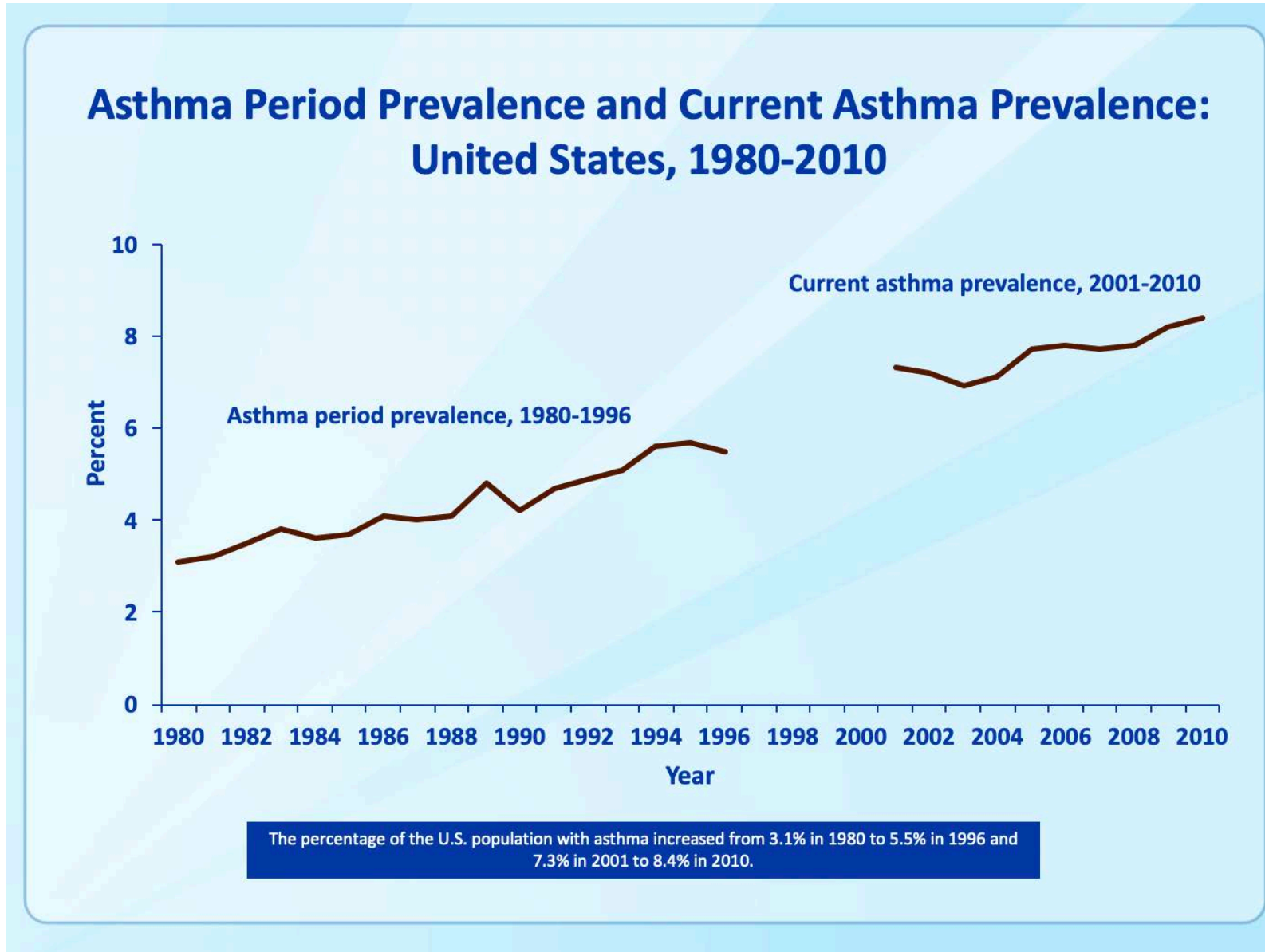


POPULATION HEALTH: ASTHMA INITIATIVE IN A COVID WORLD

Jamie Wooldridge, MD
Professor of Pediatrics



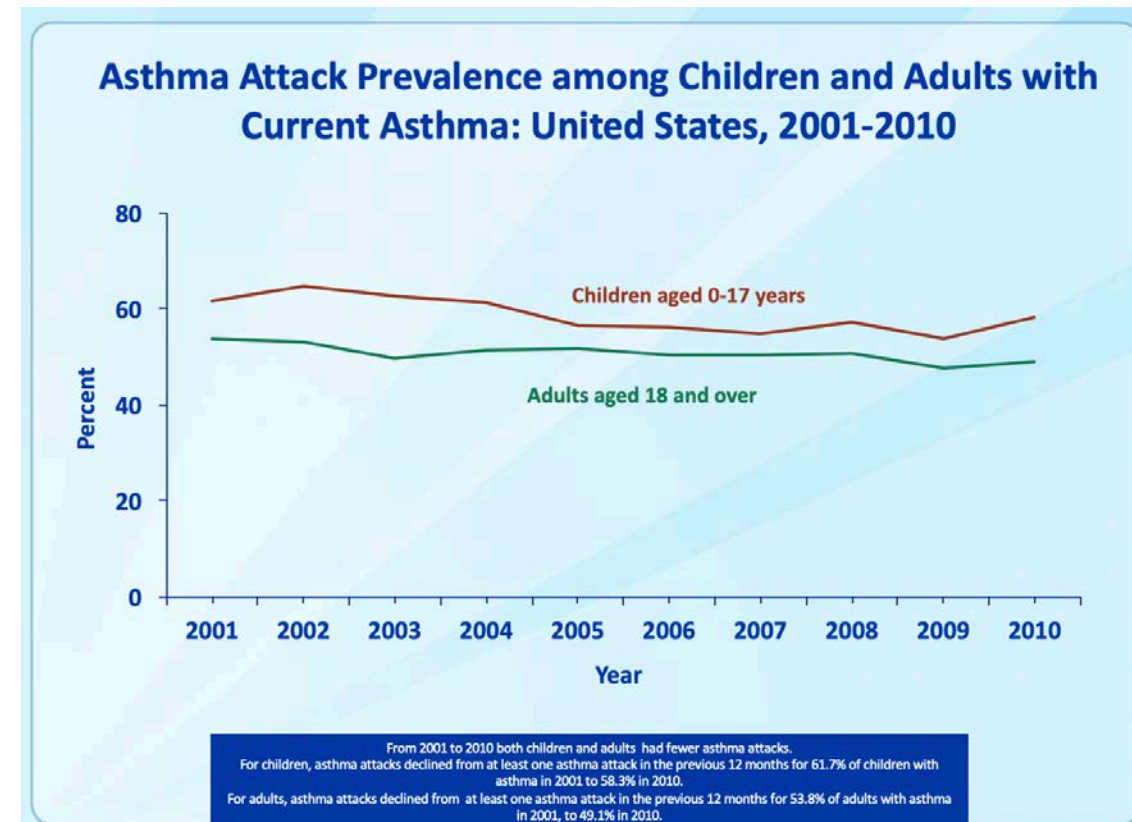
Asthma in the general population



Impact of Asthma on children

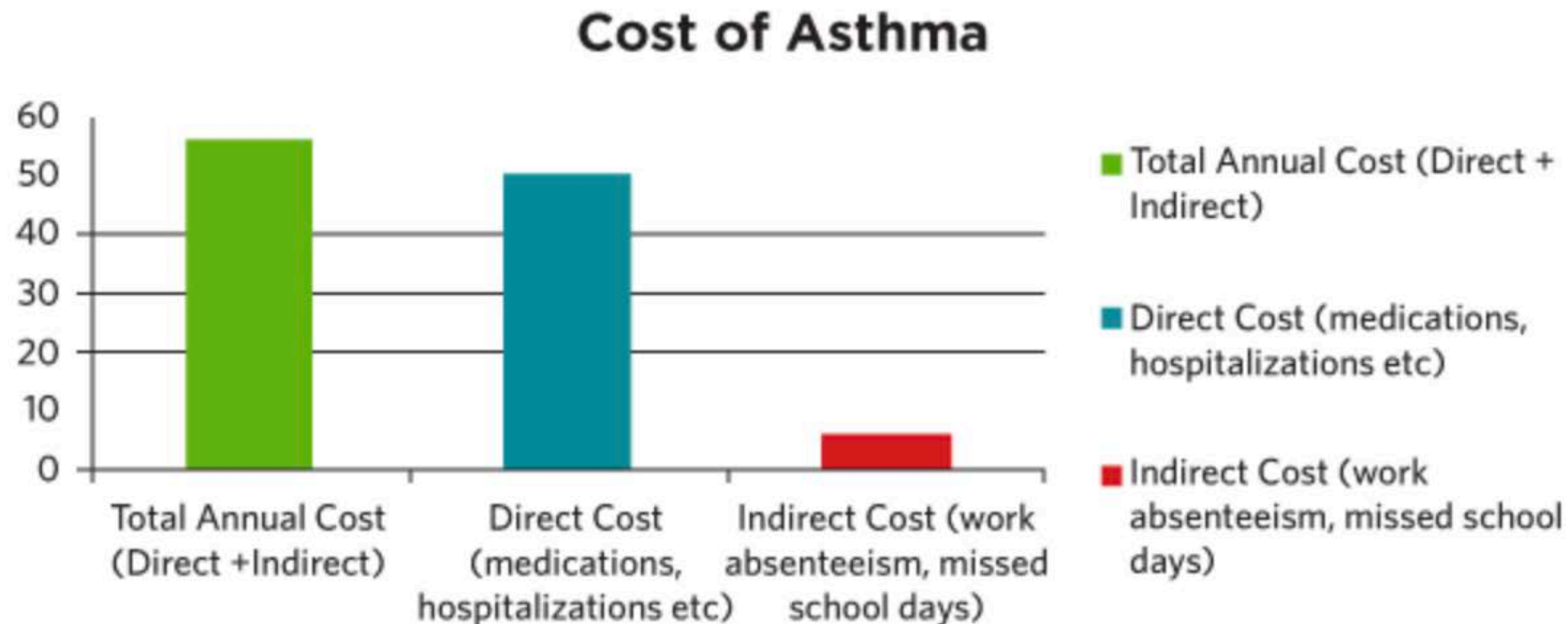
- Most common chronic illness in pediatrics
- 9 million children under age 18 years in US
 - 12.5% of pediatric population
- Second leading cause of hospitalizations
 - Leading cause in ages 0-9
- 10.5 million school days missed per year

Data from CDC and EPA



Financial burden of Asthma- \$56 Billion/year

Pediatrics account for a significant portion of these costs.



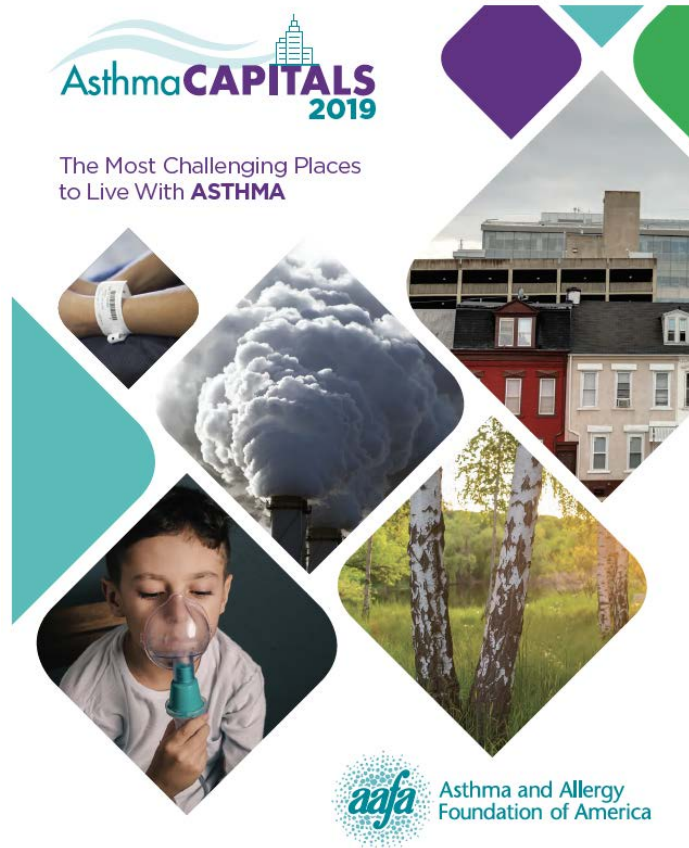
Asthma Allergy Foundation of America, May 2015



Pediatric Asthma in New York State

- New York State has 2nd highest incidence in US
- Western NY (eight counties)
 - Second highest rate of ED visits- 137.1/10,000
 - Majority of these visits occur in 0-11 years of age
 - Third highest rate for hospitalizations
 - Over half of these occur in 0-4 years of age
- Over 30% occur in Erie County
- ED visits and hospitalizations accrue >60% of asthma-related costs.

Buffalo nationally ranked as one of most challenging places to live with Asthma!



NATIONAL RANKINGS (Factors are not weighted equally)

■ Worse Than Average ▲ Average ● Better Than Average

2019 National Rankings	Overall	Metropolitan Area	Total Score (Avg 71.58)	Subtotal: Estimated Asthma Prevalence	Subtotal: Crude Death Rate for Asthma	Subtotal: ER Visits for Asthma
1	■	Springfield, MA	100.00	■	▲	■
2	■	Dayton, OH	97.53	▲	▲	■
3	■	Greensboro, NC	88.39	▲	▲	■
4	■	Philadelphia, PA	87.49	■	■	■
5	■	Cleveland, OH	86.78	▲	▲	■
6	■	Allentown, PA	85.00	■	▲	■
7	■	Louisville, KY	84.91	■	▲	■
8	■	Boston, MA	84.74	■	■	▲
9	■	Omaha, NE	84.52	▲	■	■
10	■	Milwaukee, WI	84.44	▲	■	■
11	■	New Haven, CT	84.33	■	▲	▲
12	■	Richmond, VA	83.87	▲	■	■
13	■	Hartford, CT	83.24	■	▲	■
14	■	Akron, OH	83.22	▲	▲	■
15	■	Jackson, MS	83.14	●	■	▲
16	■	Columbus, OH	82.88	▲	▲	■
17	■	St. Louis, MO	82.82	▲	■	▲
18	■	Cincinnati, OH	82.77	▲	▲	■
19	■	Baltimore, MD	81.77	▲	▲	■
20	▲	Winston-Salem, NC	81.27	▲	■	■
21	▲	Chattanooga, TN	81.12	■	●	▲
22	▲	Greenville, SC	79.88	▲	▲	■
23	▲	Detroit, MI	79.80	■	■	●
24	▲	Buffalo, NY	79.44	▲	▲	■
25	▲	Birmingham, AL	79.00	■	▲	■
26	▲	New Orleans, LA	78.97	▲	▲	■
27	▲	Albuquerque, NM	78.60	■	▲	▲
28	▲	Washington, DC	78.23	▲	■	▲
29	▲	Memphis, TN	78.19	■	■	●
30	▲	Worcester, MA	78.18	■	▲	▲
31	▲	Wichita, KS	77.76	▲	▲	■
32	▲	Oklahoma City, OK	77.42	▲	▲	▲

COVID

CDC Recommendations

AT INCREASED RISK

- Cancer
- Chronic kidney disease
- COPD (chronic obstructive pulmonary disease)
- Immunocompromised state (weakened immune system) from solid organ transplant
- Obesity (body mass index [BMI] of 30 or higher)
- Serious heart conditions, such as heart failure, coronary artery disease, or cardiomyopathies
- Sickle cell disease
- Type 2 diabetes mellitus

MIGHT BE AT INCREASED RISK

- *Asthma (moderate-to-severe)*
- Cerebrovascular disease (affects blood vessels and blood supply to the brain)
- Cystic fibrosis
- Hypertension or high blood pressure
- Immunocompromised state (weakened immune system) from blood or bone marrow transplant, immune deficiencies, HIV, use of corticosteroids, or use of other immune weakening medicines
- Neurologic conditions, such as dementia
- Liver disease
- Pregnancy
- Pulmonary fibrosis (having damaged or scarred lung tissues)
- Smoking
- Thalassemia (a type of blood disorder)
- Type 1 diabetes mellitus

Asthma and COVID-19

- Viral infections are very common trigger of asthma exacerbations
- So, does COVID cause more asthma exacerbations?
- Asthma is a chronic lung disease
- Is some one with asthma at higher risk for severe COVID-19 infection?

Asthma as a risk factor for severe COVID-19?

- Meta-analysis -14 publications, 17694 participants
 - 6 US studies, 2 Mexico studies, 2 China studies, 4 other countries
- Patients with severe COVID-19 disease were NOT associated with an increased risk of asthma than non-severe COVID-19 patients (OR=1.36, 95%CI: 0.79 to 2.34, P=0.27; I²=77%)
- Asthma was NOT associated with increased risk of mortality in patients with COVID-19 (OR=1.03, 95%CI: 0.55 to 1.93, P=0.92; I²=76%)
- Study had limitations- ongoing investigation needed

Wang Y, Ao G, Qi X, Xie B. The association between COVID-19 and asthma: a systematic review and meta-analysis. Clin Exp Allergy. 2020 Sep 15. doi: 10.1111/cea.13733. Online ahead of print

Pediatric Asthma is NOT a risk factor COVID

- Prospective Cohort study, <21 yrs of age
- SARS-CoV-2-infected close contact
- 289 of 382 (76%) were SARS-CoV-2-infected
- Infected children compared to uninfected
 - More likely to be Hispanic ($p<0.0001$)
 - Less likely to have asthma ($p=0.009$)
 - More likely to have an infected sibling contact ($p=0.0007$)

COVID as a cause of asthma exacerbations?

- 178 patients with asthma interviewed- Late April 2020
- Randomly selected from hospital data base
- Analyzed- demographic data, asthma control status, exacerbation and self-management, health utilization
- Mild exacerbations (self-managed) and exacerbations requiring medical attention included
- Mean age- 49 years (20-92 years)

COVID as a cause of asthma exacerbations?

- 74% of patients felt no change in asthma symptoms
- 89% classified as controlled based on GINA scoring
- 25.6% of the patients experienced exacerbation of asthma symptoms during the COVID-19 epidemic
 - Comparison- previous year- 15.5% experienced exacerbation
 - 75.6% did not see a provider
 - 67.6% self-managed
 - 32.4% worried about cross-infection of COVID-19

Asthma and COVID-19

So, does COVID cause more asthma exacerbations and need for steroids?

- Possibly
- Not seeking care
- Mild COVID infections causing exacerbations?

Is some one with asthma at higher risk for severe COVID-19 infection?

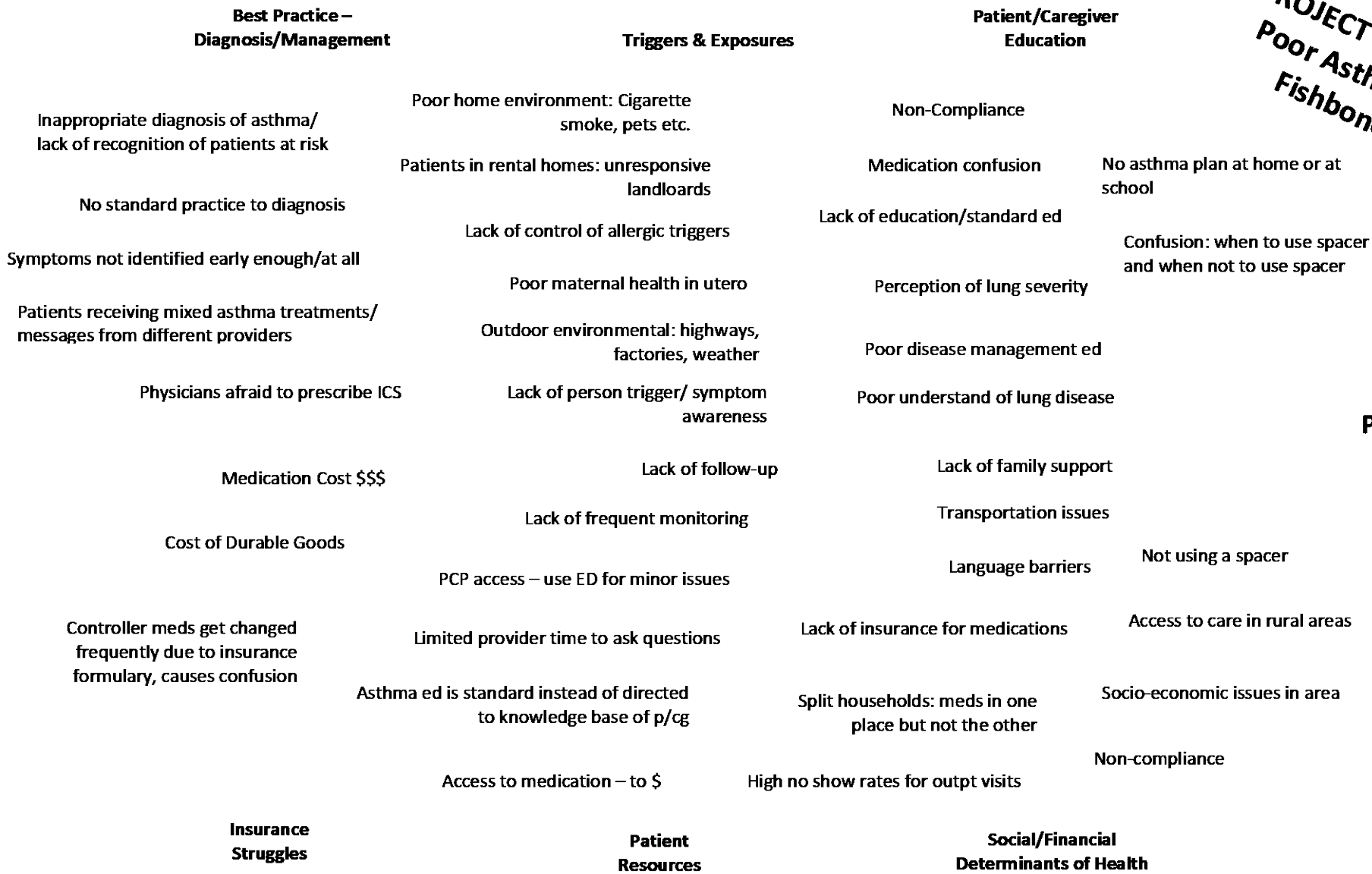
- Adults- probably not
- Children- highly unlikely

Population Health Initiative for Asthma

- Poor Asthma outcome in WNY
- High direct cares costs

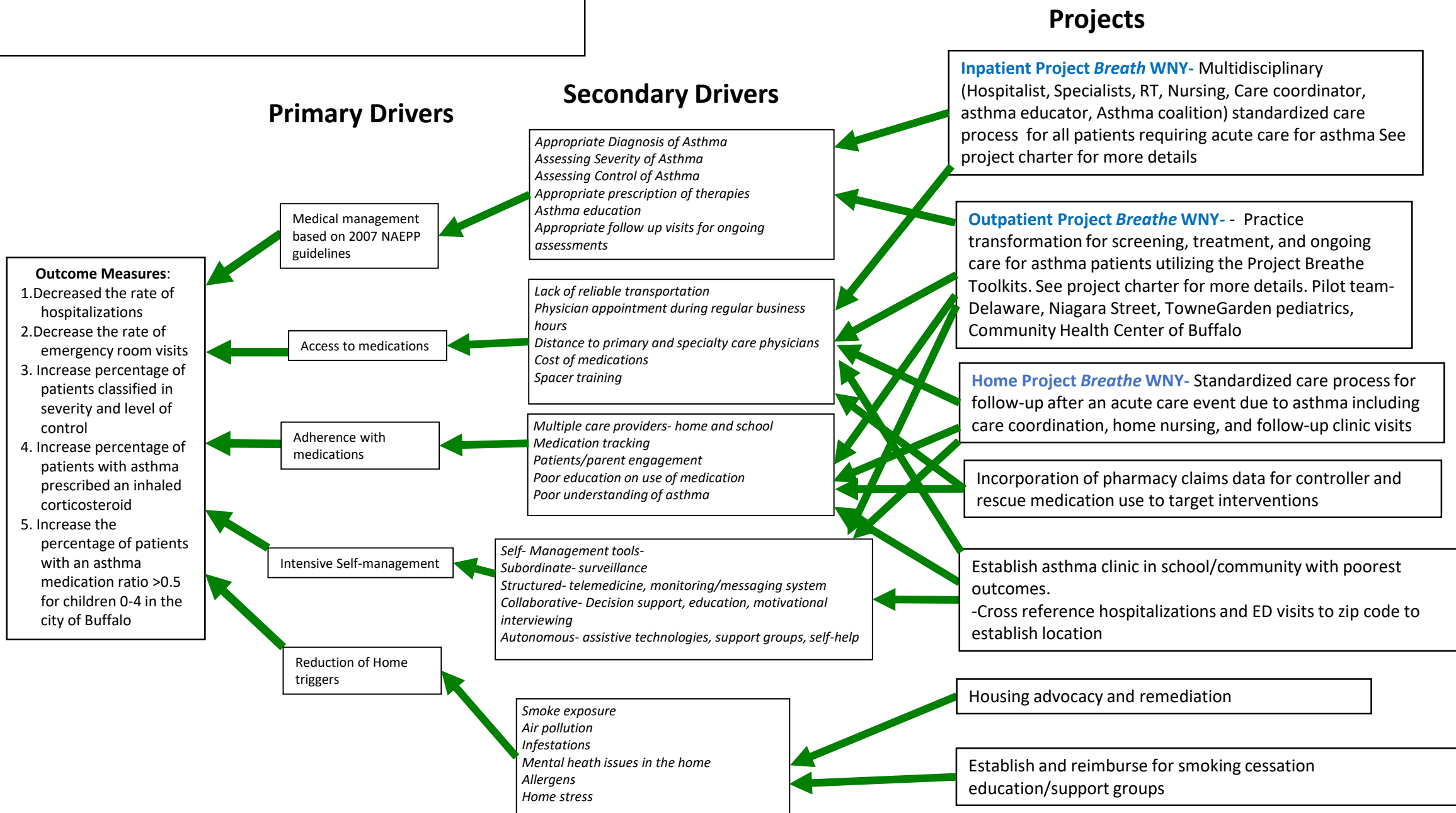
What are all the contributing factors?

**PROJECT BREATHE – WNY
Poor Asthma Outcomes
Fishbone Diagram**

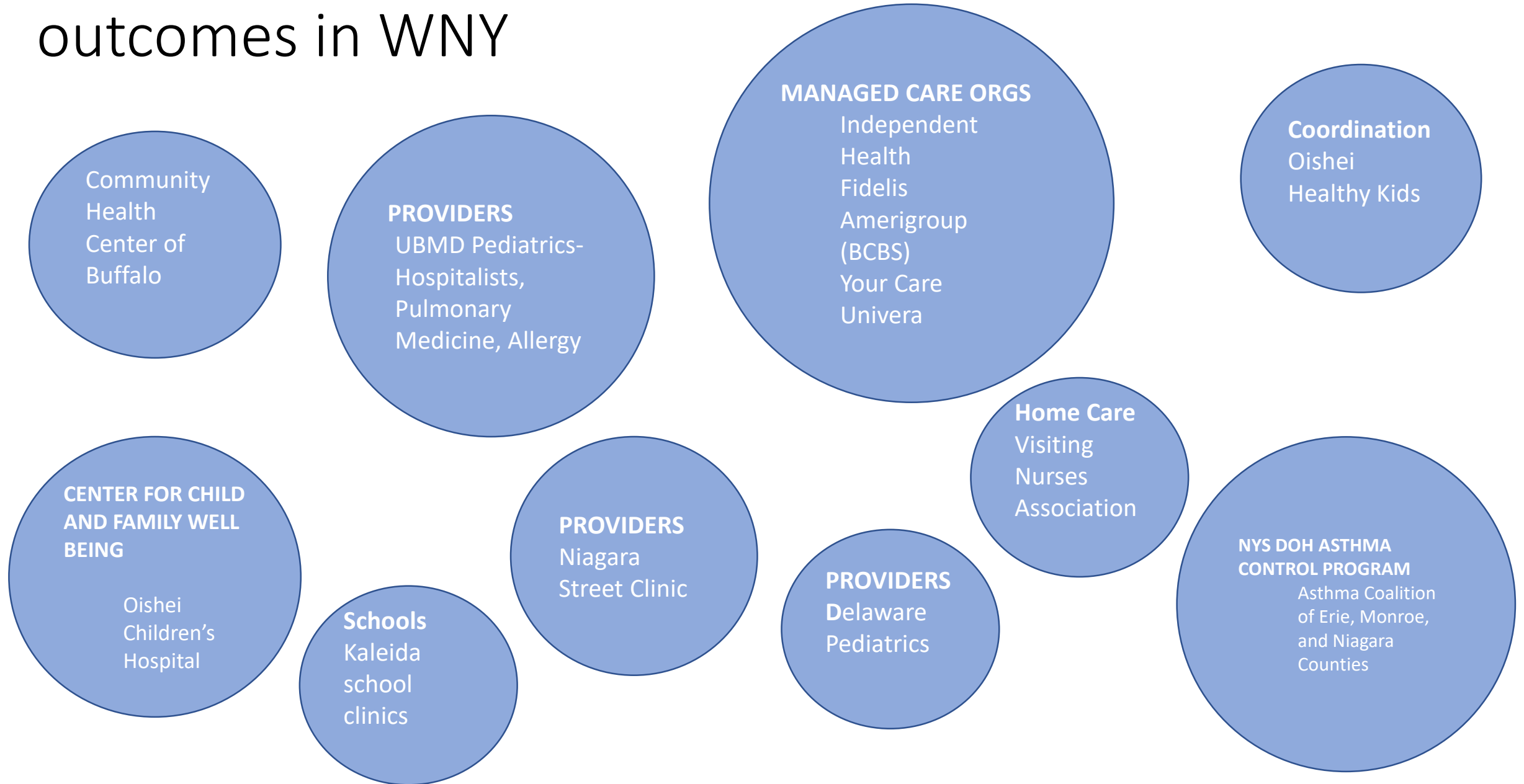


**POOR ASTHMA
OUTCOMES**

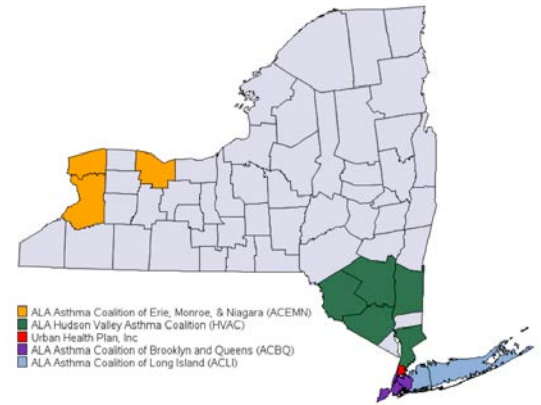
Project *BREATHE* NY Key Driver Diagram for WNY



Organizations working to improve asthma outcomes in WNY



Project *BREATHE* NY



- Designed to integrate a multi-disciplinary team-based approach, coordinated across health care settings to achieve sustainable delivery of evidence-based care for patients with asthma and their caregivers.
 - Through *practice transformation* and *quality improvement* strategies, Project *BREATHE* NY aims to:
 - Support a sustainable *multi-disciplinary asthma care team* trained on NAEPP Guidelines
 - Ensure delivery of *self-management tools* to patients with asthma and their caregivers
 - Coordinate asthma care across settings to support referrals for *home-based asthma services*
 - Link clinical-community partners to address *Social Determinants of Health* impacting patient/caregiver wellbeing

Project 1- Inpatient Project *BREATHE* WNY

Started September 2019

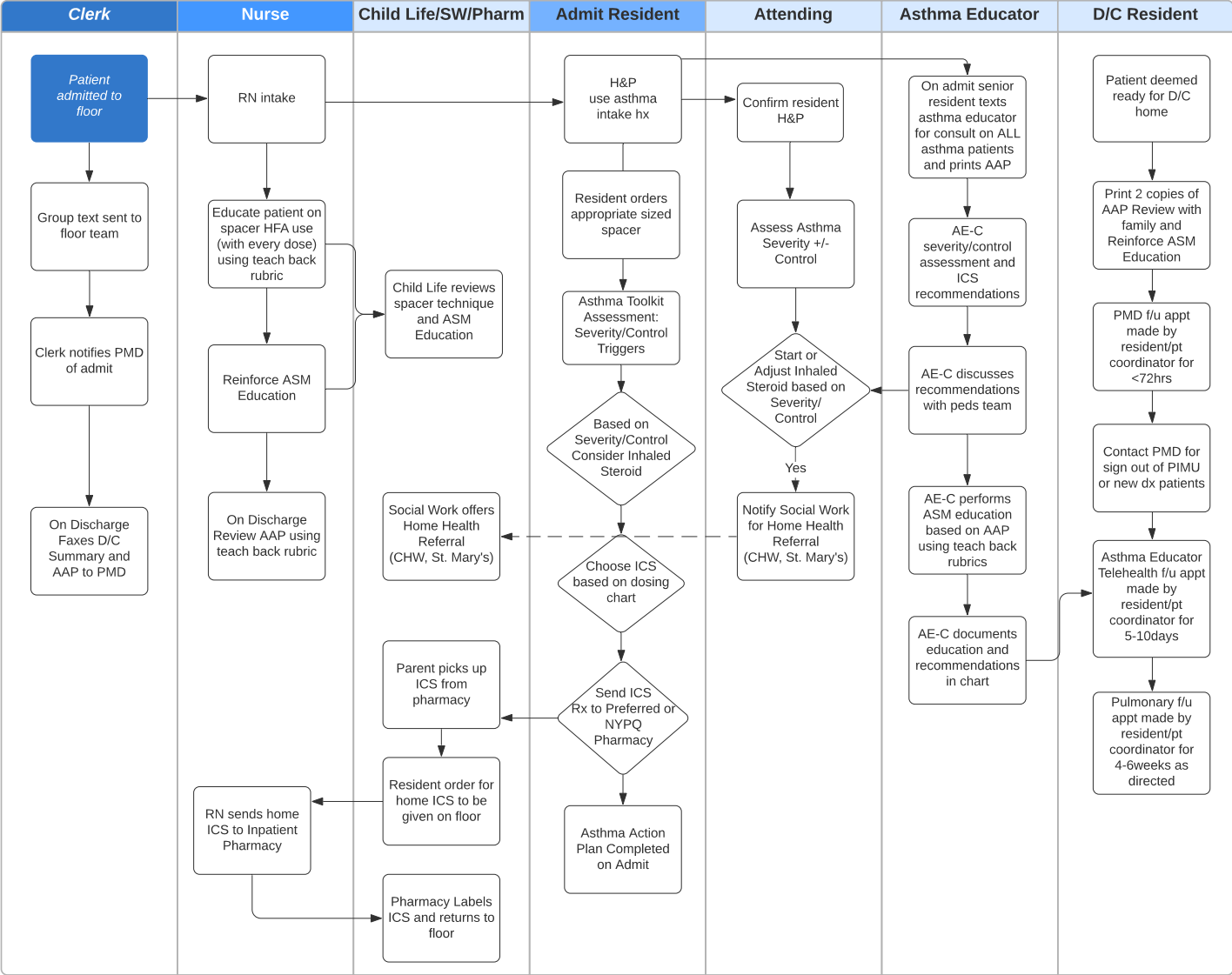
Expected Outcomes and Benefits

- The development and implementation of a standardized care path for patients with asthma requiring acute care at Oishei Children's Hospital will 1) reduce repeat admissions and ED visits, 2) create a multidisciplinary process which will be consistently utilized for all patients with asthma, 3) provide defined roles and expectations for each member of the care team to improve efficiency of care, and 4) reduced direct care costs.

Aim Statement

- The consistent, sustained implementation of a multidisciplinary (Patient, Caregiver, Physician, Nurse, Respiratory Therapist, Discharge Planner, Child Life, Social Work, and Care Coordinator) Project BREATHE consult will reduce repeated acute care episodes for patients with asthma at Oishei Children's Hospital by 25% over the next 12 months.

Inpatient Care Process and Checklist



Patient Name: _____ Admit Date: _____
DOB: _____ Discharge Date: _____
Follow-up appointment date: _____

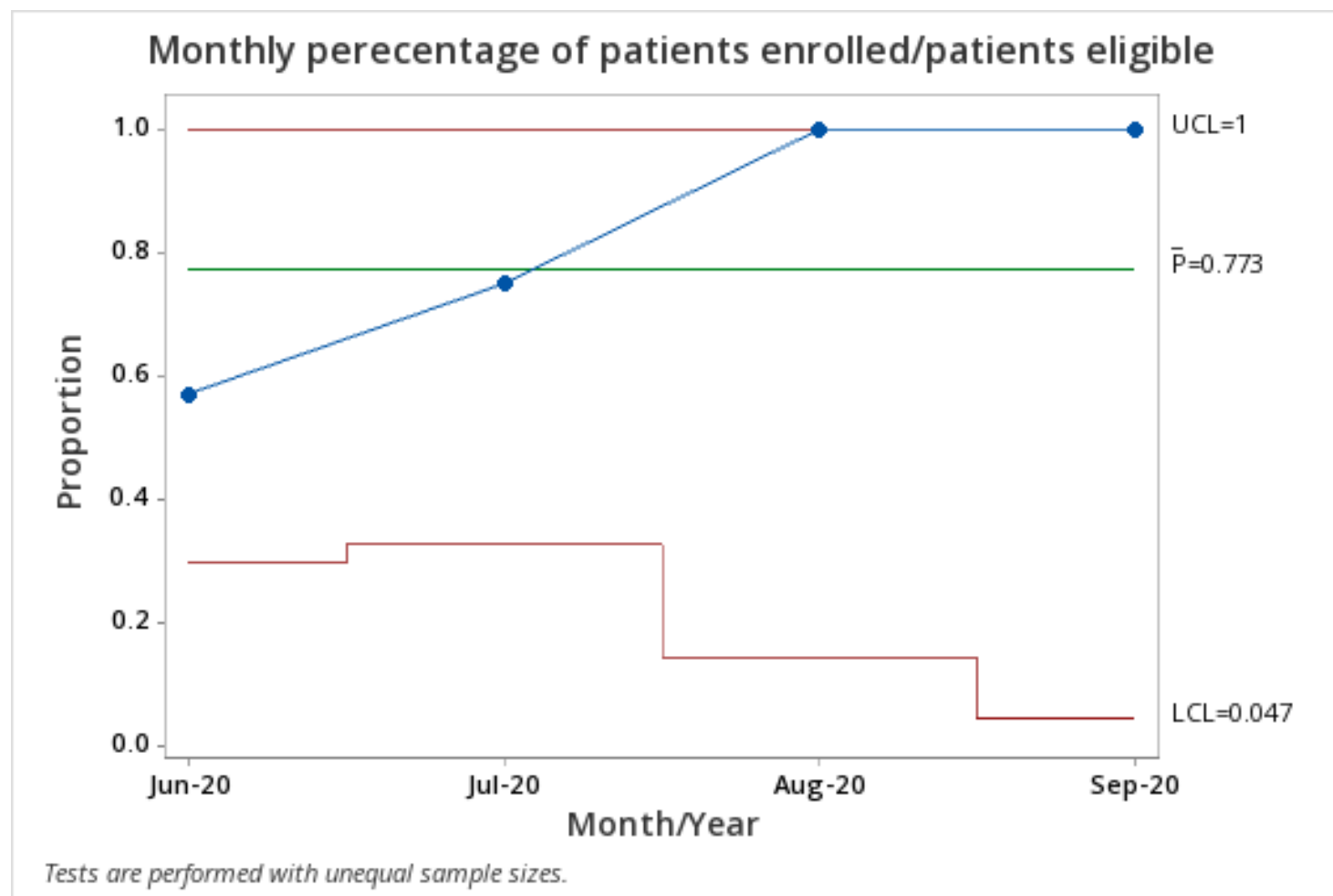
**Pediatric Asthma
Hospital Inpatient Workflow Checklist**

TASK	DATE OF SERVICE	RESPONSIBLE STAFF	INITIALS	DOCUMENTS NEEDED & LOCATION
Patient with primary or secondary diagnosis of asthma, known asthma dx, is prescribed an ICS, has recent & reoccurring breathing/whoezing problems, RAD - Nurse administers Asthma Admission Questionnaire		MD/RN		Asthma Admission Questionnaire
Nursing initiates Project BREATHE NY packet to guide patient care, BREATHE packet (find Project Breathe packet in green binder)		RN		Project BREATHE Green folder with packet
RN places colored lungs on Door & communicates to RT		RN		Green lungs
Nursing gives Asthma Admission Questionnaire and puts packet into front of patient's chart, RN colored folder w/ packet handoff to Resident		RN		AAQ - Breathe Packet
Nursing contacts Discharge Planner to alert of Project BREATHE patient		RN		
MD goes in and does an assessment of severity and control, determines ICS dosage/what meds they are currently on. Assess whether the patient needs a specialist.		MD		Severity & Control Assessment sheets - Respiratory Treatments Chart
ICS prescribed for home		MD		Respiratory Treatments Chart
Asthma Action Plan (AAP) created for parent/patient Consult appropriate specialist for patients with difficult to control asthma [AI or Pulmonology]		MD MD		AAP Refer to Criteria for Subspecialty consult on ICS chart
Patient referred to Ochsner Healthy Kids or another care coordination organization		Discharge Planner		OCH Universal Referral Form
Patient referred for skilled nursing visits (VNA): Circle: Accepted Declined		Discharge Planner		
Teach Asthma Self-Management Education (AS-ME) using Let's Take Control of Asthma Flipchart - Teach with HFA trainer		RT		Edu Flip Chart Demo Inhaler Demo Spacer
AAP Reviewed with parent/patient		RT		Previously created AAP
Provide medication and device training using teach-back method		RT		Demo Inhaler & Demo Spacer
Give Asthma-to-Go Kit to family including (spacer, pillow cover, and educational materials) Discharge Reconciliation Sheet reviewed with parent/patient BREATHE packet is put into BREATHE binder at discharge		RT RN/MD		Asthma-to-Go Kit
FOLLOW-UP CALLS MADE				
72 hours		Case Mang.		
3 months		Case Mang.		
6 months		Case Mang.		

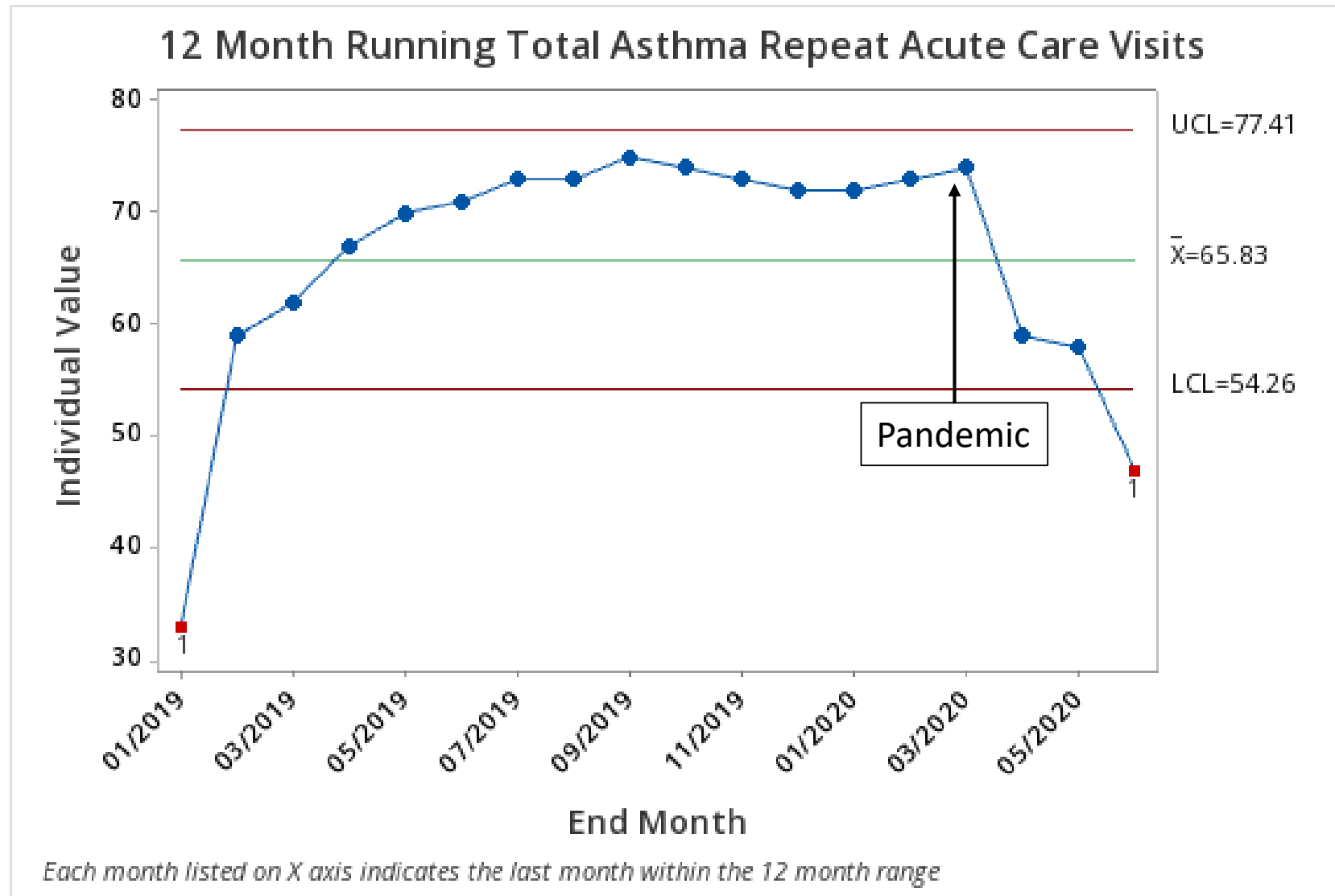
*If any step does not apply, please mark N/A

Process Measure- Percent Eligible patients

AWESOME!!!!!!!



Outcome Measure



Goal

Project 2- Outpatient Project *BREATHE* WNY

Started January 2020

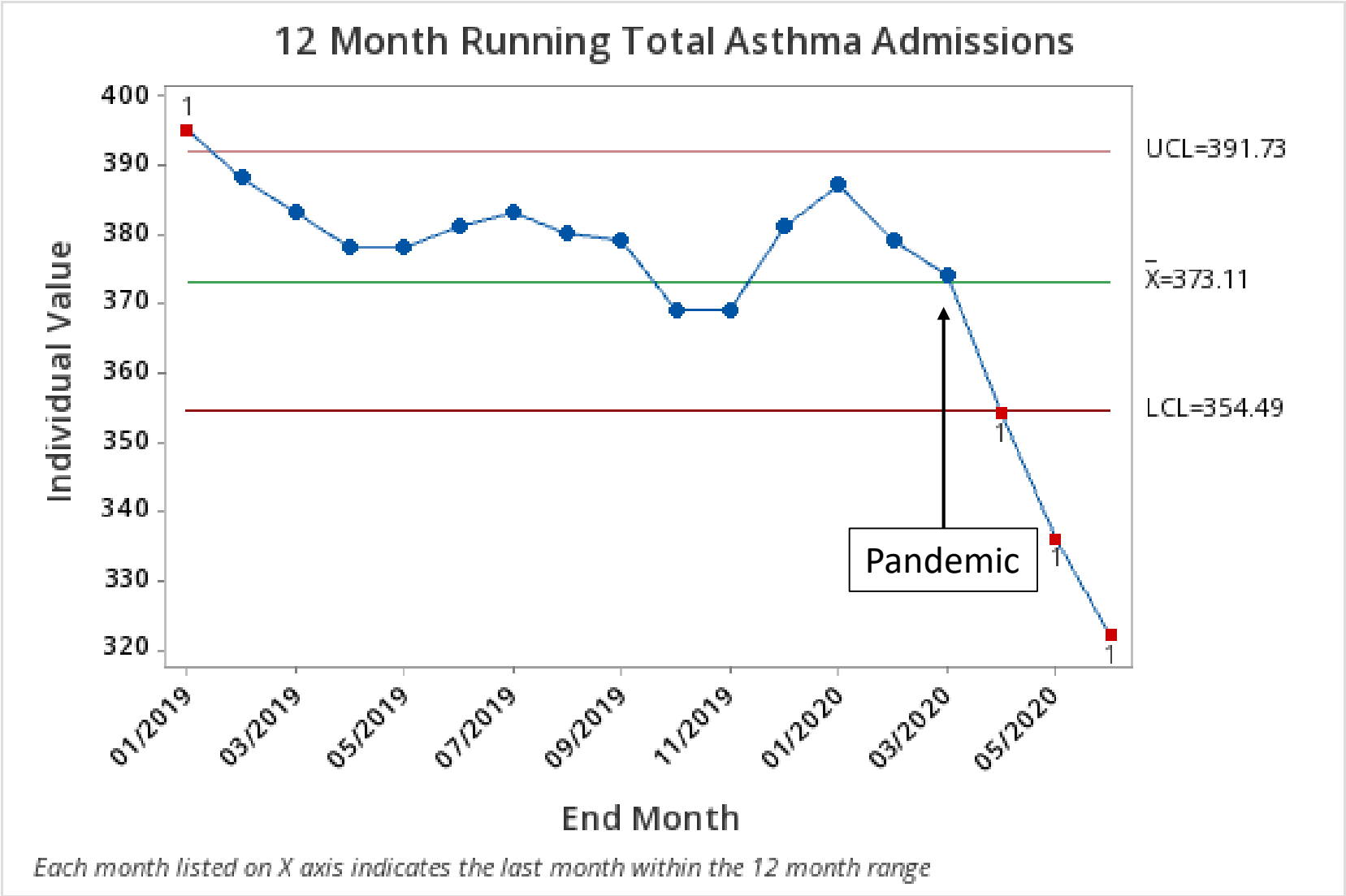
Expected Outcomes and Benefits

- The development and implementation of a standardized care path for patients with asthma requiring acute care at Delaware Pediatrics will 1) accurately diagnose asthma patients 2) reduce external acute care visits 3) create a multidisciplinary process which will be consistently utilized for all patients with asthma, 4) provide defined roles and expectations for each member of the care team to improve efficiency of care, and 5) reduced direct care costs (VBP).

Aim Statement

- The consistent, sustained implementation of a multidisciplinary (patient, caregiver, physician, nurses, asthma educators (AE-C), care coordinators/case management, medical assistants, life specialist, data analysis) Project BREATHE care process within our practice will accurately identify early asthma diagnoses, decrease external acute care asthma visits, and decrease hospitalizations by 5% in a 12-month period.

Outcome Measure



Project 3- Home Project *BREATHE* WNY

Started July 2020

Expected Outcomes and Benefits

- The development and implementation of a standardized care path for patients with asthma requiring acute care at Oishei Children's Hospital will 1) reduce repeat admissions and ED visits, 2) create a multidisciplinary process which will be consistently utilized for all patients with asthma, 3) provide defined roles and expectations for each member of the care team to improve efficiency of care, and 4) reduced direct care costs.

Draft Aim Statement

- The consistent, sustained implementation of a multidisciplinary (patient, family, liaisons, discharge planning, nurses, providers) Project BREATHE home care asthma visit process conducted by VNA will reduce asthma hospitalizations by 5% over the next 12 months.
- consistently identify environmental triggers within the patient's home, ensure proper medications are being used and not expired

Value Based Payments

- The reduction of acute care visits due to poorly controlled asthma will decrease cost for insurance payers
- However, providers working within Fee-for-services model will experience a significant reduction in revenue
- Model must be developed in partnership to share the cost savings between providers and payers
- This partnership needs to be established quickly to prevent negative financial impact

Questions