Improving Asthma Care within Vulnerable Populations

THE CHILDREN’S HOSPITAL OF PHILADELPHIA
CHOP CENTER FOR OUTCOMES RESEARCH
CHOP POLICY LAB

MENTORS: DR. STEPHANIE DOUPNIK
DR. CHEN KENYON

--TEAM AIR--
Roadmap

Asthma: Nationally and Locally

Study 1: Mental Health & Hospital Risks

Study 2: Adherence Feedback Intervention

Analysis of Vulnerable Population
What is Asthma?

Asthma Hospital Risk Adherence
Diagnosis and Treatment of Asthma

- Asthma is chronic condition
- Rescue medication and Controller medication

- The Cost of Chronic Illness
  - Asthma in perspective⁶
Asthma: Nationally and Locally

- Nationally
  - Pediatric Asthma Prevalence\(^1\)
  - Readmission Rates\(^2\)
  - Adherence\(^3\)

- Socially and Medically Vulnerable Population

- Locally: Philadelphia, PA
  - Prevalence\(^4\)
  - Readmission Rates
  - Adherence\(^5\)

- Socioeconomic Status
- Living Conditions
- Health Literacy

Asthma | Hospital Risk | Adherence
Aims of our Research

- Improving Mental Health Care
- Behavioral “Cue”
- Increasing Adherence to Medication
- Improving Asthma Care
Identifying Risk Factors for Poor Hospital Outcomes in Pediatric Asthma Patients with Depression or Anxiety
Mental Health & Readmission Risk

- Significance of Co-morbid Conditions
- Mental Health and Hospital Outcomes\textsuperscript{7-8}
- Health Care and Societal Costs

Children at CHOP w/ Clinically Significant Depression and/or Anxiety: 30%
Mental Health & Adherence

- Poor Asthma Control\(^9-11\)

- Mental Health is a "driver" for asthma adherence

Diagram:

- **Aim 1**
  - **Predictors**
    - Depression
    - Anxiety
  - **Mechanisms**
    - Coping
    - Self-efficacy in Disease Management
    - Care Coordination
    - Need

- **Hospital Outcomes**
  - Length of stay
  - 30-day ED visit or rehospitalization
  - Post-discharge medication adherence
  - 30-day post-discharge asthma symptoms

Flow:

- Asthma → Hospital Risk → Adherence
Study Design & Goals

- **Study Design**
  - 2 Surveys—Parent & Child
  - Follow Up
  - Doser

- **Goals:**
  - Coping with Hospital Stressors
  - Improved disease management

- **Eligibility criteria**
  - Age
  - Comorbidity
  - Doser

Future Applications
Automated Adherence Feedback for High Risk Children with Asthma
Asthma Controller Medication Adherence

- Behavioral “Cue”
- Significance
- Objective

“Asthma”  →  “Cue”  →  Reward  →  “Routine”  →  “Hospital Risk”  →  “Adherence”
Study Design & Goals

Asthma
Hospital Risk
Adherence
Demographic Data of Study Participants

Marital Status Breakdown
- Married
- Widowed
- Divorced
- Separated
- Never Married
- Living with a partner
- Prefer not to answer

Education Level Breakdown
- Some high school, but did not graduate
- High School graduate
- Some college or 2-year degree
- Four year college graduate

Income level and # of People
- Less than $15,000: 8
- $15,000 or more: 11
- $30,000 or more: 10
- $50,000 or more: 4
- Prefer not to answer/Don't know: 9

Type of Insurance and # of Users
- Medicaid: 35
- Private/Other: 5
- Prefer not to answer: 2

Asthma  Hospital Risk  Adherence
Successes and Complications

- Follow-up Calls
- Tech Literacy & Syncing
- Multiple Caregivers

Similar trends in Study 1

Working with a Vulnerable Population

Asthma Hospital Risk Adherence
Preliminary Data Analysis: Adherence Survey

- Probability of Adherence:
  - Non (18.7%)
  - Moderate (43.7%)
  - Early (24.8%)
  - Sustained (12.8%)

- Frequency distribution of adherence:
  - Days 0: 1, 1
  - Days 1: 2, 3
  - Days 2: 4, 4
  - Days 3: 6, 3
  - Days 4: 7, 3
  - Days 5: 8, 4

- Adherence intention in next 30 days (Percent):
  - Days 20: 1
  - Days 30: 6, 1
  - Days 60: 3, 3
  - Days 80: 5
  - Days 100: 22

- Days 0: Non (18.7%)
  - Days 10: Moderate (43.7%)
  - Days 20: Early (24.8%)
  - Days 30: Sustained (12.8%)
Future Steps and Considerations

- Use of ClinCards: Monetary Incentive
- Aiding in Parental Responsibility
- Other Considerations

*Personalized Asthma Adherence Management*
Summary: Care for Chronic Conditions

- **What I learned**
  - Primary Data Collection
  - Study & Survey Design
  - Use of Statistical Tools
  - Working with Patients

- **What our research informs**
  - Asthma Adherence
  - Broader Scope of Chronic Conditions
References