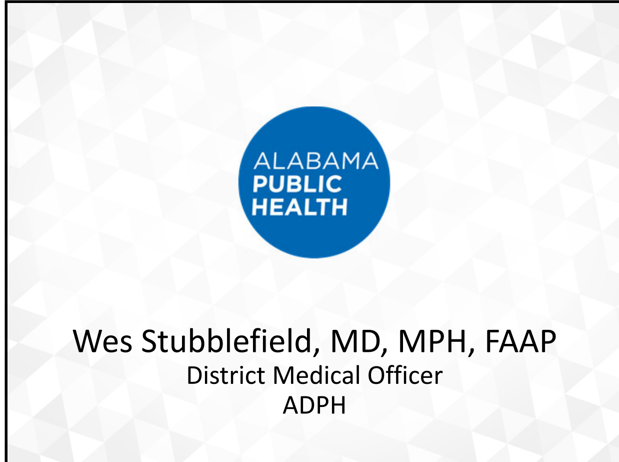

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Disclaimer

- I have no financial relationships. Any brand names are used for identification purposes.

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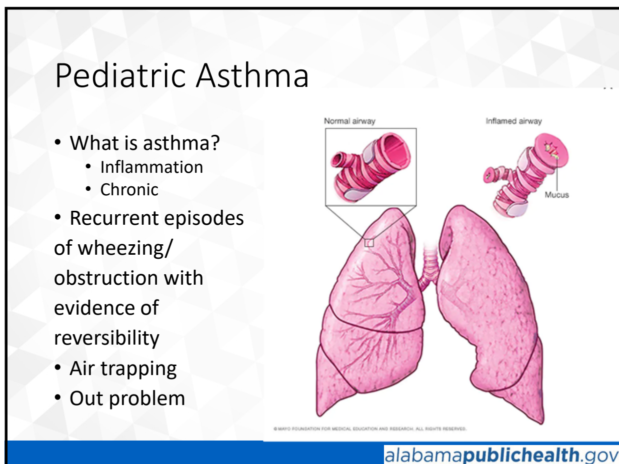

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Why?

- Family history
- Allergies
- Viral respiratory infections
- Occupational exposures
- Smoking
- Air Pollution
- Obesity

4

Who?

- Sex and Age – Children males, adults females. How young?
- Race/Ethnicity
  - Highest in Black (42% higher than White) and American Indian/Alaska Native, lower in Hispanic and Asian.
  - Hispanic (6.4%) and Asian (4.0%) had lower current asthma prevalence rates than other racial and ethnic groups
- Family Income – Higher among those with a family income below the poverty threshold.
- Health Insurance Coverage – In adults, highest for Medicaid.
- Current Child/Adult Asthma by State – Ranges (AL 8%)

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Symptoms

- Cough
- Shortness of Breath
- Wheezing
- Exercise intolerance
- Other triggers
  - Allergens
  - Smoke
  - Viruses

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What to do?

- Mainstay
  - Steroids/Beta-agonists
- Regular visits
  - Symptom/treatment evaluation
- Asthma action plan

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Medications - Controller

- Steroids (ICS)
  - Asmanex® (mometasone)
  - Alvesco® (ciclesonide)
  - Flovent® (fluticasone)
  - Pulmicort® (budesonide)
  - Qvar® (beclomethasone HFA)

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Medications - Rescue

- Beta-agonists (SABA)
  - Short-acting (albuterol)
  - Proventil HFA®, ProAir®, Ventolin HFA®, Xopenex HFA®, Xopenex® (levalbuterol)

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Medications - Other

- Long-acting – LABA
  - Indacaterol, arformoterol, formoterol, salmeterol, olodaterol
  - Not used by themselves
- LAMA (12 and up)
  - Umeclidinium, glycopyrrolate, tiotropium, aclidinium
- Accolate® (zafirlukast)/Singulair® (montelukast)/Zyflo® (zileuton)
- Theophyllines
- Cromolyn/Nedocromyl

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Medications - Combo

- ICS+LABA
- Advair® (combination of fluticasone/salmeterol), Dulera® (combination of mometasone/formoterol), Symbicort® (combination of budesonide/formoterol)
- ICS+LABA+LAMA
- Fluticasone furoate-umeclidinium-vilanterol DPI (Brand name: Trelegy Ellipta)
- Oral Steroids

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Medications - Other

- Asthma biologics
  - Most severe
- Pulmonology

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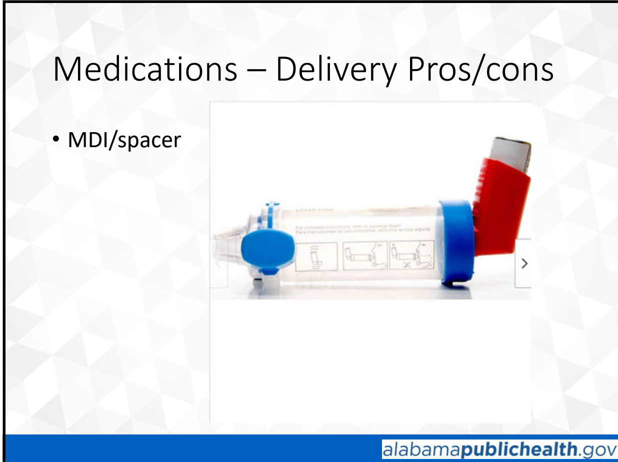

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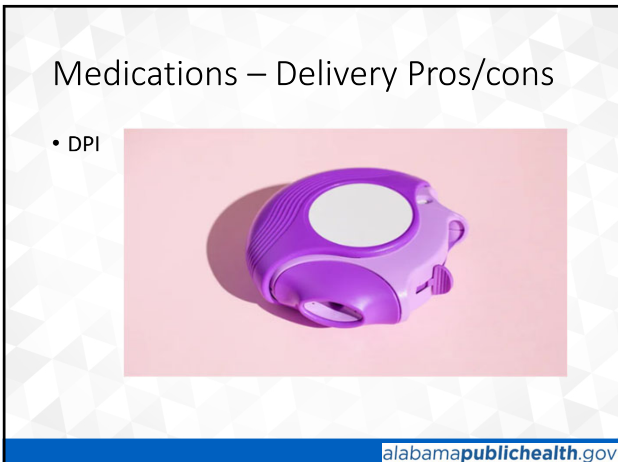

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Medications – Delivery Pros/cons

- DPI

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Medications – Delivery Pros/cons

- Nebulizer – Budesonide (Pulmicort)

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Stepwise therapy, 0-4

Figure I.b: Stepwise Approach for Management of Asthma in Individuals Ages 0–4 Years

	Intermittent Asthma	Management of Persistent Asthma in Individuals Ages 0–4 Years				
Treatment	STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	STEP 6
Preferred	PRN SABA and At the start of RTI: Add short course daily ICS▲	Daily low-dose ICS and PRN SABA	Daily medium-dose ICS and PRN SABA	Daily medium-dose ICS-LABA and PRN SABA	Daily high-dose ICS-LABA and PRN SABA	Daily high-dose ICS-LABA + oral systemic corticosteroid and PRN SABA
Alternative		Daily montelukast* or Cromolyn,* and PRN SABA		Daily medium-dose ICS + montelukast* and PRN SABA	Daily high-dose ICS + montelukast* and PRN SABA	Daily high-dose ICS + montelukast*+ oral systemic corticosteroid and PRN SABA
			For children age 4 years only, see Step 3 and Step 4 on Management of Persistent Asthma in Individuals Ages 5–11 Years diagram.			

Assess Control

- First check adherence, inhaler technique, environmental factors,▲ and comorbid conditions.
- **Step up** if needed; reassess in 4–6 weeks
- **Step down** if possible (if asthma is well controlled for at least 3 consecutive months)

Consult with asthma specialist if Step 3 or higher is required. Consider consultation at Step 2.

Control assessment is a key element of asthma care. This involves both impairment and risk. Use of objective measures, self-reported control, and health care utilization are complementary and should be employed on an ongoing basis, depending on the individual's clinical situation.

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Stepwise therapy, 5-11

Figure I.c: Stepwise Approach for Management of Asthma in Individuals Ages 5–11 Years

	Intermittent Asthma	Management of Persistent Asthma in Individuals Ages 5–11 Years				
Treatment	STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	STEP 6
Preferred	PRN SABA	Daily low-dose ICS and PRN SABA	Daily and PRN combination low-dose ICS-formoterol▲	Daily and PRN combination medium-dose ICS-formoterol▲	Daily high-dose ICS-LABA and PRN SABA	Daily high-dose ICS-LABA + oral systemic corticosteroid and PRN SABA
Alternative		Daily LTRA,* or Cromolyn,* or Nedocromil,* or Theophylline,* and PRN SABA	Daily medium-dose ICS and PRN SABA or Daily low-dose ICS-LABA, or daily low-dose ICS + LTRA,* or daily low-dose ICS +Theophylline,* and PRN SABA	Daily medium-dose ICS-LABA and PRN SABA or Daily medium-dose ICS + LTRA* or daily medium-dose ICS + Theophylline,* and PRN SABA	Daily high-dose ICS + LTRA* or daily high-dose ICS + Theophylline,* and PRN SABA	Daily high-dose ICS + LTRA* + oral systemic corticosteroid or daily high-dose ICS + Theophylline* + oral systemic corticosteroid, and PRN SABA
		Steps 2-4: Conditionally recommend the use of subcutaneous immunotherapy as an adjunct treatment to standard pharmacotherapy in individuals ≥ 5 years of age whose asthma is controlled at the initiation, build up, and maintenance phases of immunotherapy▲			Consider Omalizumab**▲	

Assess Control

- First check adherence, inhaler technique, environmental factors,▲ and comorbid conditions.
- **Step up** if needed; reassess in 2–6 weeks
- **Step down** if possible (if asthma is well controlled for at least 3 consecutive months)

Consult with asthma specialist if Step 4 or higher is required. Consider consultation at Step 3.

Control assessment is a key element of asthma care. This involves both impairment and risk. Use of objective measures, self-reported control, and health care utilization are complementary and should be employed on an ongoing basis, depending on the individual's clinical situation.

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Stepwise therapy, 12+

	Intermittent Asthma	Management of Persistent Asthma in Individuals Ages 12+ Years				
Treatment	STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	STEP 6■
Preferred	PRN SABA	Daily low-dose ICS and PRN SABA or PRN concomitant ICS and SABA▲	Daily and PRN combination low-dose ICS-formoterol▲	Daily and PRN combination medium-dose ICS-formoterol▲	Daily medium-high dose ICS-LABA + LAMA and PRN SABA▲	Daily high-dose ICS-LABA + oral systemic corticosteroids + PRN SABA
Alternative		Daily LTRA* and PRN SABA or Cromolyn,* or Nedocromil,* or Zileuton,* or Theophylline,* and PRN SABA	Daily medium-dose ICS and PRN SABA or Daily low-dose ICS-LABA, or daily low-dose ICS + LAMA,▲ or daily low-dose ICS + LTRA,* and PRN SABA or Daily low-dose ICS + Theophylline* or Zileuton,* and PRN SABA	Daily medium-dose ICS-LABA or daily medium-dose ICS + LAMA, and PRN SABA▲ or Daily medium-dose ICS + LTRA,* or daily medium-dose ICS + Theophylline,* or daily medium-dose ICS + Zileuton,* and PRN SABA	Daily medium-high dose ICS-LABA or daily high-dose ICS + LTRA,* and PRN SABA	
		Steps 2-4: Conditionally recommend the use of subcutaneous immunotherapy as an adjunct treatment to standard pharmacotherapy in individuals ≥ 5 years of age whose asthma is controlled at the initiation, build up, and maintenance phases of immunotherapy▲			Consider adding Asthma Biologics (e.g., anti-IgE, anti-IL5, anti-IL5R, anti-IL4/IL13)**	

Assess Control

- First check adherence, inhaler technique, environmental factors,▲ and comorbid conditions.
- **Step up** if needed; reassess in 2–6 weeks
- **Step down** if possible (if asthma is well controlled for at least 3 consecutive months)

Consult with asthma specialist if Step 4 or higher is required. Consider consultation at Step 3.

Control assessment is a key element of asthma care. This involves both impairment and risk. Use of objective measures, self-reported control, and health care utilization are complementary and should be employed on an ongoing basis, depending on the individual's clinical situation.

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Monitoring

- Standardized screening tools – ACT
- Spirometry – age restricted
- Peak flow – limited use

Spirometry

STRIVE

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Resources

- Asthma Action Plan

ASTHMA ACTION PLAN

Steroid concerns

- Growth problems
- Bone problems
- Eye problems

But…

- 55lb child = 25kgs
- 1 "flare-up"
- Oral steroids – 50mg once daily x 5 days
- Total 250mg
- Fluticasone 88mcg twice daily x 30 days = 5.28mg/month (2 puffs twice daily)
- ~1.74mg/month x 12 = 20mg/year
- Budesonide 0.25mg twice daily x 30 days = 15mg
- ~5mg/month x 12 = 60mg/year

What happens?

- Growing out of asthma?
- What can we do?

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References

- NHLBI
  - Asthma Management Guidelines: Focused Updates 2020 – updated 2021
- CDC
- American Lung Association
- Mayo Clinic

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