POPULATION HEALTH: ASTHMA INITIATIVE IN A COVID WORLD

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Asthma in the general population

The percentage of the U.S. population with asthma increased from 3.1% in 1980 to 5.5% in 1996 and 7.3% in 2001 to 8.4% in 2010.
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.
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.

CDC and SPARCS data
Buffalo nationally ranked as one of most challenging places to live with Asthma!
**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

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?
Best Practice –
Diagnosis/Management

Inappropriate diagnosis of asthma/
lack of recognition of patients at risk

No standard practice to diagnosis

Symptoms not identified early enough/at all

Patients receiving mixed asthma treatments/
messages from different providers

Physicians afraid to prescribe ICS

Medication Cost $$$

Cost of Durable Goods

Controller meds get changed
frequently due to insurance
formulary, causes confusion

Poor home environment: Cigarette
smoke, pets etc.

Patients in rental homes: unresponsive
landlords

Lack of control of allergic triggers

Poor maternal health in utero

Outdoor environmental: highways,
factories, weather

Lack of person trigger/symptom
awareness

Lack of follow-up

Lack of frequent monitoring

PCP access – use ED for minor issues

Limited provider time to ask questions

Asthma ed is standard instead of directed
to knowledge base of p/cg

Access to medication – to $

High no show rates for outpt visits

Patient/Caregiver
Education

Non-Compliance

Medication confusion

No asthma plan at home or at
school

Lack of education/standard ed

Confusion: when to use spacer
and when not to use spacer

Perception of lung severity

Poor disease management ed

Poor understand of lung disease

Lack of family support

Transportation issues

Language barriers

Not using a spacer

Access to care in rural areas

Socio-economic issues in area

Non-compliance

Insurace
Struggles

Patient
Resources

Social/Financial
Determinants of Health

POOR ASTHMA OUTCOMES
**Primary Drivers**

- Lack of reliable transportation
- Physician appointment during regular business hours
- Distance to primary and specialty care physicians
- Cost of medications
- Spacer training

**Secondary Drivers**

- Medical management based on 2007 NAEPP guidelines
- Access to medications
- Adherence with medications
- Intensive Self-management
- Reduction of Home triggers
- Self-management tools:
  - Subordinate: surveillance
  - Structured: telemedicine, monitoring/messaging system
  - Collaborative: Decision support, education, motivational interviewing
  - Autonomous: assistive technologies, support groups, self-help

**Outcome Measures**:

1. Decreased the rate of hospitalizations
2. Decrease the rate of emergency room visits
3. Increase percentage of patients classified in severity and level of control
4. Increase percentage of patients with asthma prescribed an inhaled corticosteroid
5. Increase the percentage of patients with an asthma medication ratio >0.5 for children 0-4 in the city of Buffalo

**Projects**

- **Inpatient Project Breathe 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**.

- **Housing advocacy and remediation**.

- **Establish and reimburse for smoking cessation education/support groups**.
Organizations working to improve asthma outcomes in WNY

**PROVIDERS**
- UBMD Pediatrics-Hospitalists, Pulmonary Medicine, Allergy
- Niagara Street Clinic
- Delaware Pediatrics
- Kaleida school clinics
- Community Health Center of Buffalo
- Center for Child and Family Well Being
  - Oishei Children’s Hospital
- Schools

**MANAGED CARE ORGS**
- Independent Health
- Fidelis
- Amerigroup (BCBS)
- Your Care
- Univera

**COORDINATION**
- Oishei Healthy Kids
- NYS DOH Asthma Control Program
  - Asthma Coalition of Erie, Monroe, and Niagara Counties

**HOME CARE**
- Visiting Nurses Association

**Asthma Coalition of Erie, Monroe, and Niagara Counties**
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
Process Measure - Percent Eligible patients

AWESOME!!!!!!!
Outcome Measure

12 Month Running Total Asthma Repeat Acute Care Visits

- Individual Value
- UCL=77.41
- UCL=77.41
- LCL=54.26

Goal

Pandemic

Each month listed on X axis indicates the last month within the 12 month range
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

12 Month Running Total Asthma Admissions

- UCL = 391.73
- LCL = 354.49
- $\bar{X} = 373.11$

Each month listed on X axis indicates the last month within the 12 month range.
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