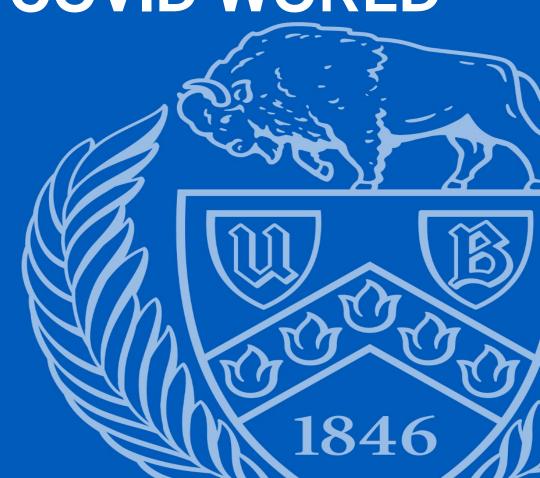
# POPULATION HEALTH: ASTHMA INITIATIVE IN A COVID WORLD

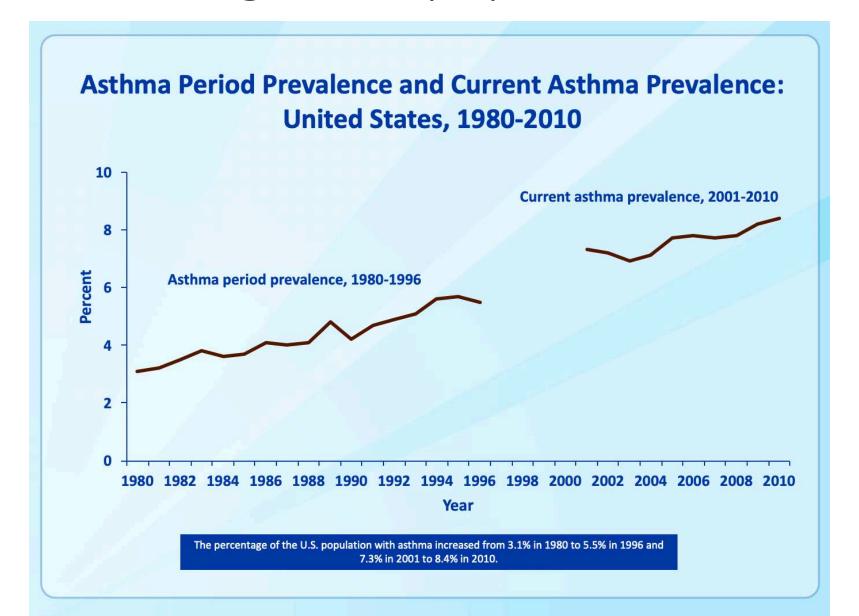
Jamie Wooldridge, MD Professor of Pediatrics





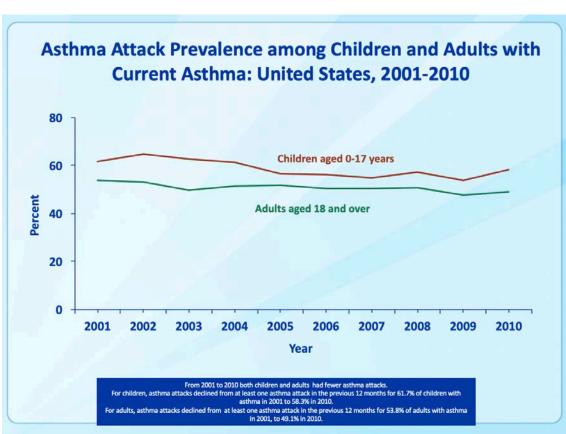


## Asthma in the general population



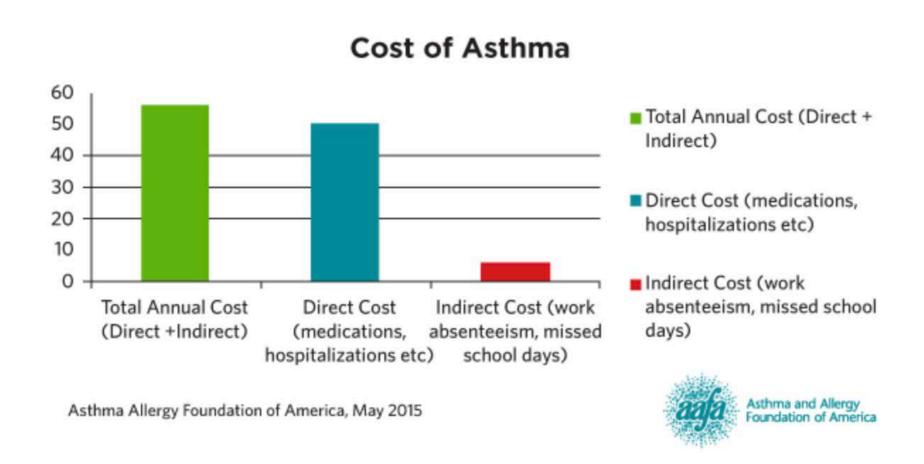
## Impact of Asthma on children

- 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



## Financial burden of Asthma- \$56 Billion/year

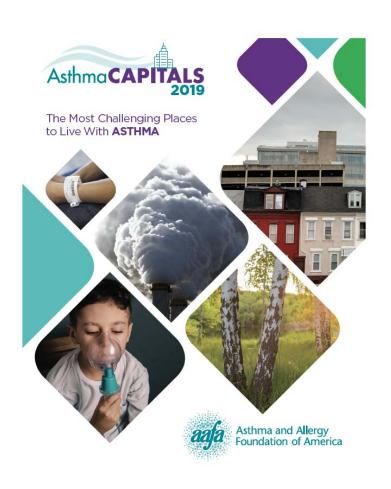
Pediatrics account for a significant portion of these costs.



### 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 Factors are not w	RANKINGS	Worse Than Avera	ige 🛕 🗛	/erage	Better Th	an 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		<b>A</b>	
2	-	Dayton, OH	97.53	<b>A</b>	<b>A</b>	
3		Greensboro, NC	88.39	<b>A</b>	_	
4		Philadelphia, PA	87.49			
5	_	Cleveland, OH	86.78	_	<b>A</b>	
6	-	Allentown, PA	85.00		<b>A</b>	
7	-	Louisville, KY	84.91		<b>A</b>	
8		Boston, MA	84.74			<b>A</b>
9		Omaha, NE	84.52	<b>A</b>		
10	•	Milwaukee, WI	84.44	<b>A</b>		
11	_	New Haven, CT	84.33		<b>A</b>	<b>A</b>
12		Richmond, VA	83.87	<b>A</b>		
13	-	Hartford, CT	83.24		<b>A</b>	
14		Akron, OH	83.22	<b>A</b>	<b>A</b>	
15		Jackson, MS	83.14	•	•	<b>A</b>
16		Columbus, OH	82.88	<b>A</b>	<b>A</b>	
17		St. Louis, MO	82.82	<b>A</b>		<b>A</b>
18		Cincinnati, OH	82.77	<b>A</b>	<b>A</b>	
19		Baltimore, MD	81.77	_		
20	<u> </u>	Winston-Salem, NC	81.27	<b>A</b>		
21	<b>A</b>	Chattanooga, TN	81.12		•	<b>A</b>
22	<u> </u>	Greenville, SC	79.88	<b>A</b>	<b>A</b>	
23	<u> </u>	Detroit, MI	79.80			
24	<u> </u>	Buffalo, NY	79.44	<u> </u>	<u> </u>	
25	<b>A</b>	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</li>
- 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)</li>
  - 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?

Best Practice – Diagnosis/Managemen	t Triggers & Expos	Patient/Caregi sures Education	iver POOFAS	T BREATHE - WNY thma Outcomes ne Diagram
Inappropriate diagnosis of asthma/ lack of recognition of patients at risk	Poor home environment: Cigarette smoke, pets etc.	Non-Compliance	Fishbo	ne Diagone WAY
·	Patients in rental homes: unresponsive landloards	Medication confusion	No asthma plan at home or at school	agram
No standard practice to diagnosis	Lack of control of allergic triggers	Lack of education/standard ed	Confusion: when to use space	
Symptoms not identified early enough/at all	Poor maternal health in utero Perception of lung sev		and when not to use spacer	
Patients receiving mixed asthma treatments/ messages from different providers	Outdoor environmental: highways, factories, weather		d	
Physicians afraid to prescribe I	CS Lack of person trigger/ symptor awarenes	. oor arracrotaria or rang arec	ase	POOR ASTHMA
Medication Cost \$\$\$	Lack of follow-	up Lack of family supp	ort	OUTCOMES
Cost of Durable Goods	Lack of frequent monitoring	Transportation issu	es	
3333, 23, 23, 23, 23, 23, 23, 23, 23, 23	PCP access – use ED for minor issues	Language barriers	Not using a spacer	
Controller meds get changed frequently due to insurance	Limited provider time to ask questions	Lack of insurance for medications	Access to care in rural areas	
formulary, causes confusion Ast	hma ed is standard instead of directed to knowledge base of p/cg	Split households: meds in one place but not the other	Socio-economic issues in area	
	Access to medication – to \$	ligh no show rates for outpt visits	Non-compliance	
Insurance Struggles	Patient Resources	Social/Finand Determinants of		

### **Project BREATHE NY Key Driver Diagram for WNY**

#### **Secondary Drivers Primary Drivers** Appropriate Diagnosis of Asthma Assessing Severity of Asthma Assessina Control of Asthma Appropriate prescription of therapies Asthma education Medical management Appropriate follow up visits for ongoing based on 2007 NAEPP assessments guidelines **Outcome Measures:** Lack of reliable transportation 1.Decreased the rate of Physician appointment during regular business hospitalizations 2.Decrease the rate of Distance to primary and specialty care physicians Access to medications emergency room visits Cost of medications 3. Increase percentage of Spacer training patients classified in severity and level of control Multiple care providers- home and school Adherence with Medication trackina 4. Increase percentage of medications Patients/parent engagement patients with asthma Poor education on use of medication prescribed an inhaled Poor understanding of asthma corticosteroid 5. Increase the percentage of patients Self- Management toolswith an asthma Intensive Self-management Subordinate- surveillance medication ratio >0.5 Structured-telemedicine, monitoring/messaging system for children 0-4 in the Collaborative- Decision support, education, motivational city of Buffalo interviewing Autonomous- assistive technologies, support groups, self-help Reduction of Home triggers Smoke exposure Air pollution Infestations Mental heath issues in the home Alleraens Home stress

### **Projects**

Inpatient Project Breath WNY- Multidisciplinary (Hospitalist, Specialists, RT, Nursing, Care coordinator, asthma educator, Asthma coalition) standardized care process for all patients requiring acute care for asthma See project charter for more details

Outpatient Project Breathe WNY- - Practice transformation for screening, treatment, and ongoing care for asthma patients utilizing the Project Breathe Toolkits. See project charter for more details. Pilot team-Delaware, Niagara Street, TowneGarden pediatrics, Community Health Center of Buffalo

**Home Project** *Breathe* **WNY-** Standardized care process for follow-up after an acute care event due to asthma including care coordination, home nursing, and follow-up clinic visits

Incorporation of pharmacy claims data for controller and rescue medication use to target interventions

Establish asthma clinic in school/community with poorest outcomes.

-Cross reference hospitalizations and ED visits to zip code to establish location

Housing advocacy and remediation

Establish and reimburse for smoking cessation education/support groups

Organizations working to improve asthma outcomes in WNY **MANAGED CARE ORGS** Independent Coordination Health Oishei Community Fidelis Healthy Kids Health **PROVIDERS** Amerigroup Center of **UBMD Pediatrics-**(BCBS) Buffalo Hospitalists, Your Care Pulmonary Univera Medicine, Allergy **Home Care** Nurses **CENTER FOR CHILD** Association **AND FAMILY WELL PROVIDERS NYS DOH ASTHMA** BEING Niagara **CONTROL PROGRAM PROVIDERS** Street Clinic **Asthma Coalition** Oishei **D**elaware Schools of Erie, Monroe, Children's and Niagara **Pediatrics** Kaleida Counties school clinics

### **New York State Regional Asthma Contractors**

# A Hudson Valley Asthma Coalition (HVAC)

## 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

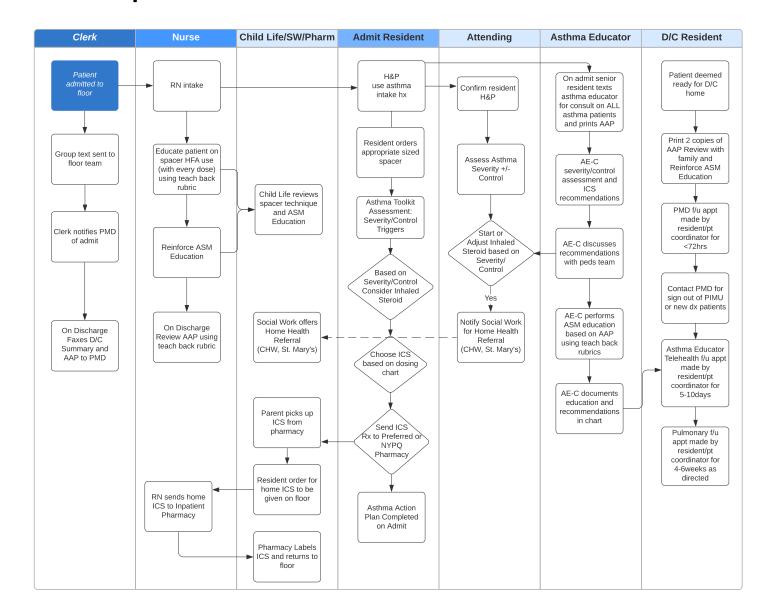
### **Expected Outcomes and Benefits**

• 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



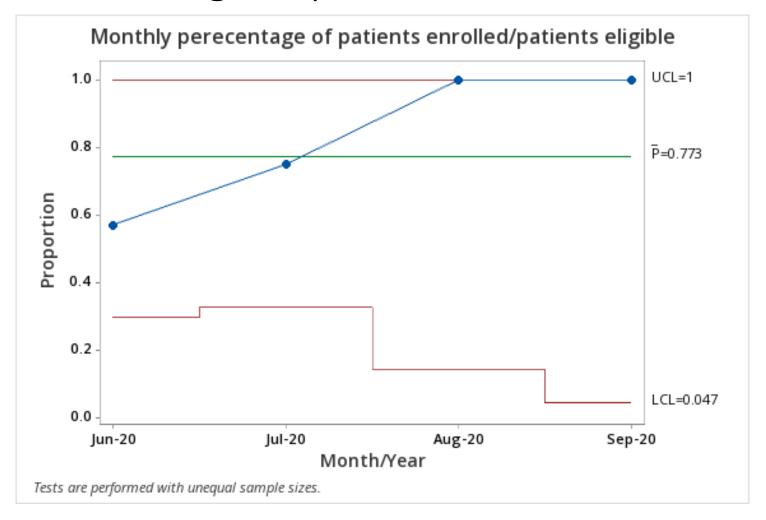
atient Name:				Admit Date: Discharge Date:		
OR-	Pediatric Asthma Hospital Inpatient Workflow Checklist			Follow-up appointment date:		
TASK	<b>D</b> ATE OF	RESPONSIBLE	INITIALS	DOCUMENTS NEEDED		
	SERVICE	STAFF		& LOCATION		
Patient with primary or secondary diagnosis of asthma,		MD/RN				
known asthma dx, is prescribed an ICS, has recent &						
reoccurring breathing/wheezing problems, RAD -						
Nurse administers Asthma Admission Questionnaire		RN		Asthma Admission Questionnaire		
Nursing initiates Project BREATHE NY packet to guide		RN		Project BREATHE		
patient care, BREATHE packet (find Project Breathe				Green folder with		
packet in green binder)				packet		
RN places colored lungs on Door & communicates to RT		RN		Green lungs		
Nursing gives Asthma Admission Questionnaire and		RN		AAQ-		
puts packet into front of patient's chart, RN colored				Breathe Packet		
folder w/ packet handoff to Resident						
Nursing contacts Discharge Planner to alert of Project BREATHE patient		RN				
MD goes in and does an assessment of severity and		MD		Severity & Control		
control, determines ICS dosage/what meds they are				Assessment sheets –		
currently on. Assess whether the patient needs a				Respiratory Treatments Chart		
specialist.						
ICS prescribed for home		MD		Respiratory Treatments Chart		
Asthma Action Plan (AAP) created for parent/patient		MD		AAP		
Consult appropriate specialist for patients with difficult		MD		Refer to Criteria for		
to control asthma [Al or Pulmonology]				Subspecialty consult on ICS chart		
Patient referred to Oishei Healthy Kids or another care		Discharge		OHK Universal		
coordination organization		Planner		Referral Form		
Patient referred for skilled nursing visits (VNA):		Discharge				
Circle: Accepted Declined		Planner				
Teach Asthma Self-Management Education (AS-ME)		RT		Edu Flip Chart		
using Let's Take Control of Asthma Flipchart —Teach				Demo Inhaler		
with HFA trainer				Demo Spacer		
AAP Reviewed with parent/patient		RT		Previously created AAP		
Provide medication and device training using teach-		RT		Demo Inhaler &		
back method				Demo Spacer		
Give Asthma-to-Go-Kit to family including (spacer,		RT		Asthma-to-Go-Kit		
pillow cover, and educational materials)						
Discharge Reconciliation Sheet reviewed with		RN/MD				
parent/patient						
BREATHE packet is put into BREATHE binder at						
discharge						
FOLLOW-UP CALLS MADE		10.11				
72 hours		Case Mang.				
3 months		Case Mang.				

<sup>\*</sup>If any step does not apply, please mark N/A

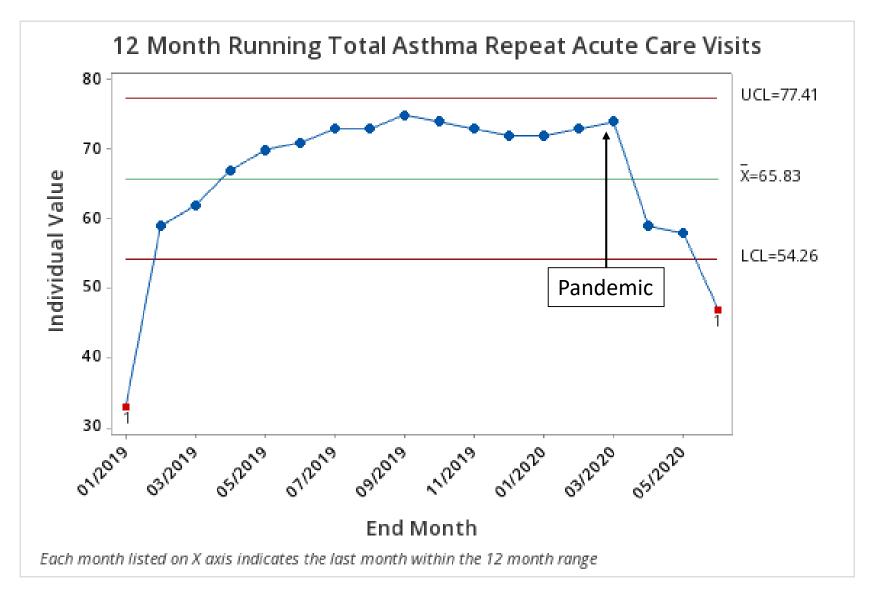
## Process Measure- Percent Eligible patients

### **AWESOME!!!!!!!**





### Outcome Measure



## Project 2- Outpatient Project BREATHE WNY

Started January 2020

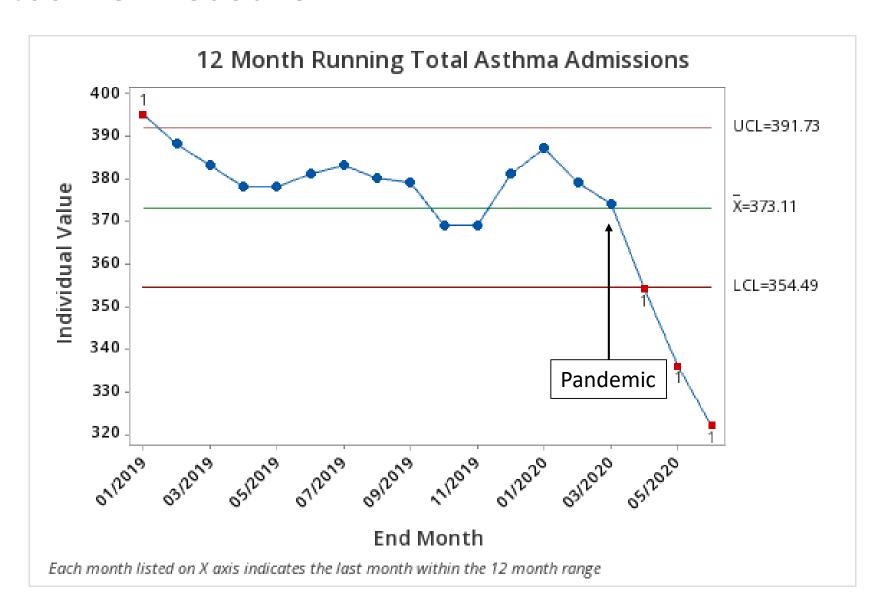
### **Expected Outcomes and Benefits**

• 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