child still has symptoms after 24 hours, CALL YOUR CHILD'S DOCTOR and if he/she agrees:
- ☐ Start: Call the Asthma Clinic at 734-764-4123
- ☐ Other:

If rescue medication is needed more than 2 times a week, call your child's doctor at 734-764-4123.

RED ZONE (Medical Alert)
- ✓ Breathing is hard and fast (nose opens wide, ribs show), *or*
- ✓ Quick-relief medications have not helped, *or*
- ✓ Cannot do usual activities (including trouble talking or walking)

Emergency Treatment
Give these medication(s) AND seek medical help NOW.

Take: Albuterol — 4 puffs with chamber and mask OR 2 nebulizer treatments (one after anot

Then:
- Wait 15 minutes and see if the treatment(s) helped
- If your child is GETTING WORSE or is NOT IMPROVING, go to the hospital or call 9-1-1
- If your child is BETTER, continue treatments every 4 to 6 hours and call your child's doctor – say your child is having an asthma attack and needs to be seen TODAY

Then:
- ☐ If your doctor agrees, start:
- ☐ Other:

Plan Developed in Partnership with Patient's Family by (Doctor's Name): Dr. Good Control — Doctor Number: 12345
Signature: _____ Date/Time: 3/18/2013

POD-0241 | REV: 12/09 HIM: 12/09 | Medical Records | Asthma Action Plan Patients 0 – 4 Years

- What to take daily
- Symptoms to treat
- What to treat with
- How to use
- How often to use
- How long to treat
- When to call the MD
- When to seek ED care

Asthma Medications

Relievers / Rescue / Bronchodilators

Short-acting Beta$_2$ Agonists

ProAir
albuterol sulfate
90mcg
Teva

ProAir RespiClick
albuterol sulfate dry powder
90mcg
Teva

Proventil
albuterol sulfate
90mcg
Merck

Ventolin
albuterol sulfate
90mcg
GlaxoSmithKline

Xopenex
levalbuterol tartrate
45mcg
Sunovion

Nebulized Albuterol
albuterol sulfate
2.5 mg/3mL
generic

Xopenex Inhalation Solution
levalbuterol HCl
0.31mg/3mL
Sunovion

Xopenex Inhalation Solution
levalbuterol HCl
0.63mg/3mL
Sunovion

Xopenex Inhalation Solution
levalbuterol HCl
1.25mg/3mL
Sunovion

Ipratropium Bromide

Atrovent*
ipratropium bromide
17mcg
Boehringer Ingelheim

Combivent Respimat*
ipratropium bromide 20mcg,
albuterol sulfate 100mcg
Boehringer Ingelheim

* Ipratropium bromide is not a recommended rescue inhaler outside of use in the emergency room or urgent care but may, on occasion, be prescribed to supplement short-acting Beta$_2$ agonists.

Controllers

Inhaled Corticosteroids (ICS): Metered-Dose Inhalers (MDI)

Aerospan
flunisolide
80mcg
Meda Pharmaceuticals

Alvesco
ciclesonide
80mcg
Sunovion

Alvesco
ciclesonide
160mcg
Sunovion

Asmanex
mometasone furoate
100mcg
Merck

Asmanex
mometasone furoate
200mcg
Merck

Flovent
fluticasone propionate
44mcg
GlaxoSmithKline

Flovent
fluticasone propionate
110mcg
GlaxoSmithKline

Flovent
fluticasone propionate
220mcg
GlaxoSmithKline

Inhaled Corticosteroids (ICS): Dry Powder Inhalers

QVAR
beclomethasone dipropionate
40mcg
Teva

QVAR
beclomethasone dipropionate
80mcg
Teva

ArmonAir RespiClick
fluticasone propionate
55mcg
Teva

ArmonAir RespiClick
fluticasone propionate
113mcg
Teva

ArmonAir RespiClick
fluticasone propionate
232mcg
Teva

Arnuity Ellipta
fluticasone furoate
100mcg
GlaxoSmithKline

Arnuity Ellipta
fluticasone furoate
200mcg
GlaxoSmithKline

Asmanex Twisthaler
mometasone furoate
110mcg
Merck

Asmanex Twisthaler
mometasone furoate
220mcg
Merck

Flovent Diskus
fluticasone propionate
50mcg
GlaxoSmithKline

Flovent Diskus
fluticasone propionate
100mcg
GlaxoSmithKline

Flovent Diskus
fluticasone propionate
250mcg
GlaxoSmithKline

Pulmicort Flexhaler
budesonide
90mcg
AstraZeneca

Pulmicort Flexhaler
budesonide
180mcg
AstraZeneca

Combination Therapies

Advair
fluticasone propionate, salmeterol
45mcg/21mcg
GlaxoSmithKline

Advair
fluticasone propionate, salmeterol
115mcg/21mcg
GlaxoSmithKline

Advair
fluticasone propionate, salmeterol
230mcg/21mcg
GlaxoSmithKline

Advair Diskus
fluticasone propionate, salmeterol
100mcg/50mcg
GlaxoSmithKline

Advair Diskus
fluticasone propionate, salmeterol
250mcg/50mcg
GlaxoSmithKline

Advair Diskus
fluticasone propionate, salmeterol
500mcg/50mcg
GlaxoSmithKline

Airduo RespiClick
fluticasone propionate/
salmeterol
55mcg/14mcg
Teva

Airduo RespiClick
fluticasone propionate/
salmeterol
113mcg/14mcg
Teva

Airduo RespiClick
fluticasone propionate/
salmeterol
232mcg/14mcg
Teva

Breo Ellipta
fluticasone furoate/
vilanterol
100mcg/25mcg
GlaxoSmithKline

Breo Ellipta
fluticasone furoate/
vilanterol
200mcg/25mcg
GlaxoSmithKline

Dulera
mometasone furoate,
formoterol fumarate
100mcg/5mcg
Merck

Dulera
mometasone furoate,
formoterol fumarate
200mcg/5mcg
Merck

Symbicort
budesonide,
formoterol fumarate
80mcg/4.5mcg
AstraZeneca

Symbicort
budesonide,
formoterol fumarate
160mcg/4.5mcg
AstraZeneca

Inhaled Corticosteroids (ICS): Nebulized

Pulmicort Respules
budesonide
0.25mg/2mL
AstraZeneca

Pulmicort Respules
budesonide
0.5mg/2mL
AstraZeneca

Pulmicort Respules
budesonide
1mg/2mL
AstraZeneca

Anticholinergic Controller

Long acting anti-mucarinici agent (LAMA)

Spiriva Respimat
tiotropium bromide
1.25mcg
Boehringer Ingelheim

Long-acting Beta$_2$ Agonists (LABA)

Serevent Diskus*
salmeterol xinafoate
50mcg
GlaxoSmithKline
*use with an ICS

MDH Minnesota Department of Health

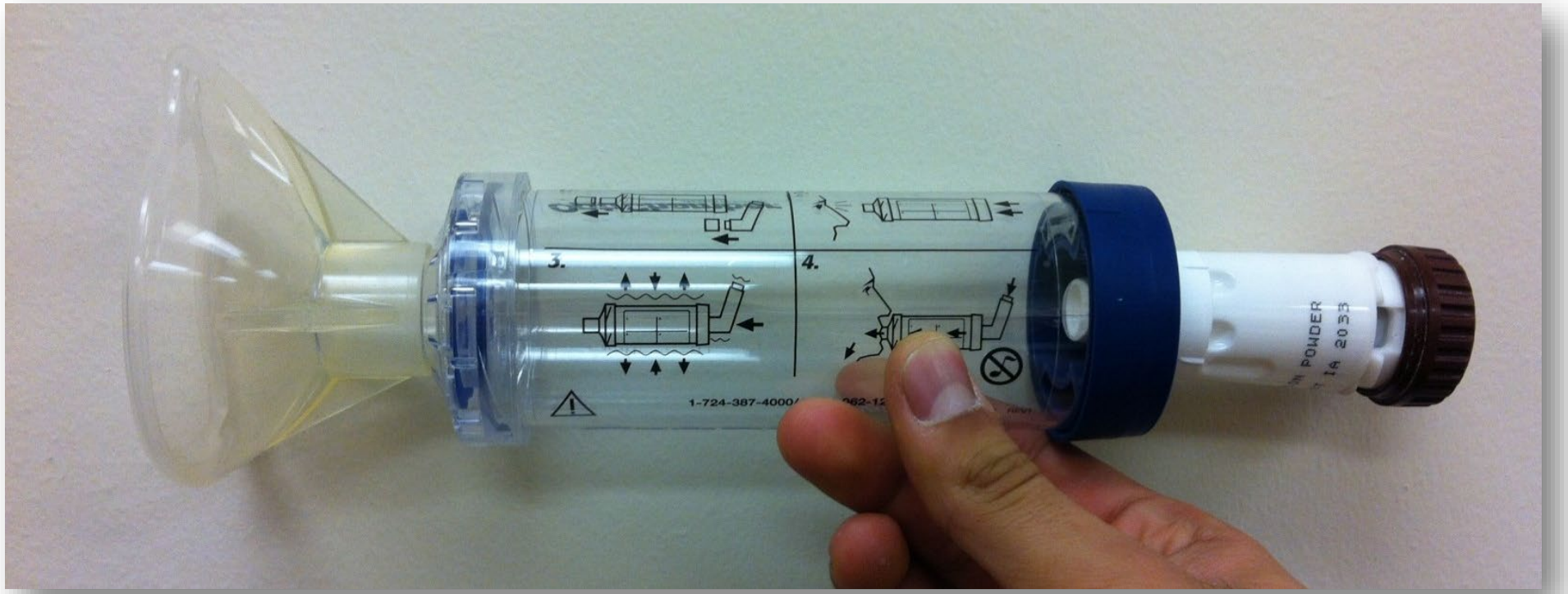
Health Promotion and Chronic Disease Division
Minnesota Department of Health
PO Box 64882
St. Paul, MN 55164-0882

651-201-5909
www.health.state.mn.us/asthma

Funding for this educational poster was made possible by the Centers for Disease Control and Prevention. The views expressed in this material do not necessarily reflect the official policies of the Department of Health and Human Service, nor does it imply endorsement by the U.S. Government.

http://www.health.state.mn.us/divs/healthimprovement/content/documents-asthma/medications/MedsPoster14x24.pdf

Complicated Device Techniques



What does research say?

- It is estimated that between 70% and 80% of patients do not use their inhaler correctly (GINA, 2014).
- "…correct use of inhalation devices by children and adolescents is associated with improved lung function, reduced school absenteeism, decreased number of days with restricted activities, and fewer visits to emergency departments" (Inhaler Error Steering Committee, 2013).

Even our providers don’t know…

- Only 15% to 69% of health care professionals (across all disciplines) are able to demonstrate correct inhaler use

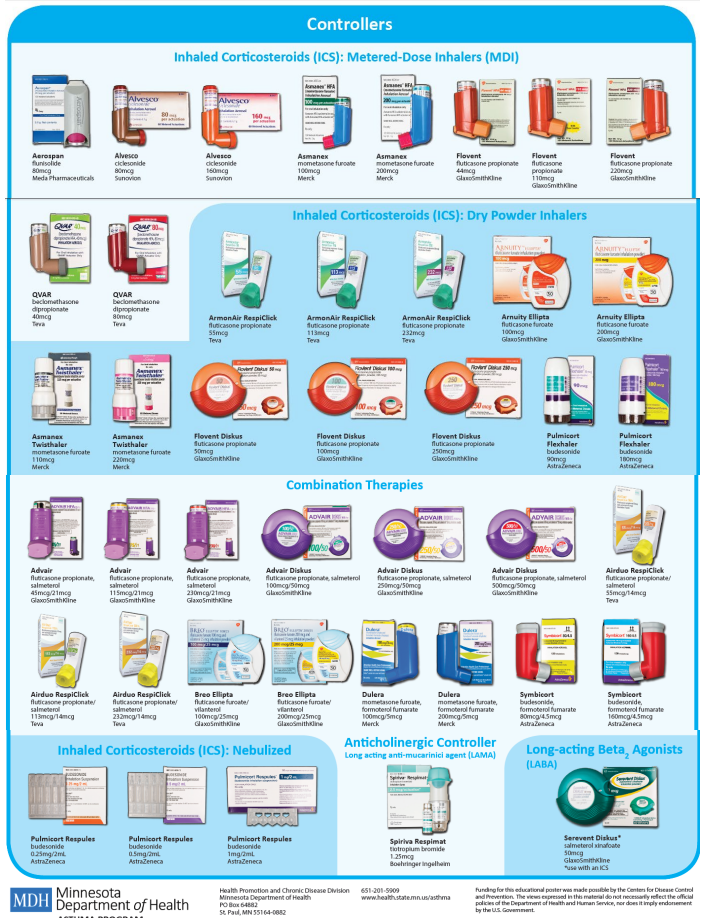
(Inhaler Error Steering Committee, 2013).

Poor outcomes

- Confusion leads to incorrect use; bad technique results in poorly controlled asthma and higher costs, either as a result of increased morbidity or increased use of relief medication (Inhaler Error Steering Committee, 2013).
- The perceived complexity of inhaled medications may lead to discontinuation of the medication, which will further erode asthma control (Chorão et al., 2014).

Device Techniques

- Metered Dose Inhalers (MDI)
  - “Puffer”- chamber/chamber with mask
  - Redihaler (no chamber)
- Dry Powdered Inhalers (DPI)
  - RespiClick
  - Turbuhaler/Twisthaler
  - Diskus/Wixela
  - Ellipta
- Respimat
  - Chamber/chamber with mask



Complicated Insurance Issues

Drug Class	Drug Name	New Status
Tetracycline Antibiotics	doxycycline hyclate 100mg tablet	Covered on formulary
Contraceptive Oral - Monophasic	noret-estr-fe 0.4-0.035(21)-75	Covered on formulary with Gender Edit
Insulin Analogs - Rapid Acting	Novolog 100 Unit/ml Vial	Not Covered on formulary
Insulin Analogs - Rapid Acting	Novolog 100 Unit/ml Cartridge	Not Covered on formulary
Insulin Analogs - Rapid Acting	Novolog 100 Units/ml Flexpen	Not Covered on formulary
Insulin Analogs - Rapid Acting	Apidra 100 Units/ml Vial	Not Covered on formulary
Insulin Analogs - Rapid Acting	Apidra Solostar 100 Units/ml	Not Covered on formulary
Insulin Analogs - Rapid Acting	Humalog 100 Units/ml Vial	Not Covered on formulary
Insulin Analogs - Rapid Acting	Humalog 100 Units/ml Cartridge	Not Covered on formulary
Insulin Analogs - Rapid Acting	Humalog 100 Units/ml Kwikpen	Not Covered on formulary
Insulin Analogs - Rapid Acting	Humalog JR 100 Units/ml Kwikpen	Not Covered on formulary
Insulin Analogs - Rapid Acting	Admelog Solostar 100 Unit/ml	Covered on formulary with Quantity Limit and Age Edit
Insulin Analogs - Rapid Acting	Admelog 100 Unit/ml Vial	Covered on formulary with Quantity Limit
Asthma Therapy - Glucocorticoids	Qvar 40mcg; 80 mcg Oral Inhaler	Not Covered on formulary
Asthma Therapy - Glucocorticoids	Aerospan 80 mcg Inhaler	Not Covered on formulary
Asthma Therapy - Leukotriene Receptor Antagonists	montelukast sodium 4mg, 5mg chew tablet; montelukast sodium 10mg tablet	Covered on formulary with Quantity Limit
Asthma/COPD Therapy - Beta 2-Adrenergic Agents, Inhaled, Long Acting	Foradil Aerolizer 12mcg cap	Not Covered on formulary
Asthma/COPD Therapy - Beta Adrenergic-Glucocorticoid Combinations	Symbicort 80-4.5mcg Inhaler	Covered on formulary with Quantity Limit and Age Edit

Honesty is the best policy
Adherence vs “truth”

Check adherence

- Adherence to controller regimens have consistently been found to be only 30% to 40% in clinical practice settings and only as high as 70% in well monitored clinical trial settings (Sumino & Cabana, 2013).
- Call the pharmacy- fill v pick-up

Importance of truth-telling

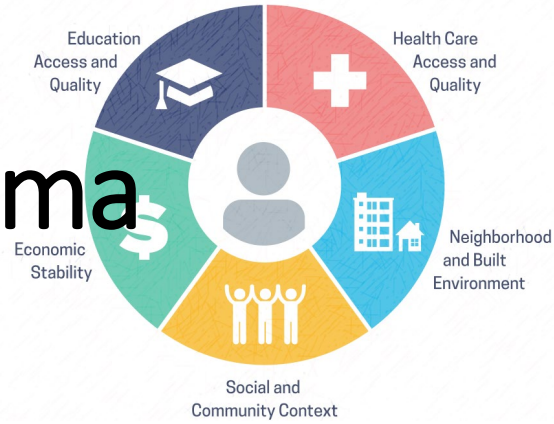
- Increasing medications
- Increased risk of exacerbation
- Over-use of oral steroids

- Sumino. K., & Cabana, M.D. Medication Adherence in Asthma Patients. Current Opinions Pulmonary Medicine. January 2013. Volume 19, Number 1.

Additional challenges:

- Racial disparities
  - Black and Hispanic/Puerto Rican > White
- Environmental Justice issues
  - Housing
  - Air pollution
  - Highways
- Psychosocial issues
- Mental health challenges
- Insurance

Social Determinants of Health and Asthma



- Housing conditions, particularly indoor air pollution and microbial/pest allergen exposures, are key determinant of asthma morbidity, particularly for poor urban populations.
- Parent-reported food insecurity in the year before kindergarten or in second grade was associated with incident asthma by the third grade.
- Vitamin D insufficiency, higher in black populations, has been associated with asthma prevalence and morbidity; however, a causal mechanism remains controversial.
- Adverse Childhood Events (ACES)- linked to poor health, including asthma prevalence in children and adults.

CONCLUSION:

This large body of evidence support a fundamental connection between the structural and social aspects of health and asthma morbidity across one's lifetime. It is essential that these factors are considered when developing asthma prevention and treatment programs. Substantial improvements for asthma outcomes will not be made without addressing underlying societal processes that have created large and persistent disparities in asthma outcomes.

Sullivan, K., Thakur, N. Structural and Social Determinants of Health in Asthma in Developed Economies: a Scoping Review of Literature Published Between 2014 and 2019. *Curr Allergy Asthma Rep* **20,** 5 (2020). https://doi.org/10.1007/s11882-020-0899-6

https://link.springer.com/article/10.1007/s11882-020-0899-6

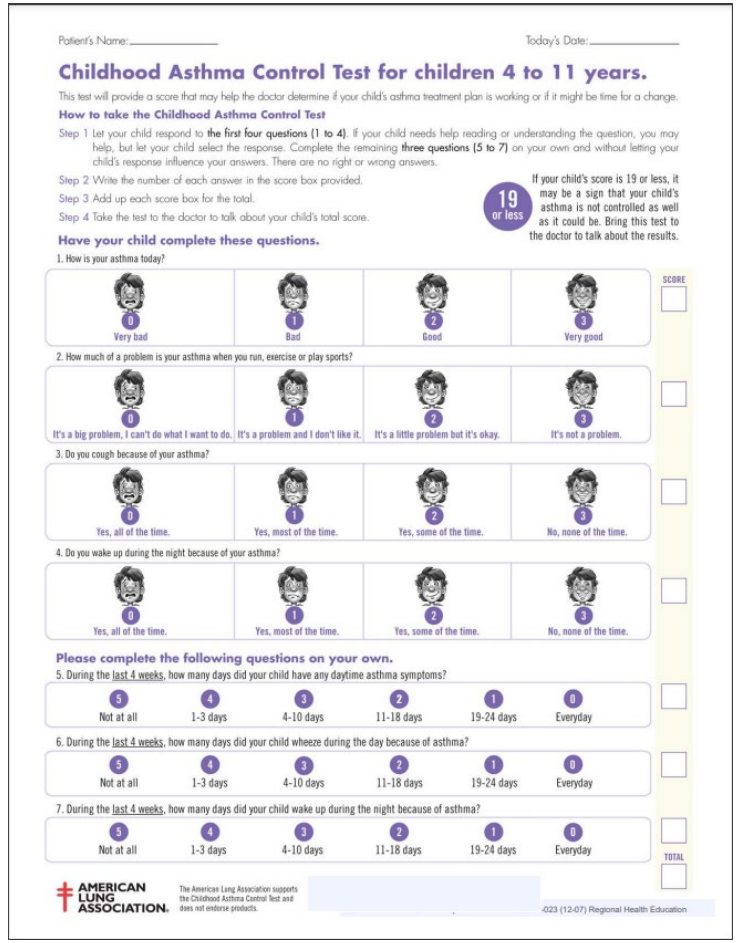
What about Control?

Asthma Control Test

- Validated tool

- Well controlled: 20 and higher
- Not well controlled: 17-19
- Very poorly controlled: 16 and below

- Need to use with a bit of skepticism?



Patient's Name: _____ Today's Date: _____

Childhood Asthma Control Test for children 4 to 11 years.

This test will provide a score that may help the doctor determine if your child's asthma treatment plan is working or if it might be time for a change.

How to take the Childhood Asthma Control Test

Step 1 Let your child respond to **the first four questions (1 to 4)**. If your child needs help reading or understanding the question, you may help, but let your child select the response. Complete the remaining **three questions (5 to 7)** on your own and without letting your child's response influence your answers. There are no right or wrong answers.

Step 2 Write the number of each answer in the score box provided.

Step 3 Add up each score box for the total.

Step 4 Take the test to the doctor to talk about your child's total score.

19 or less — If your child's score is 19 or less, it may be a sign that your child's asthma is not controlled as well as it could be. Bring this test to the doctor to talk about the results.

Have your child complete these questions.

1. How is your asthma today?

0	1	2	3	SCORE
Very bad	Bad	Good	Very good	

2. How much of a problem is your asthma when you run, exercise or play sports?

0	1	2	3	
It's a big problem, I can't do what I want to do.	It's a problem and I don't like it.	It's a little problem but it's okay.	It's not a problem.	

3. Do you cough because of your asthma?

0	1	2	3	
Yes, all of the time.	Yes, most of the time.	Yes, some of the time.	No, none of the time.	

4. Do you wake up during the night because of your asthma?

0	1	2	3	
Yes, all of the time.	Yes, most of the time.	Yes, some of the time.	No, none of the time.	

Please complete the following questions on your own.

5. During the last 4 weeks, how many days did your child have any daytime asthma symptoms?

5	4	3	2	1	0	
Not at all	1-3 days	4-10 days	11-18 days	19-24 days	Everyday	

6. During the last 4 weeks, how many days did your child wheeze during the day because of asthma?

5	4	3	2	1	0	
Not at all	1-3 days	4-10 days	11-18 days	19-24 days	Everyday	

7. During the last 4 weeks, how many days did your child wake up during the night because of asthma?

5	4	3	2	1	0	
Not at all	1-3 days	4-10 days	11-18 days	19-24 days	Everyday	

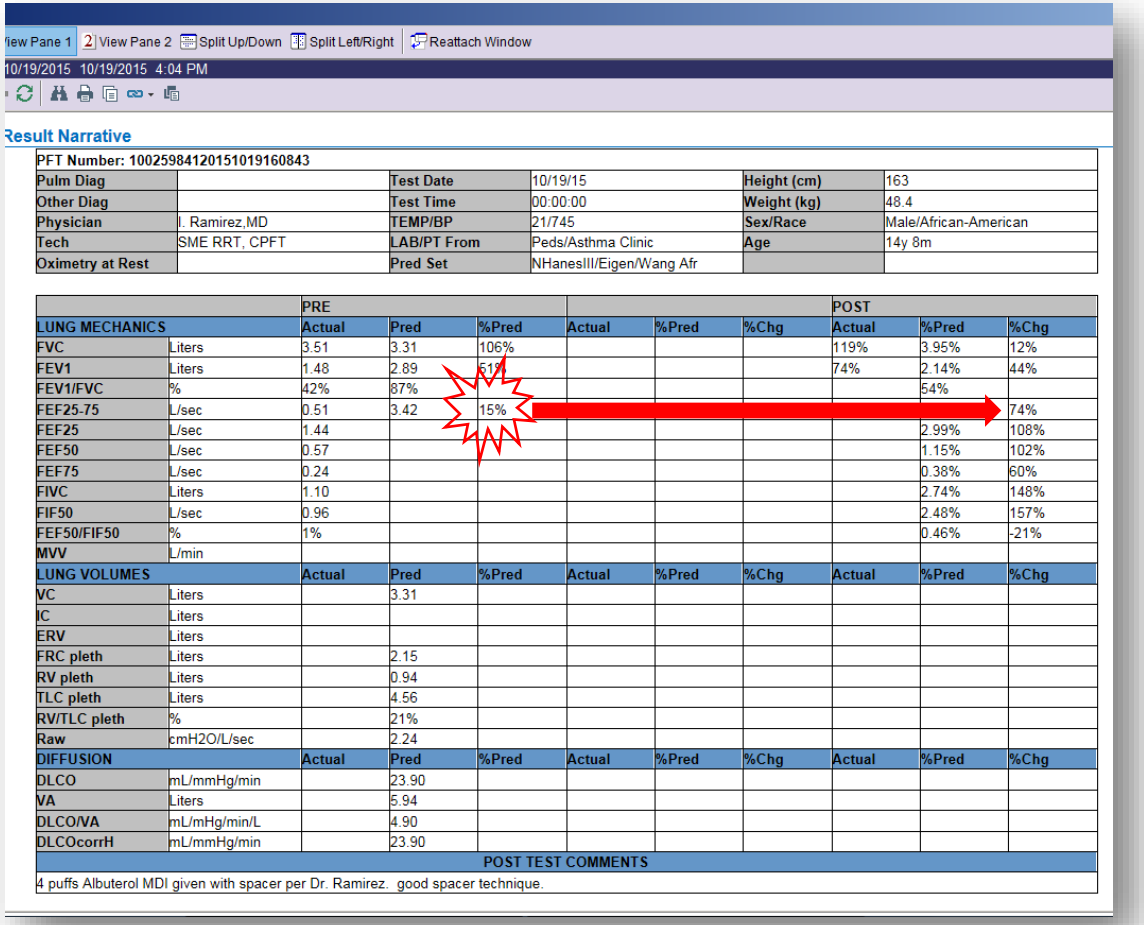
TOTAL

AMERICAN LUNG ASSOCIATION. The American Lung Association supports the Childhood Asthma Control Test and does not endorse products.

-023 (12-07) Regional Health Education

Symptom perception– under, over, just right

- Cough– is it really asthma?
- “Just used to it”
- Paradoxical vocal fold motion disorder
- “Shortness of breath”
- Parent attribution- face is red
- What else?
  - Anxiety
  - Depression



View Pane 1 | View Pane 2 | Split Up/Down | Split Left/Right | Reattach Window

10/19/2015 10/19/2015 4:04 PM

Result Narrative

PFT Number: 10025984120151019160843

Pulm Diag		Test Date	10/19/15	Height (cm)	163
Other Diag		Test Time	00:00:00	Weight (kg)	48.4
Physician	I. Ramirez,MD	TEMP/BP	21/745	Sex/Race	Male/African-American
Tech	SME RRT, CPFT	LAB/PT From	Peds/Asthma Clinic	Age	14y 8m
Oximetry at Rest		Pred Set	NHanesIII/Eigen/Wang Afr		

		PRE						POST		
LUNG MECHANICS		Actual	Pred	%Pred	Actual	%Pred	%Chg	Actual	%Pred	%Chg
FVC	Liters	3.51	3.31	106%				119%	3.95%	12%
FEV1	Liters	1.48	2.89	51%				74%	2.14%	44%
FEV1/FVC	%	42%	87%						54%	
FEF25-75	L/sec	0.51	3.42	15%						74%
FEF25	L/sec	1.44							2.99%	108%
FEF50	L/sec	0.57							1.15%	102%
FEF75	L/sec	0.24							0.38%	60%
FIVC	Liters	1.10							2.74%	148%
FIF50	L/sec	0.96							2.48%	157%
FEF50/FIF50	%	1%							0.46%	-21%
MVV	L/min									
LUNG VOLUMES		Actual	Pred	%Pred	Actual	%Pred	%Chg	Actual	%Pred	%Chg
VC	Liters		3.31							
IC	Liters									
ERV	Liters									
FRC pleth	Liters		2.15							
RV pleth	Liters		0.94							
TLC pleth	Liters		4.56							
RV/TLC pleth	%		21%							
Raw	cmH2O/L/sec		2.24							
DIFFUSION		Actual	Pred	%Pred	Actual	%Pred	%Chg	Actual	%Pred	%Chg
DLCO	mL/mmHg/min		23.90							
VA	Liters		5.94							
DLCO/VA	mL/mHg/min/L		4.90							
DLCOcorrH	mL/mmHg/min		23.90							

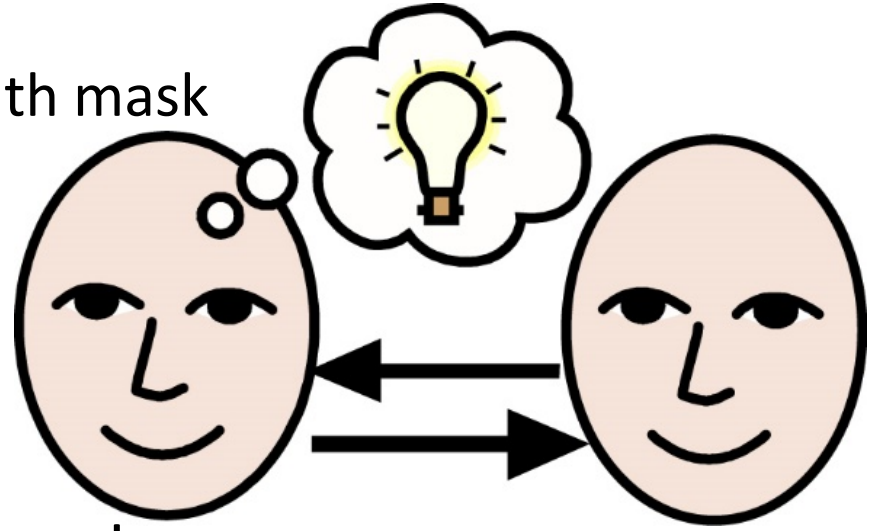
POST TEST COMMENTS

4 puffs Albuterol MDI given with spacer per Dr. Ramirez. good spacer technique.

What can we do? Bridging the gaps….

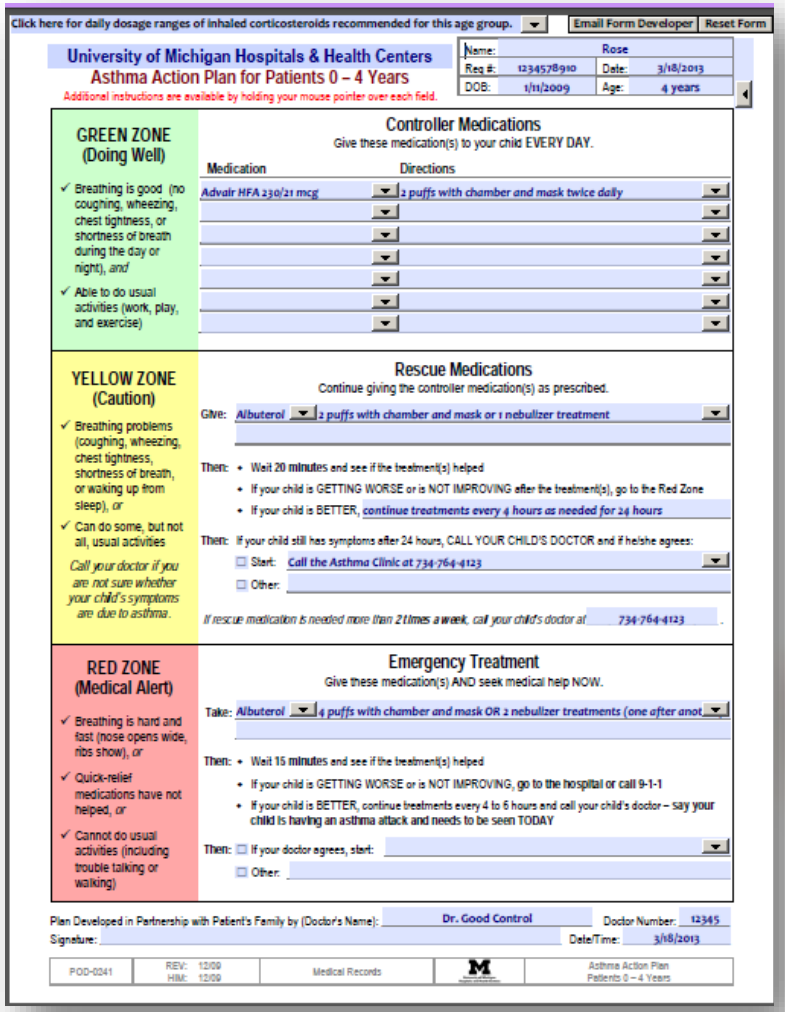
EDUCATE ourselves and our patients!

- Newest updates to the NAEPP Guidelines
  - https://www.nhlbi.nih.gov/health-topics/asthma-management-guidelines-2020-updates
- Know medications and devices
  - MDI- 2 puffs twice daily with chamber/chamber with mask
  - RespiClick- one dose twice daily
  - Diskus- one dose twice daily
  - Ellipta- one dose once daily
  - Respimat- two puffs once daily



- Assess understanding and device technique at each contact

What patients MUST know
15 minute Asthma Education



Click here for daily dosage ranges of inhaled corticosteroids recommended for this age group. | Email Form Developer | Reset Form

University of Michigan Hospitals & Health Centers
Asthma Action Plan for Patients 0 – 4 Years
Additional instructions are available by holding your mouse pointer over each field.

Name:	Rose		
Req #:	1234578910	Date:	3/18/2013
DOB:	1/11/2009	Age:	4 years

GREEN ZONE (Doing Well)
- ✓ Breathing is good (no coughing, wheezing, chest tightness, or shortness of breath during the day or night), *and*
- ✓ Able to do usual activities (work, play, and exercise)

Controller Medications
Give these medication(s) to your child EVERY DAY.

Medication	Directions
Advair HFA 230/21 mcg	2 puffs with chamber and mask twice daily

YELLOW ZONE (Caution)
- ✓ Breathing problems (coughing, wheezing, chest tightness, shortness of breath, or waking up from sleep), *or*
- ✓ Can do some, but not all, usual activities

Call your doctor if you are not sure whether your child's symptoms are due to asthma.

Rescue Medications
Continue giving the controller medication(s) as prescribed.

Give: Albuterol — 2 puffs with chamber and mask or 1 nebulizer treatment

Then:
- Wait 20 minutes and see if the treatment(s) helped
- If your child is GETTING WORSE or is NOT IMPROVING after the treatment(s), go to the Red Zone
- If your child is BETTER, continue treatments every 4 hours as needed for 24 hours

Then: If your child still has symptoms after 24 hours, CALL YOUR CHILD'S DOCTOR and if he/she agrees:
- ☐ Start: Call the Asthma Clinic at 734-764-4123
- ☐ Other:

If rescue medication is needed more than 2 times a week, call your child's doctor at 734-764-4123.

RED ZONE (Medical Alert)
- ✓ Breathing is hard and fast (nose opens wide, ribs show), *or*
- ✓ Quick-relief medications have not helped, *or*
- ✓ Cannot do usual activities (including trouble talking or walking)

Emergency Treatment
Give these medication(s) AND seek medical help NOW.

Take: Albuterol — 4 puffs with chamber and mask OR 2 nebulizer treatments (one after anot

Then:
- Wait 15 minutes and see if the treatment(s) helped
- If your child is GETTING WORSE or is NOT IMPROVING, go to the hospital or call 9-1-1
- If your child is BETTER, continue treatments every 4 to 6 hours and call your child's doctor – say your child is having an asthma attack and needs to be seen TODAY

Then:
- ☐ If your doctor agrees, start:
- ☐ Other:

Plan Developed in Partnership with Patient's Family by (Doctor's Name): Dr. Good Control — Doctor Number: 12345
Signature: — Date/Time: 3/18/2013

POD-0341	REV: 12/09 HIM: 12/09	Medical Records	M	Asthma Action Plan Patients 0 – 4 Years

- Symptoms to treat
- What to treat with
- How to use
- How often to use
- How long to treat
- When to call the MD
- When to seek ED care

Karla’s Rules of 3

CALL if:

You have used albuterol:

- **3** times in one day
- **3** times in one week
- Albuterol only lasts **3** hours

5 Steps of Proper Inhalation

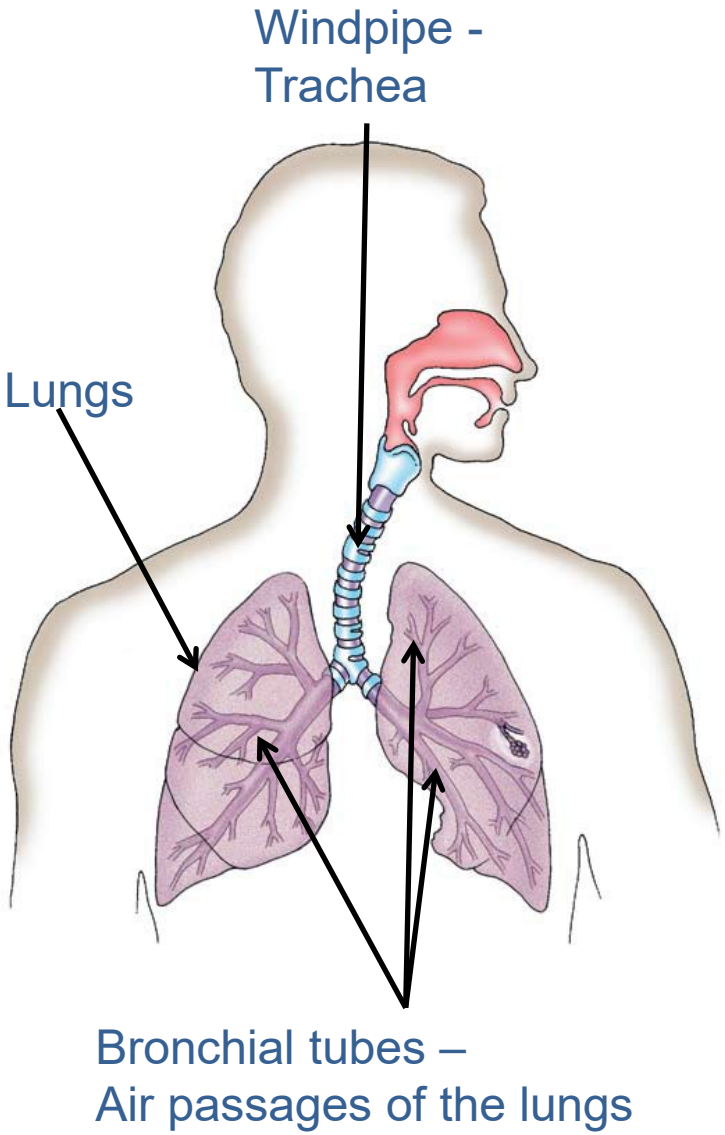
1- Blow all of your air out

2- Place the mouthpiece in your mouth/mask on face

3- Push down on the canister

4- Slowly take a deep breath/10 tidal breaths

5- Hold your breath for 10 seconds



Action Steps

- Create an environment of trust
- Get family buy-in
- Create the easiest plan
- Address psychosocial issues that might make things more challenging
- Address family/friends/internet advice/pharmacies
- Have families bring all of their medications
- Call pharmacies to check on adherence
- Explain things multiple ways every time
- Have the patient/family demonstrate their technique
- Simplify as needed
- Standardized education across the health system

Additional Resources

- Clinical Care Guidelines
  - Provider tools
  - Patient education materials
  - Languages
  - https://www.uofmhealth.org/provider/clinical-care-guidelines
- MDHHS Asthma Initiative of Michigan
  - https://getasthmahelp.org/
- NAEPP Targeted Updates
  - https://www.nhlbi.nih.gov/health-topics/asthma-management-guidelines-2020-updates

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