



Carolinan HealthCare System

One

Carolinan Asthma Coach

Kelly Reeves, BSN, RN, UXC

and

Andy McWilliams, MD, MPH

April 20, 2016

Objectives

1. Discuss basics of asthma and its impact on patients
2. Review research projects that informed the need for a HIT solution
3. Share an iterative development process that engages end-users
4. Demo of Carolinas Asthma Coach
5. Pilot evaluation and next steps

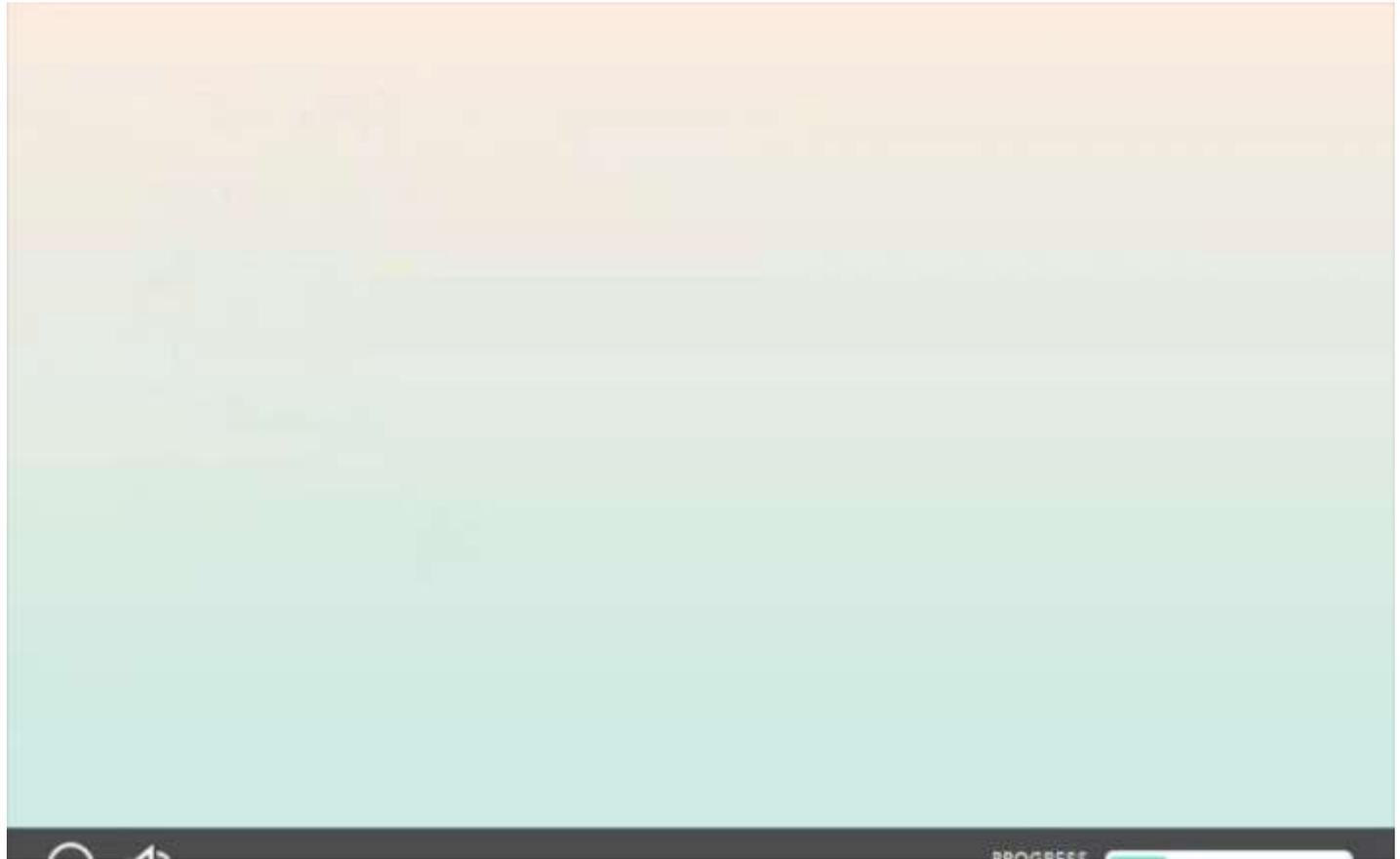


Asthma

Swelling

**Extra
Mucus**

**Tightening
Muscles**



4/23/2016

3



One



Carolinas HealthCare System

Impact of Asthma

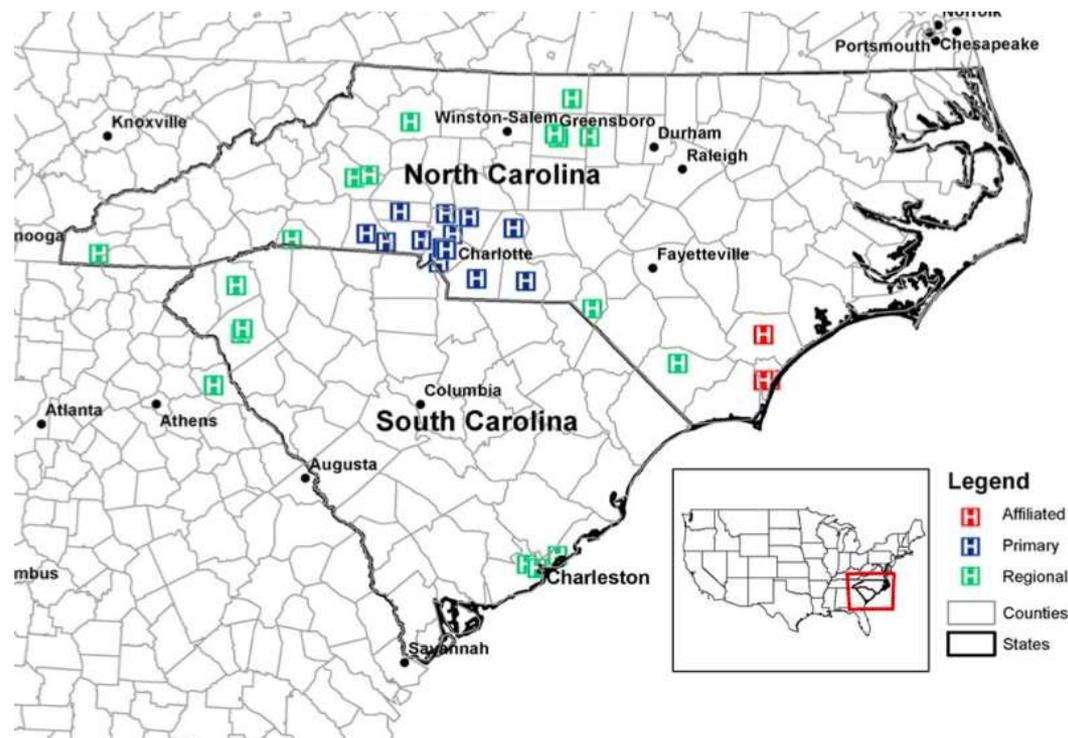
- Asthma **affects nearly 30 million people, including over 10 million children**, in the U.S.
- The burden of asthma in the U.S. is significant, accounting annually for:
 - ❑ Over 2 million ED visits
 - ❑ 504,000 hospitalizations
 - ❑ 13.6 million physician office visits
 - ❑ 4,200 deaths

Resulting in \$50.1 billion direct medical costs



Carolinas HealthCare System

- 2nd largest integrated public non-profit healthcare system in the US
- 40 hospitals
- Over 260 ambulatory clinics
- 11 million patient encounters yearly
- Diverse patients, providers, and geographic footprint



Quality Chasm

- Many patients with asthma **lack adequate control** of their symptoms
- Contributing factors include
 - Lack of Standardized Care
 - Social Determinants
 - Poor Medical Compliance
 - Environmental Factors



Patient-Centered Communication



4/23/2016

7



One



Carolinas HealthCare System

Shared Decision Making...a meeting of the experts

Patient provides information on: values, preferences, lifestyle, beliefs and current knowledge about the illness and its treatment

Physician/ACP provides all relevant disease information: benefits and risks of various treatments and potential effects on the patient's psychological and social well being



CHS Asthma Research

- Asthma Comparative Effectiveness Study (ACE), funded by AHRQ



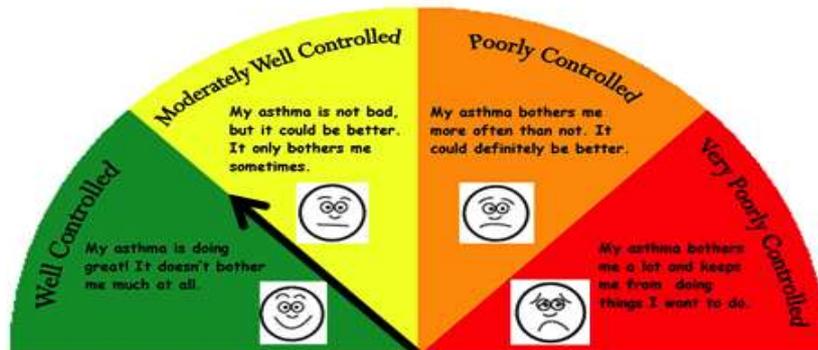
- Asthma Dissemination Around Patient-centered Treatments in North Carolina (ADAPT-NC) funded by PCORI



The ACE Study

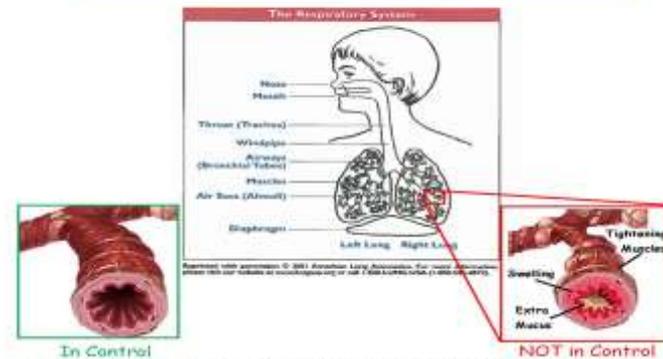
- Adapted a Shared Decision Making (SDM) intervention for patients with asthma using a participatory approach
- Implemented SDM asthma clinics at 6 sites
- SDM improves chronic disease self-management

FORM #2: HOW WELL CONTROLLED IS YOUR ASTHMA?



ACE Study Form #2 - Overall 5/14 Page 1 of 1

Form #4: Facts About Asthma

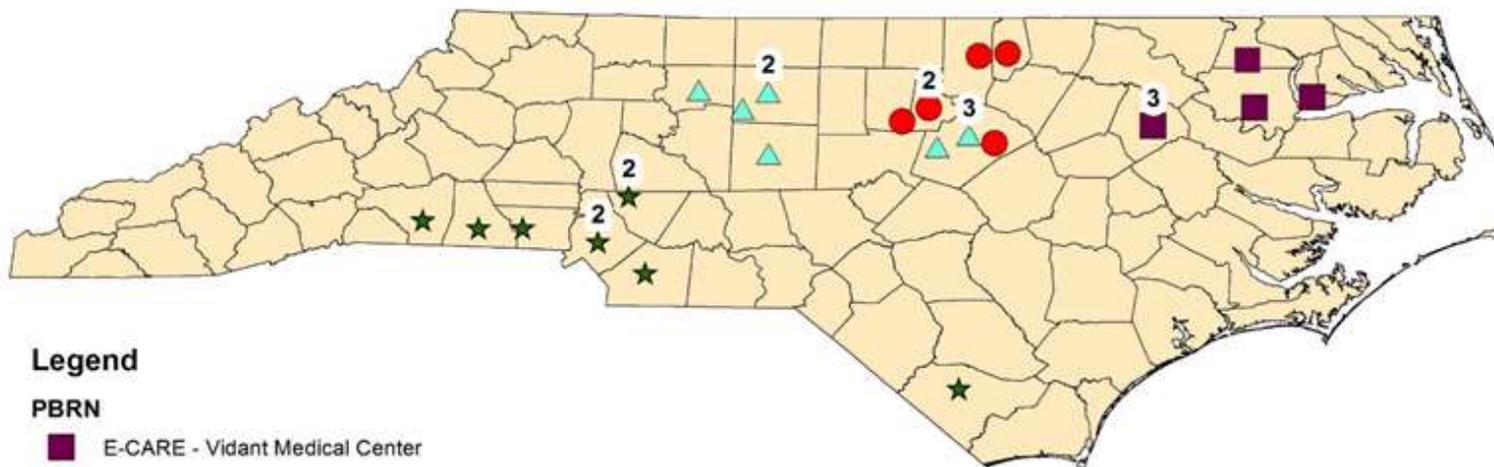


Asthma is a disease of the airways in your lungs. When someone with asthma breathes in one of their "triggers," it causes their airways to get smaller. Doctors call this "bronchospasm." This makes it harder to breathe and can lead to an asthma attack.

3 main things cause the airways to get smaller:

- Swelling/Inflammation
- Extra Mucus
- Tightening Muscles

Practices Recruited for ADAPT-NC



Legend

PBRN

- E-CARE - Vidant Medical Center
- PCRC - Duke University
- MAPPR - Carolinas Healthcare System
- NCnet - UNC Chapel Hill
- County Boundaries

TML, 6/2015



So we began to “noodle”

- Can we leverage health IT to overcome challenges?
- Can we replicate key parts of asthma SDM in a digital, interactive solution?
- Better yet... can we drive efficiency, standardize parts of asthma care, and improve outcomes?
- Can an IT based asthma SDM solution be useful in safety-net clinics?



Asthma Needs an Integrated IT Solution

- **Simplify** information
- **Standardize** assessments
- Improve workflow **efficiency**
- Bring tailored **evidence** to the patient-provider encounter
- Engage, activate, **empower** patients

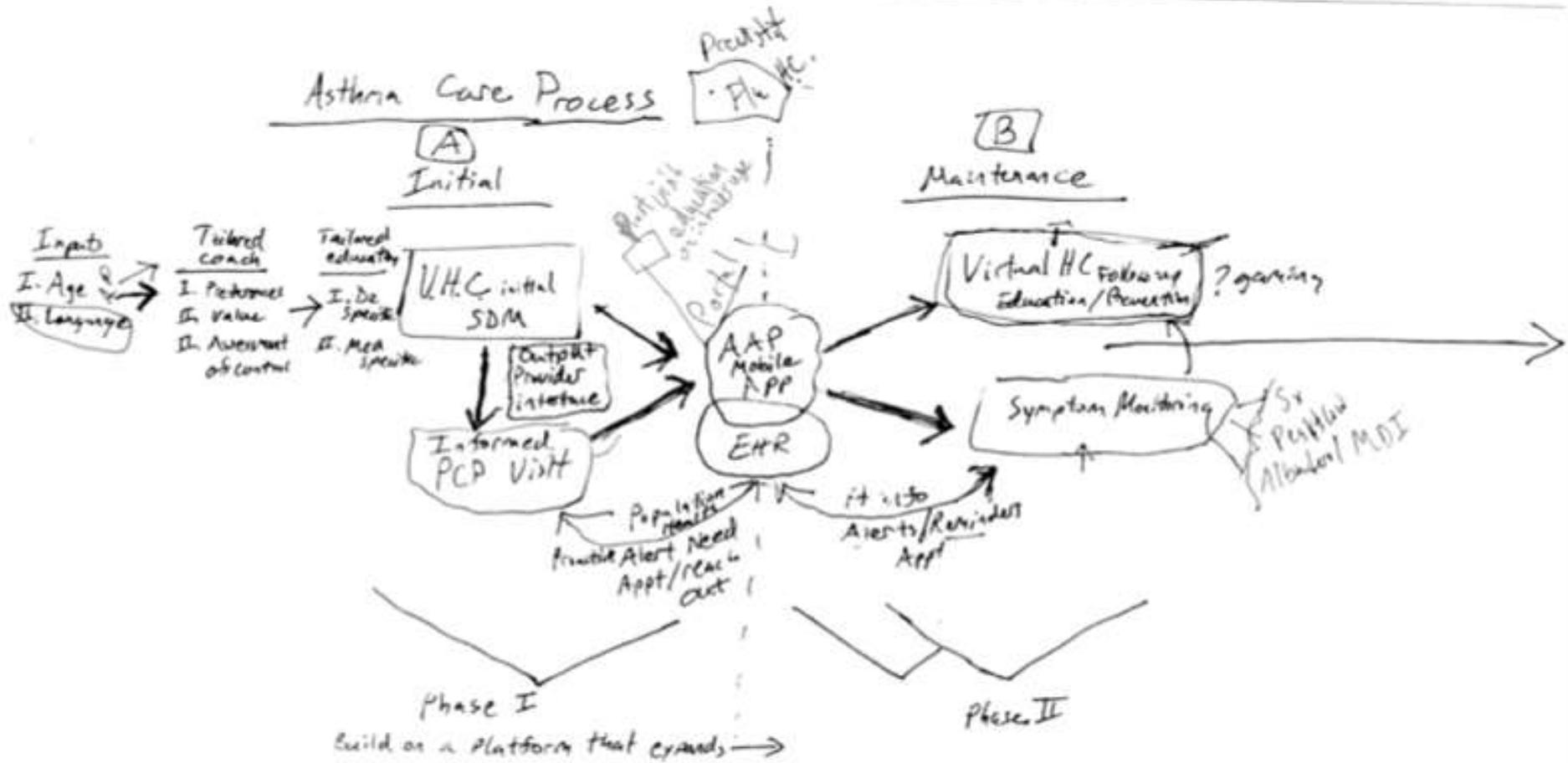


Currently

- **No health IT Solutions** for asthma that incorporate the latest evidence on:
 - Shared decision making
 - Patient engagement
 - Asthma management



You have to start somewhere



1/23/2019

10

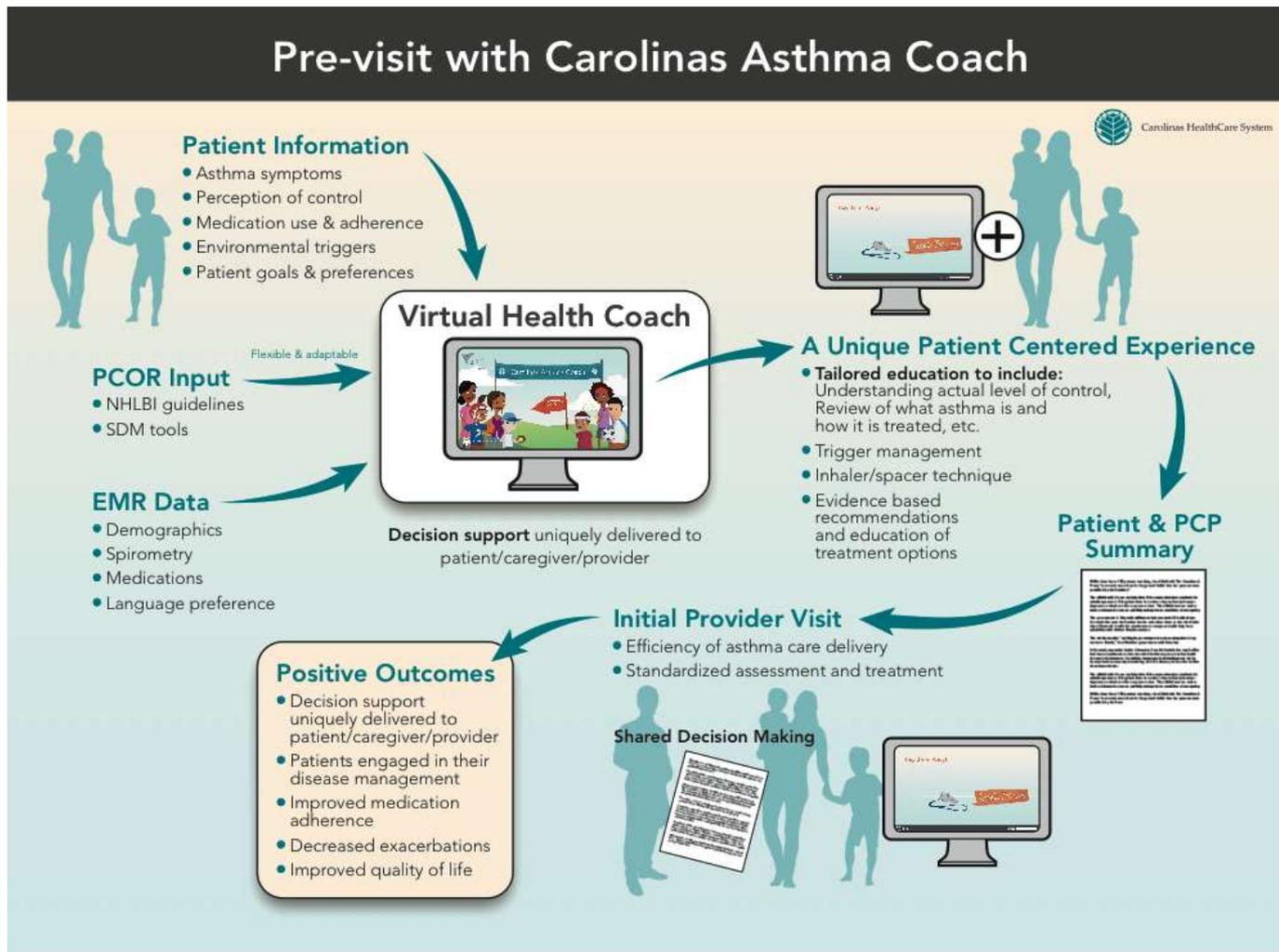


One



Carolina HealthCare System

Phase 1 – Proof of Concept



Project Objectives

- Engage end users in development phase of a virtual solution for asthma care
- Evaluate from a stakeholder perspective the **usability**, **acceptability**, and **efficacy** of the virtual solution and its components



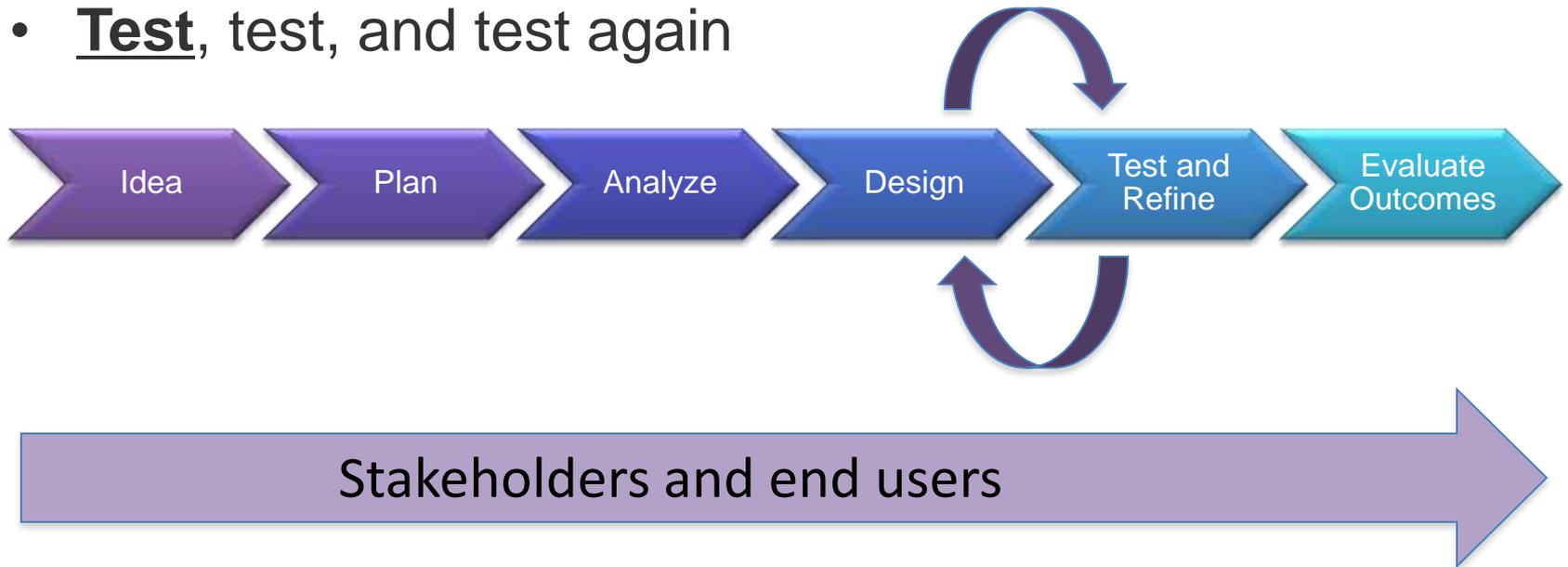
First Steps

- Identify stakeholders
- Plan for patient engagement
- Partner with experienced vendor
- Develop a process that allows for real-world testing and expertise without disrupting efficiency

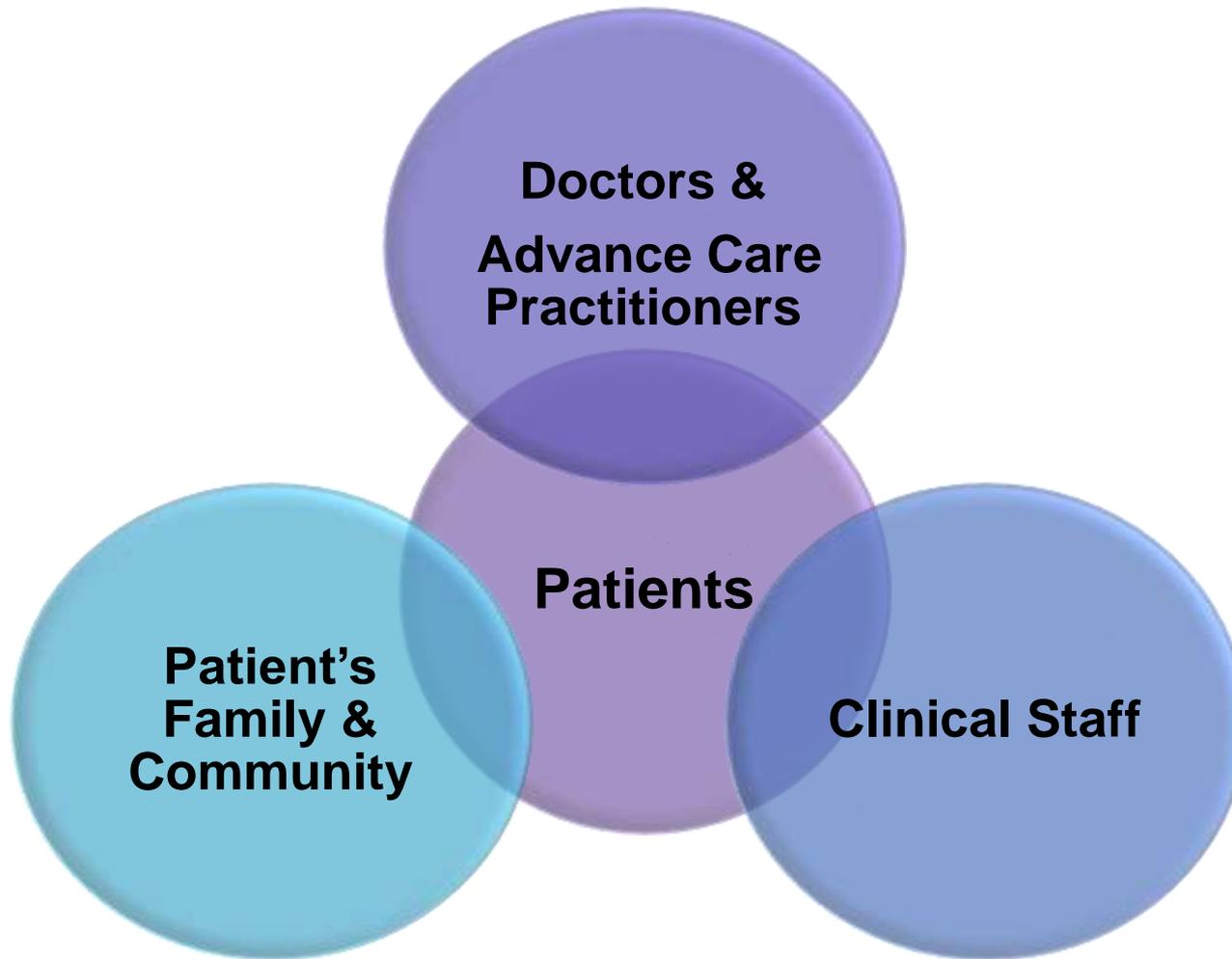


Iterative Design Process

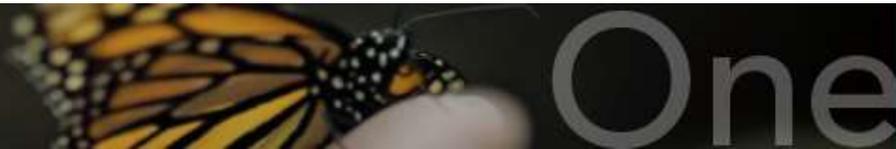
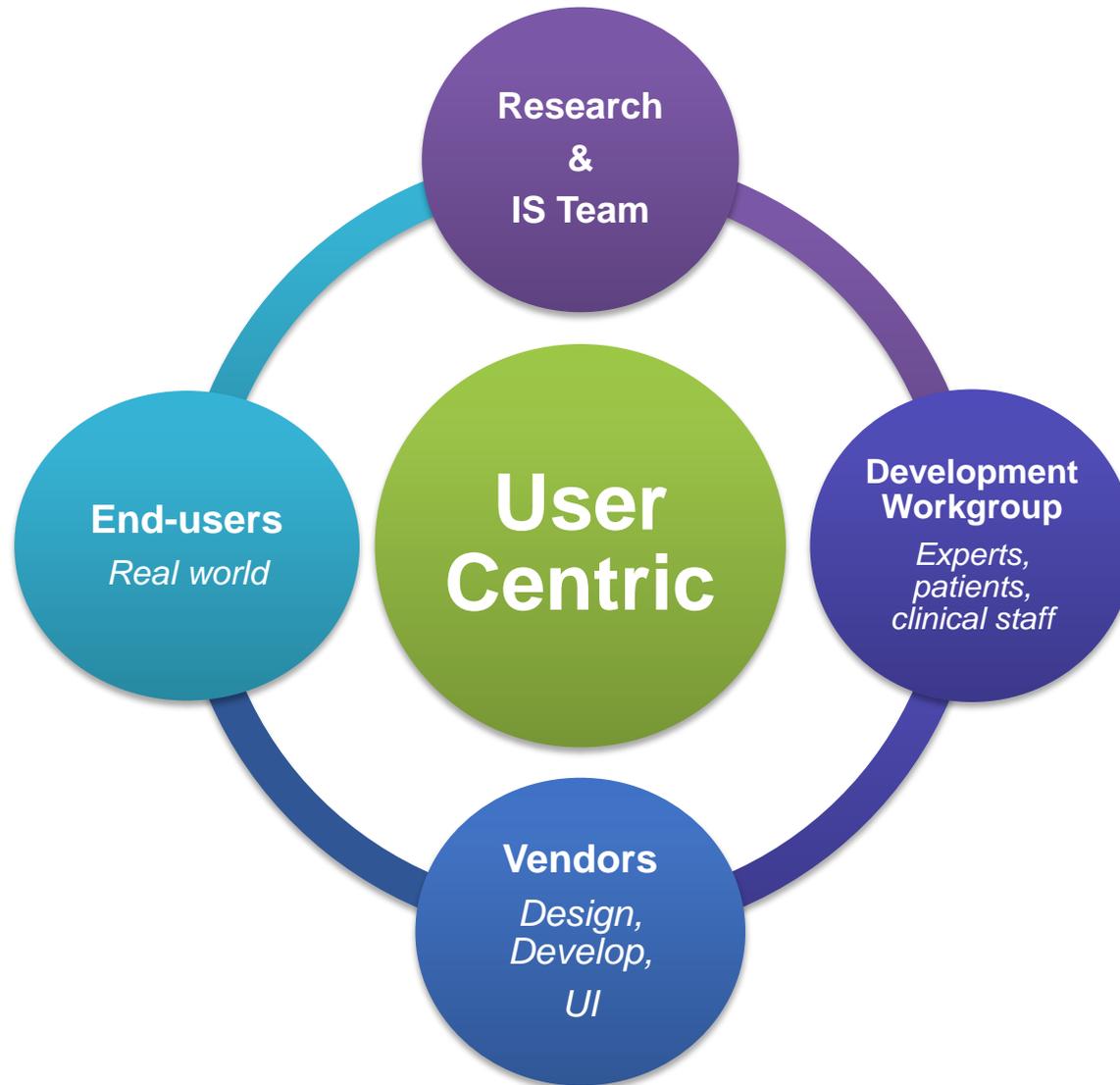
- User-centered design process
- Engage end-users and stakeholders **early** and **often**
- **Test**, test, and test again



Engaging End-Users in Development



CHS User Centric Design Process



Carolinas Asthma Coach

Carolinas Asthma Coach is Aimed At:

- Providing a health IT solution for asthma
- Engaging and activating patients and caregivers
- Driving standardization in asthma care delivery process
- Improving asthma outcomes



A Multi-Disciplinary Approach To Development

Development Workgroup

- Workgroup consists of
 - ❑ Patients
 - ❑ Caregivers
 - ❑ Providers
 - ❑ Health literacy experts
 - ❑ Asthma educator
- Meets regularly with research team to advise on the development of the tool

Real-World End-User Testing

- Key informant interviews with patients and providers
- Feedback from interviews used to inform iterative development process at specific milestones



Development Milestones

- Story Board Concepts and Single Path Review
- Full Script Review and Taste of the Experience
- Rough Cut Review of fully produced Experience
- Final Cut review of the produced Experience



Story Board and Concepts



4/23/2016

25

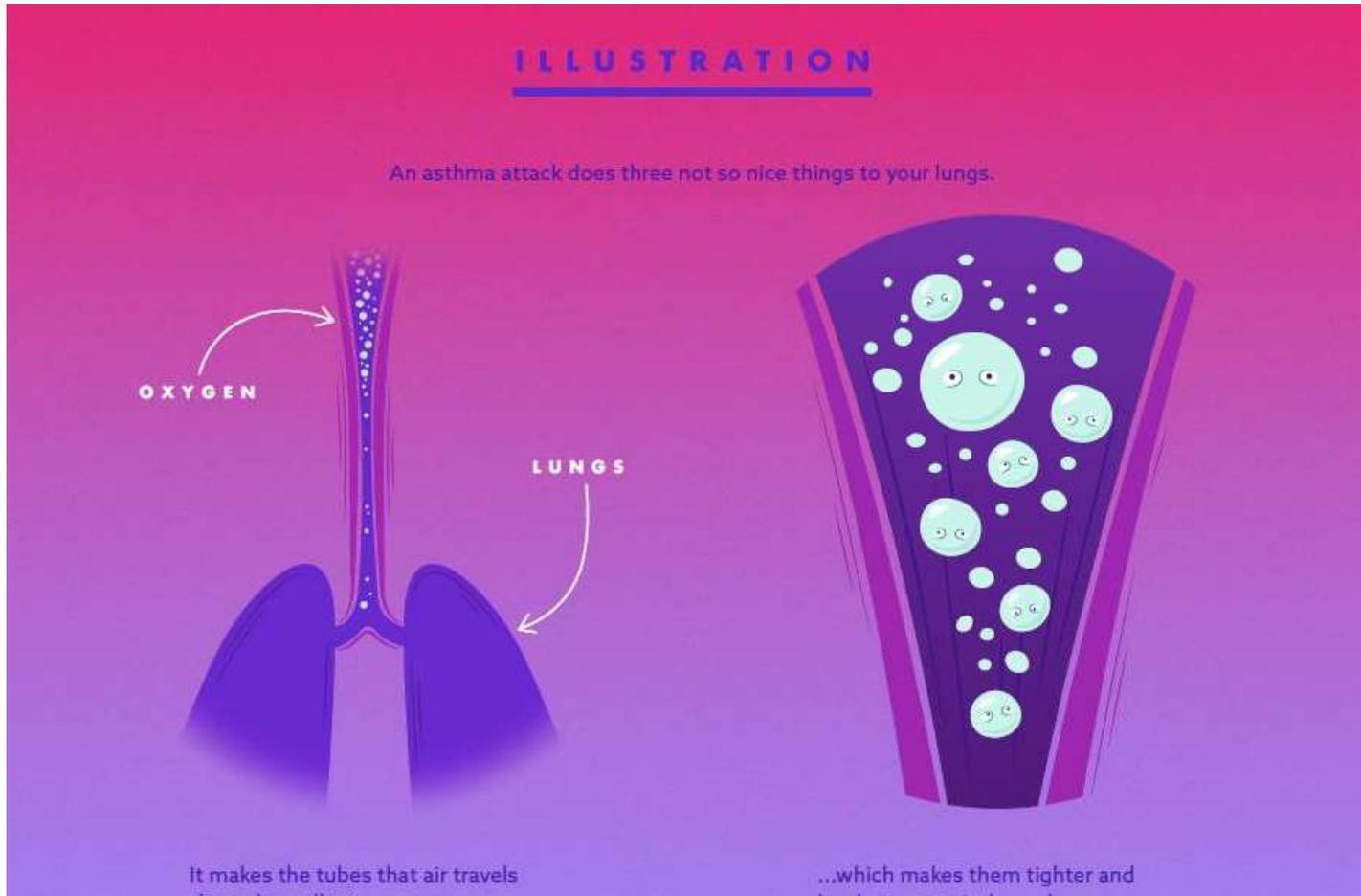


One



Carolina's HealthCare System

Key Concepts - What is Asthma?



Carolinas Asthma Coach



4/8/2016

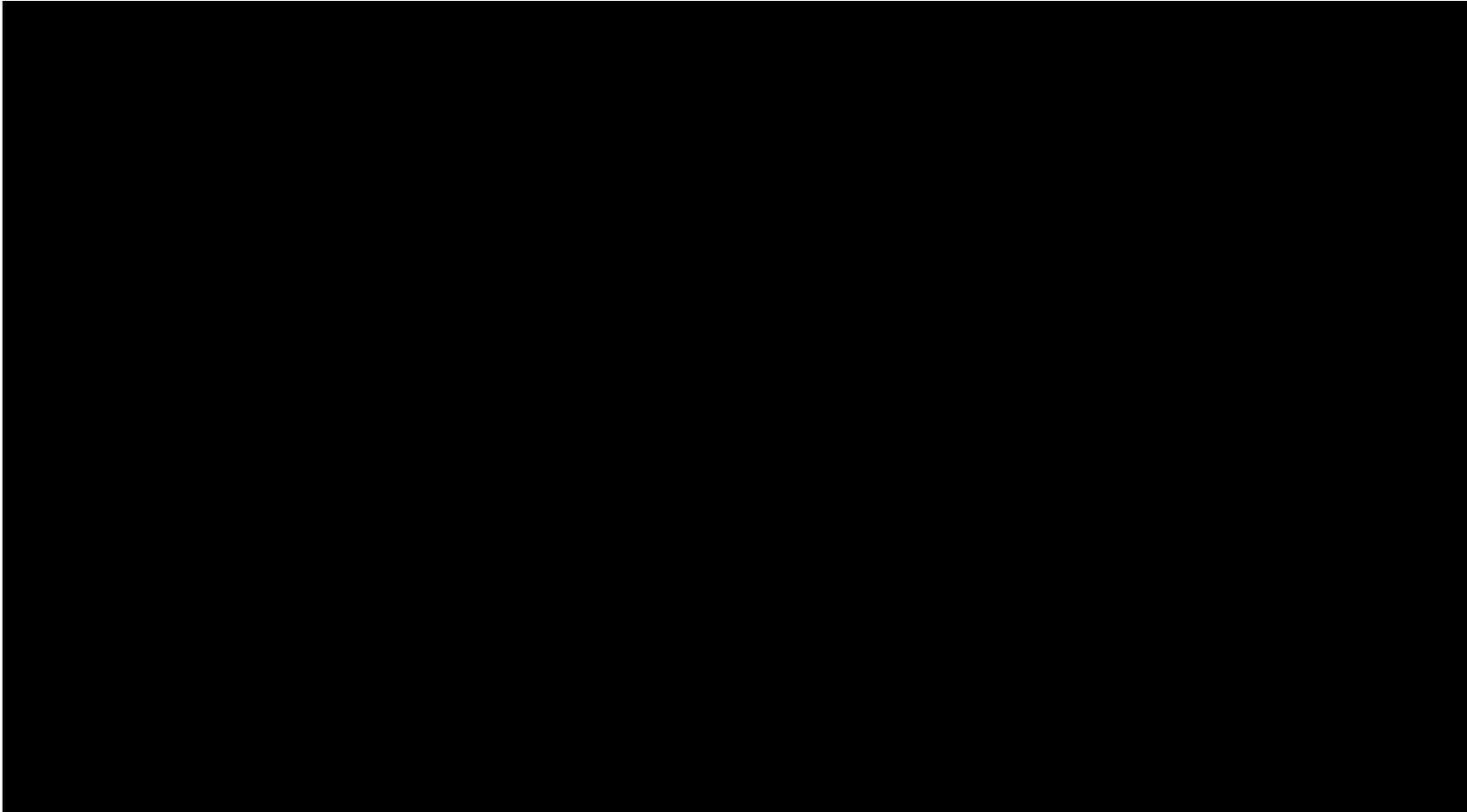


One



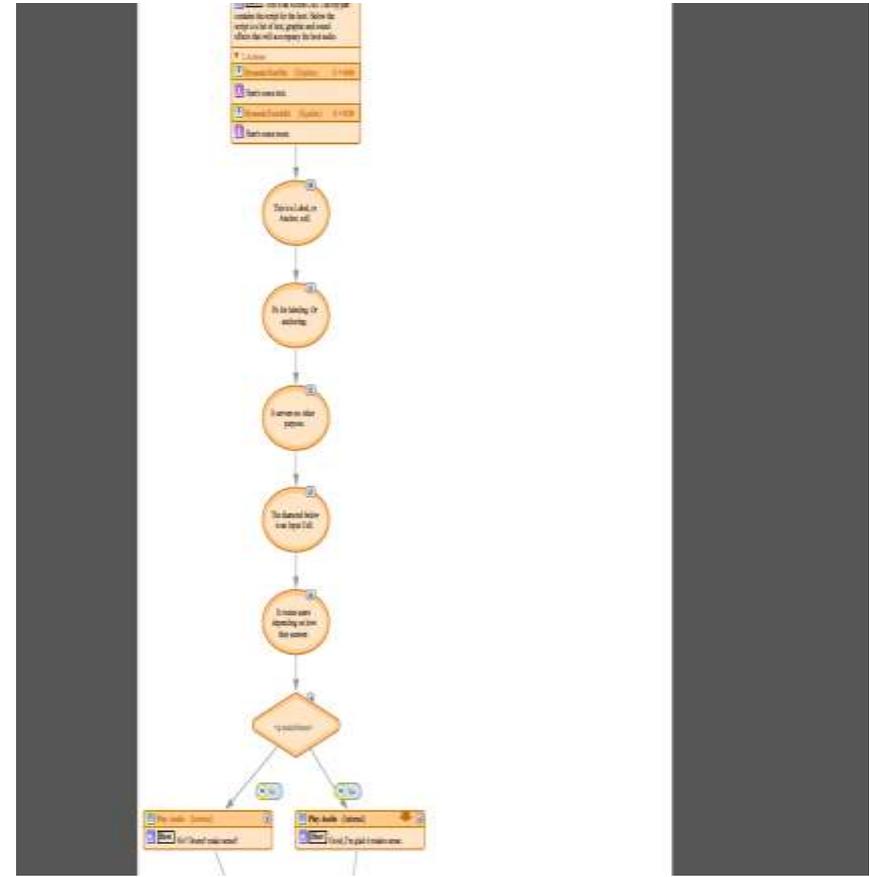
Carolinas HealthCare System

Carolinas Asthma Coach

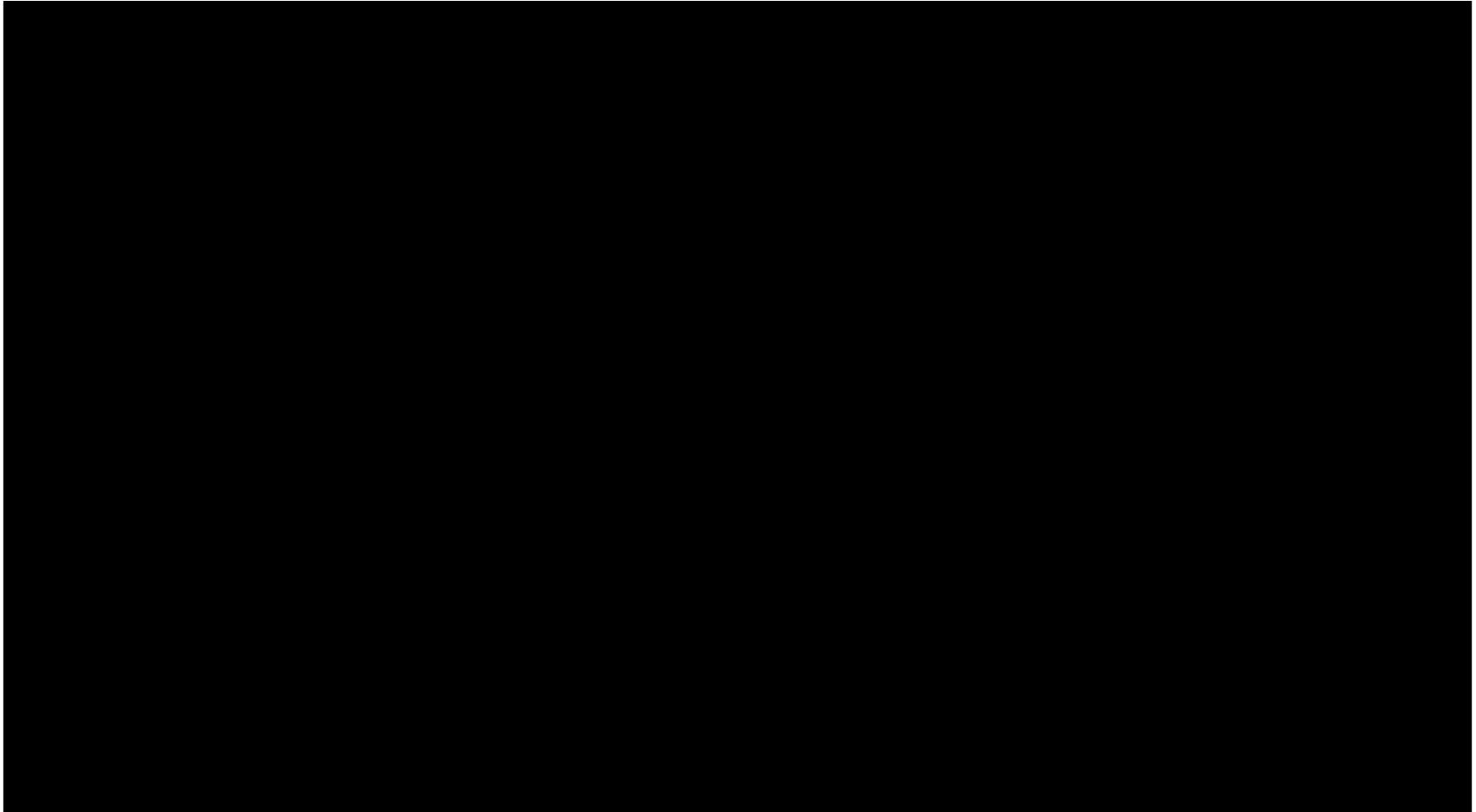


And now the details... Script and Algorithms

| Paragraph | Styles |
|---|--|
| <p>[Emily]</p> <p>How old are you?</p> <p>[12 years old]</p> <p>And who brought you here today?</p> <ol style="list-style-type: none"> 1. Mom* 2. Dad 3. Somebody else 4. I'm by myself <p>Thanks! [1]</p> | <p>answered a "start" screen appears, where the user can press "start" to begin. This way, if the nurse jiks out the information for them, they can hand over the iPad and let the child/parent start the experience themselves.</p> <p>Alex Nichols [some appears on screen throughout, but one or another bud]</p> <p>Alex Nichols [age details out when choices in context/linearity section]</p> <p>Alex Nichols [conversation re/yo to "Dad" throughout]</p> <p>Alex Nichols [conversation re/yo to "the grown-up who brought you here" or "the grown-up" throughout]</p> <p>Alex Nichols [conversation starts to any references to neither person but with them]</p> |
| <p>Hey there, Emily! My name is Coach McLungs. [1]</p> <p>Also, I'm a coach! And I'm here to coach you on how to kick your asthma right square in the butt. [2]</p> <p>Now, Emily, how are you feeling about your asthma visit? Pretty good? Kinda nervous Or maybe just like... whatever.</p> <ol style="list-style-type: none"> 1. Pretty good 2. Kinda nervous* 3. Whatever | <ol style="list-style-type: none"> 1. Nametag with "Coach McLungs" appears 2. Kid looks kinda sick, but then kicks a kickball into the stratosphere and looks HEALTHY! <p>Alex Nichols [Nice! I'm here to keep those good v. Bugging. So is your. [reconnect to single part]]</p> <p>Alex Nichols [A light, so the doctor's office is kinda boring. I get it. But there's nothing "whatever" about asthma. It's serious stuff I'm here to help you out. So is your... [reconnect to single part]]</p> |
| <p>Hey, I don't blame you. Who wouldn't be nervous to talk about a condition that makes it hard to breathe? But: I'm here to help! So is your mom! And so is your doctor! [1] And together, we're gonna come up with</p> | <ol style="list-style-type: none"> 1. Chalk board appears. 2. SFIX: Action movie style thunder as "Asthma Action Plan" appears on chalk board! <p>Alex Nichols [Dad: your dad]</p> <p>SO MEROON FUSE: the grown-up who brought you here.</p> |



Goal Setting and Preferences



Medication Adherence



One



Carolinus HealthCare System

Assessment - “ Symptom-O-Meter”



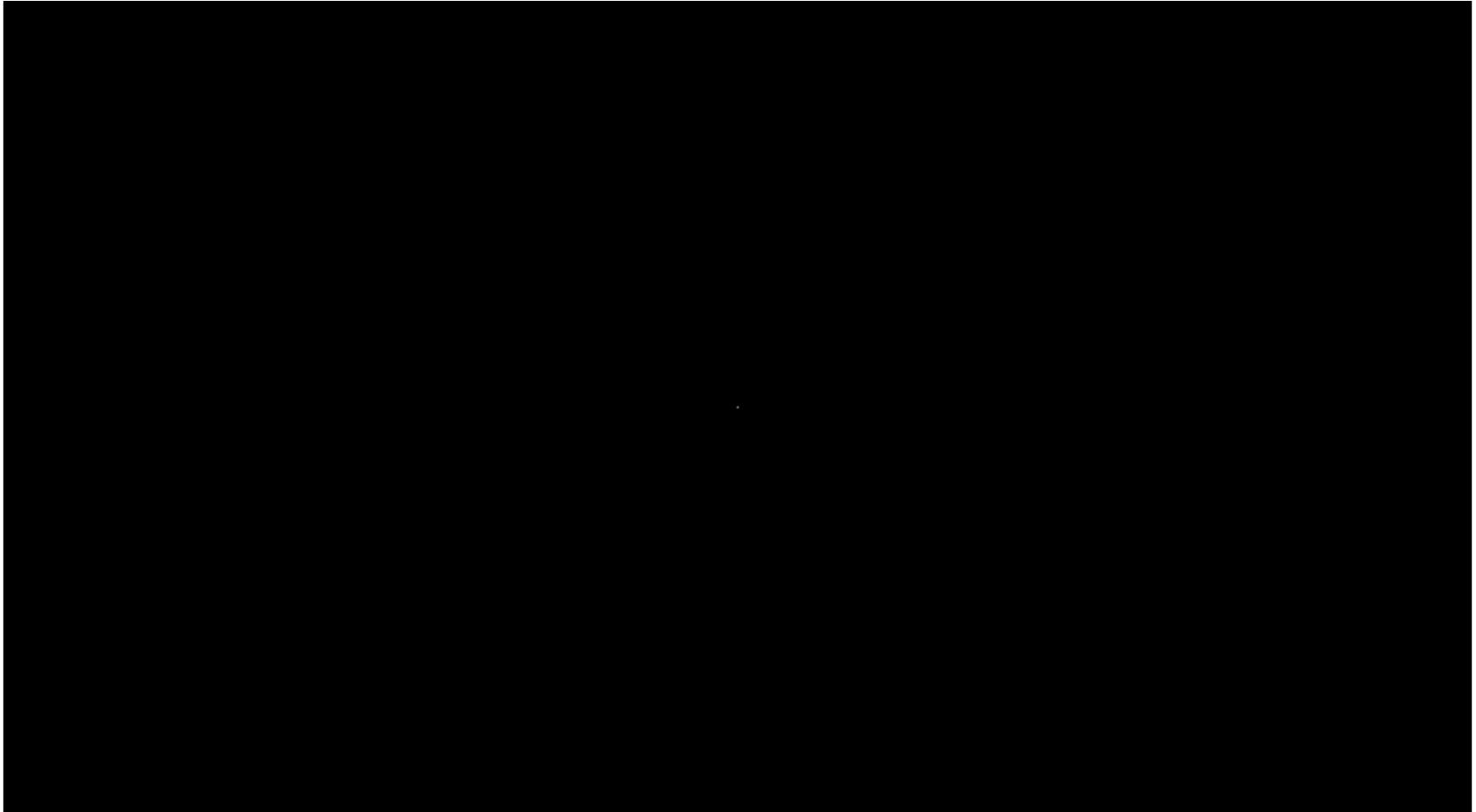
4/23/2016

32



Carolinan HealthCare System

Asthma Education - Technique



One



Asthma Education - Trigger avoidance



Provider and Patient summaries

4/14/16, 9:39 PM



Provider Summary

Sally's Asthma Coach Results

Patient Profile

- Self-reported asthma control level: kind of under control (not well controlled)
- Came here with Mom
- Feeling kinda nervous about today's visit
- Big Asthma goal: Sleeping through the night without asthma getting in the way
- Current asthma knowledge level: I know a little bit

Symptoms (Self-Reported)

- Coughing
- Hard to Breathe

Triggers

- Basic education provided on pollution, smoke, cigarette smoke, and other triggers like cockroaches and mice.
- Patient educated on the following self-reported triggers:

Controller Medication History

- Uses a controller medicine: Yes
- Controller medicine adherence: Every day

Answers to the Control Assessment Questions:

- Daytime symptoms: 3 to 7 days each week
- Nighttime awakenings: 1 or 2 nights total
- Rescue inhaler or nebulizer: 3 to 7 times a week
- Activity interference level: Minor limitation
- Asthma attacks requiring oral steroids in past year: Just 1

The information provided in the Provider Summary is not a substitute for individual patient assessment based upon the healthcare provider's examination of each patient and consideration of laboratory data and other factors unique to the patient. You should exercise your professional judgment in evaluating any information within this product.

https://chsc.jellyvision-conversation.com/staging/html5/summary..._ise%2C%22hardBreathing%22%3Atrue%7D&numSymptomsPerDay-undefined Page 1 of 5

4/14/16, 10:08 PM



Sally's Asthma Visit Playbook

Hi, Sally!

This playbook has what you need to make your asthma visit go well. It can also help you with helpful facts about your asthma at home!

Sally's Big #1 Asthma Goal

You said you wanted to [sleep through the night](#). Controlling your asthma will help reach that goal!

What is Asthma, Again?

Asthma is a "chronic" condition—meaning it won't just go away. You need to control it with the right medicine and smart choices.

When you have asthma:

- The breathing tubes in your lungs swell up.
- The muscles around those tubes get tight.
- Mucus gets into the breathing tubes, too!
- All of this makes it hard to breathe.

Sally's Asthma Symptoms

Here are the symptoms you told me you get:

- Coughing
- Hard to Breathe

Be aware of your symptoms! Your Asthma Action Plan will help you know what to do when you start to feel them.

Sally's Asthma Action Plan

Your doctor will help you make an Asthma Action Plan. With an Asthma Action Plan, you'll know what to do if your asthma symptoms are good, okay, or bad. Like this:

Green Zone: No asthma symptoms. Just keep taking your daily controller medicine, if ordered by your doctor.

Yellow Zone: Some asthma symptoms. Be careful! Keep taking your controller medicine and add your rescue medication as the doctor ordered.

Red: Lots of asthma symptoms! Take your rescue medication as ordered and Get help from a grown-up quick!

Sally's Control-O-Meter

You take a controller medicine every day. That's great!

You thought your asthma was kind of under control and according to the Control-O-Meter... your asthma is persistent asthma, not well controlled.

You said you were having problems with:

https://chsc.jellyvision-conversation.com/staging/html5/summary..._se%2C%22hardBreathing%22%3Atrue%7D&numSymptomsPerDay-undefined Page 2 of 5

Controller Medicine or Rescue Medicine?

Controller medicine: It may have a funny name like Qvar, Pulmicort, Flovent, or Advair. Take it everyday before your asthma symptoms have a chance to bother you. It will stop the breathing tubes in your lungs from swelling up and making too much mucus.

Rescue medicine: It might be called albuterol, ProAir, Proventil, Ventolin, or Xopenex. It should be taken when your asthma symptoms start, like in the yellow zone. Rescue medicine makes the muscles around your breathing tubes relax. That makes it easier to get air through—but that only lasts a little while. It's the daily controller medicine that keeps you symptom free!

Sally's Asthma Triggers

Triggers are the things that make your asthma worse. Here are some tips for staying away from triggers:

- Avoid pollution, stay inside on bad air days, and never let anyone smoke near you. It's okay to be kind of bossy about it!
- Just in case you're allergic to cockroaches or mice make sure you always clean up crumbs and never take food into the bedroom.

You said you also had trouble with:

- Smells: Stay away from perfumes, powders, hairsprays, stinky paints, and scented candles—those are all common asthma triggers. And make sure whoever cleans up around the house doesn't spray stuff with a lot of bleach and ammonia—even clean smells can trigger asthma.

Other Stuff

Mom, talk to the doctor about:

- Talk to your doctor about staying on your medicine or considering a change in the amount you take
- When to schedule a follow-up appointment
- Your asthma medicine concerns:
 - Control
 - Side effects

That's just about it! On the next page, you'll see a colorful chart describing some medication options. Take it to your doctor and ask them to explain how to use it to control your asthma! Good luck, Sally!

—Coach McLungs

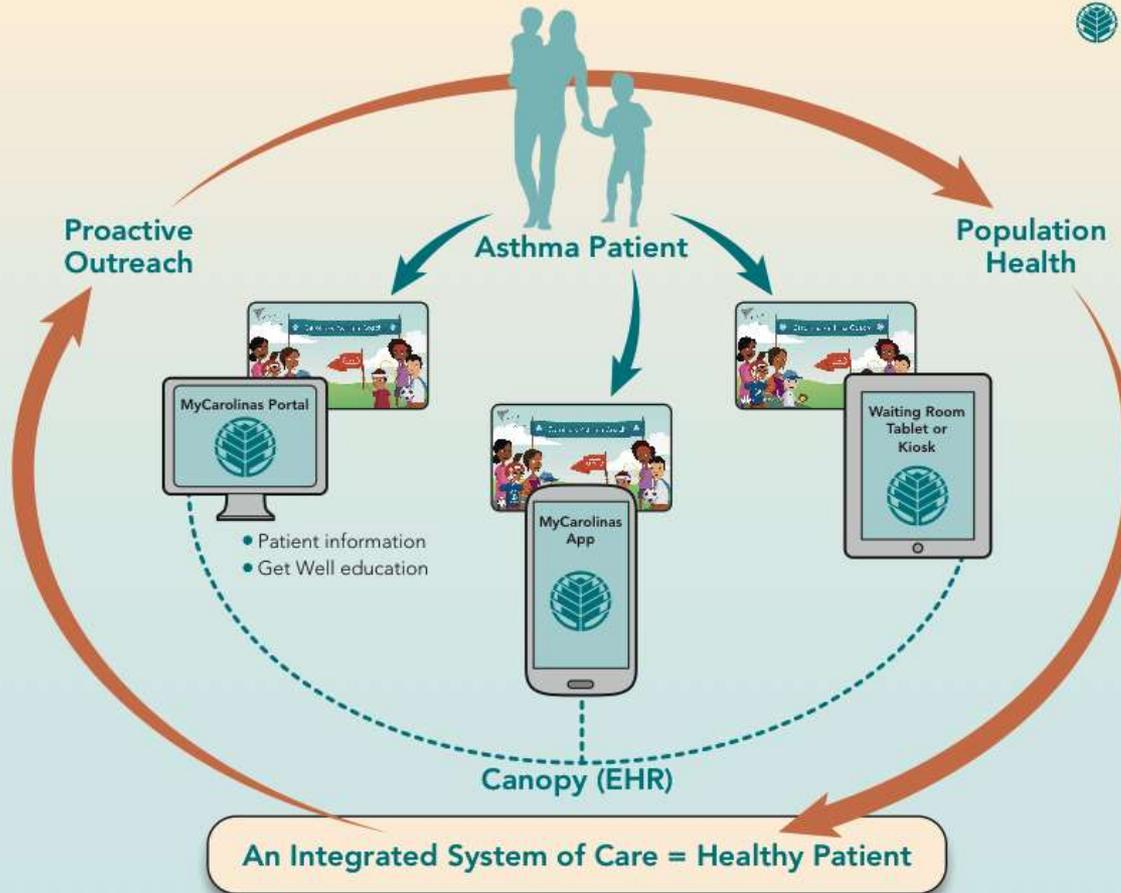
Efficacy and Implementation Evaluation

- Implementation evaluation in one pediatric clinic with PDSA cycles
- Efficacy evaluation in 2 safety-net clinics evaluating intermediate outcomes:
 - Level of Shared Decision Making
 - Knowledge change
 - Reliability of determining disease severity/control
 - Provider adherence to guidelines
 - Satisfaction



Future Development Opportunities

Carolinas Asthma Coach Integration



4/23/2016

37



Carolinas HealthCare System

Visit Our Website

Firefox File Edit View History Bookmarks Tools Window Help

Mon 10:55 PM Andy McWilliam

Asthma Action Plan

Asthma Action Plan



carolinashhealthcare.org https://asthma.carolinashhealthcare.org

Google

Most Visited Getting Started



Carolinash HealthCare System



Primary Care Asthma Tools

Helping providers make clinical decisions at the point of care.

- > [Asthma Action Plan Generator](#)
- > [Shared Decision Making Toolkit](#)
- > [Implementation Resources](#)

- > ["The Amazings" Asthma App Game](#)



Thanks to the multidisciplinary team of contributors!

- Lindsay Shade
- Hazel Tapp
- Cheryl Courtlandt
- Andrew Gunter
- Mike Dulin
- Sveta Mohanan
- Shane Gavin
- Jeff Cohen
- Pam Landis
- Jan Scotton
- Beth Burton
- Holly Harron
- Carla Jones
- Melissa Calvert
- Our patients
- Providers



Questions?



Thoughts, Questions, Feedback?

Contact:

Andy McWilliams, MD, MPH

Andrew.mcwilliams@carolinashealthcare.org

Kelly Reeves, BSN, RN, UXC

Kelly.reeves@carolinashealthcare.org

