

Breathe in, Breathe out... Now what? Improved pediatric asthma outcomes through improved inhaler technique

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COMMUNITY HEALTH PROGRAMS-BERKSHIRE PEDIATRICS

SIGMA THETA TAU 45TH BIENNIAL CONVENTION

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DNP Scholarly Project

The University of Texas at Tyler

DNP Chair:

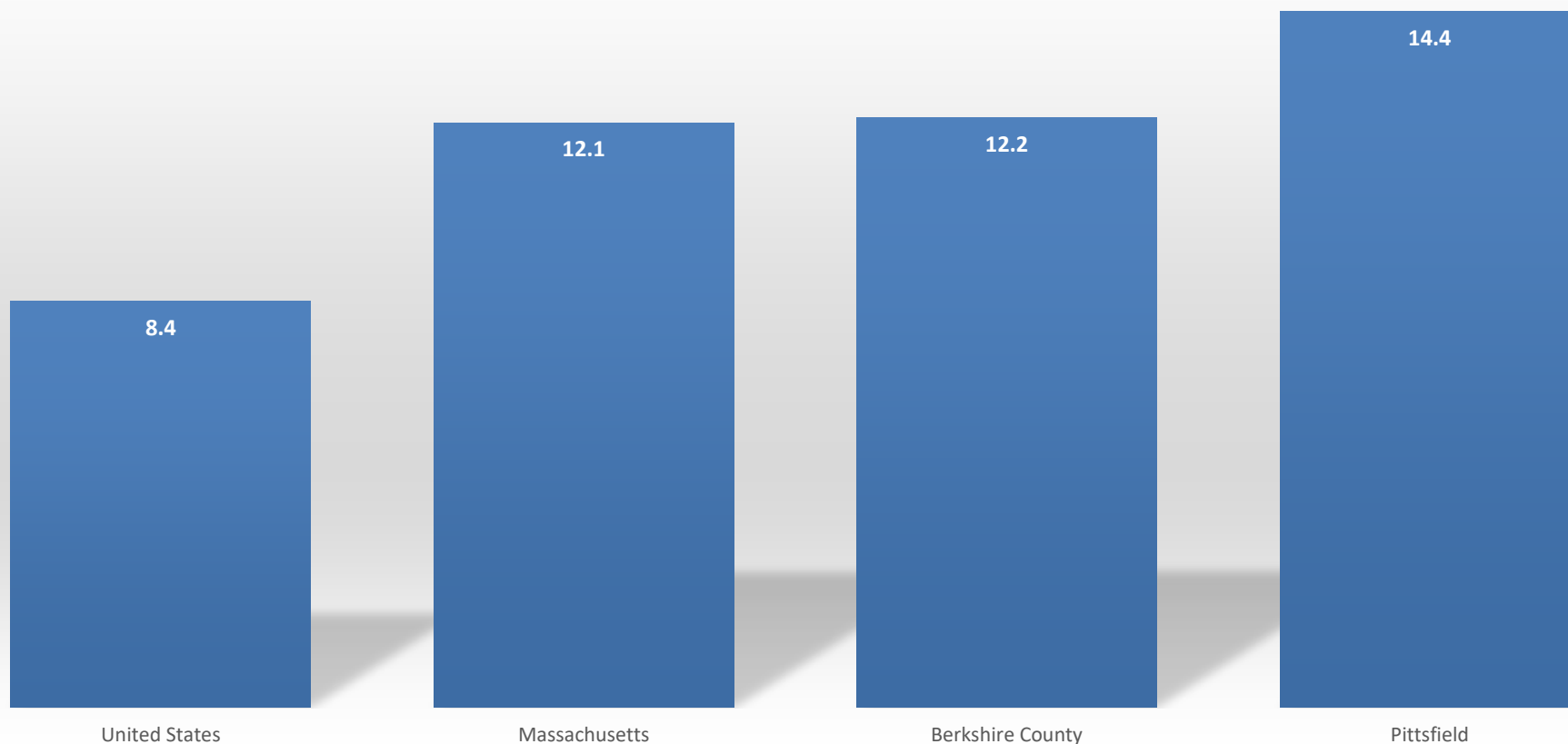
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Pediatric Asthma Prevalence, 2017^{9,10,24-26}

Asthma Prevalence, 2017 (%)



Asthma and Emergency Care in MA

- 10% of children in Massachusetts diagnosed with asthma
- 13,942 Asthma Related Emergency Room (ER) visits (\$6,041,000)
- Berkshire County 5th highest asthma-related ER visit rate in Massachusetts

Asthma and Missed School 1,9-10,24-26

In the US: 14.4 million days missed from school

1 asthma exacerbation: 4.1 missed school days

Uncontrolled asthma: exhibited learning difficulties and lower standardized testing scores

Pittsfield School District: 1 missed day school: \$72 lost tuition

Where we were..... Where we are

- In 1996, Major Janet L. Bourne (USAF) wrote her master's thesis in nursing on pediatric inhaler technique:
 - Only 40-45% of patients correctly utilized an inhaler.
- In 2016, at the onset of this DNP scholarly project on pediatric inhaler technique:
 - Only 40-45% of patients correctly utilized an inhaler.

How does CHP teach inhaler technique?

- CHP Berkshire Pediatrics did not perform hands on or meaningful verbal education of inhaler technique
- 60% of patients did not have correct technique
- Correct inhaler technique involves 8 steps

PICOT Question

In pediatric patients with asthma (P), how does hands on inhaler education (I) compared to verbal only education (C) affect inhaler technique (O1), follow up clinic visits for exacerbations (O2), ER utilization(O3), school attendance (O4), parent work attendance (O5) over a 3-month period-of-time (T)?



Literature Review

CINAHL, Cochrane, Pub
Med Search, Psych Info,
Academic Search
Complete, Scholar
Works, & Henderson
Library

Yield=1334

Keywords: pediatric
asthma, inhaler
technique,
nebulizers/vaporizers,

Emergency
room/department,
school

Limiters: English, age
5-18, human, peer
review

Discarded:

Not scope of project,
population: 1,229

Duplicates: 74

Total yield of 31
articles



Community Health Programs

Healthy People | Families | Communities

EBP Model & Theoretical Model

- Clinical Scholar EBP Model
- Functional Mastery of Health Ownership:
Maria Donnelley, PhD, BSN.
The University of Texas at Tyler



Synthesis and Recommendations

- 3 studies had improved inhaler technique with respiratory therapy and pharmacist involvement (inter/intra professional) with health provider team^{7,13,17}
- Average length of successful inhaler technique program: 3 months^{1,3-13,16-22,24,30}
- 17 studies with successful IT utilize IT checklist^{2,4,6-9,11-14,16-17,19,21-22,26,30}
- 6 studies with successful IT utilize asthma control test (ACT)^{2,4,6,10,19-20}
- 5 studies with successful IT utilize asthma action plan (AAP)^{2,4,6,13,17}



Program Guidelines

Asthma, age 5-18
Given Asthma Control Test (ACT); Asthma Quality of Life (AQOL); ER/urgent care, missed school days questionnaire

Provider:
Assess asthma
Asthma Action Plan (AAP)

Patient IT
Re-educate IT
Patient re-demonstrate IT
IT checklist

Follow up appointment 6 months; sooner for exacerbation



Community Health Programs

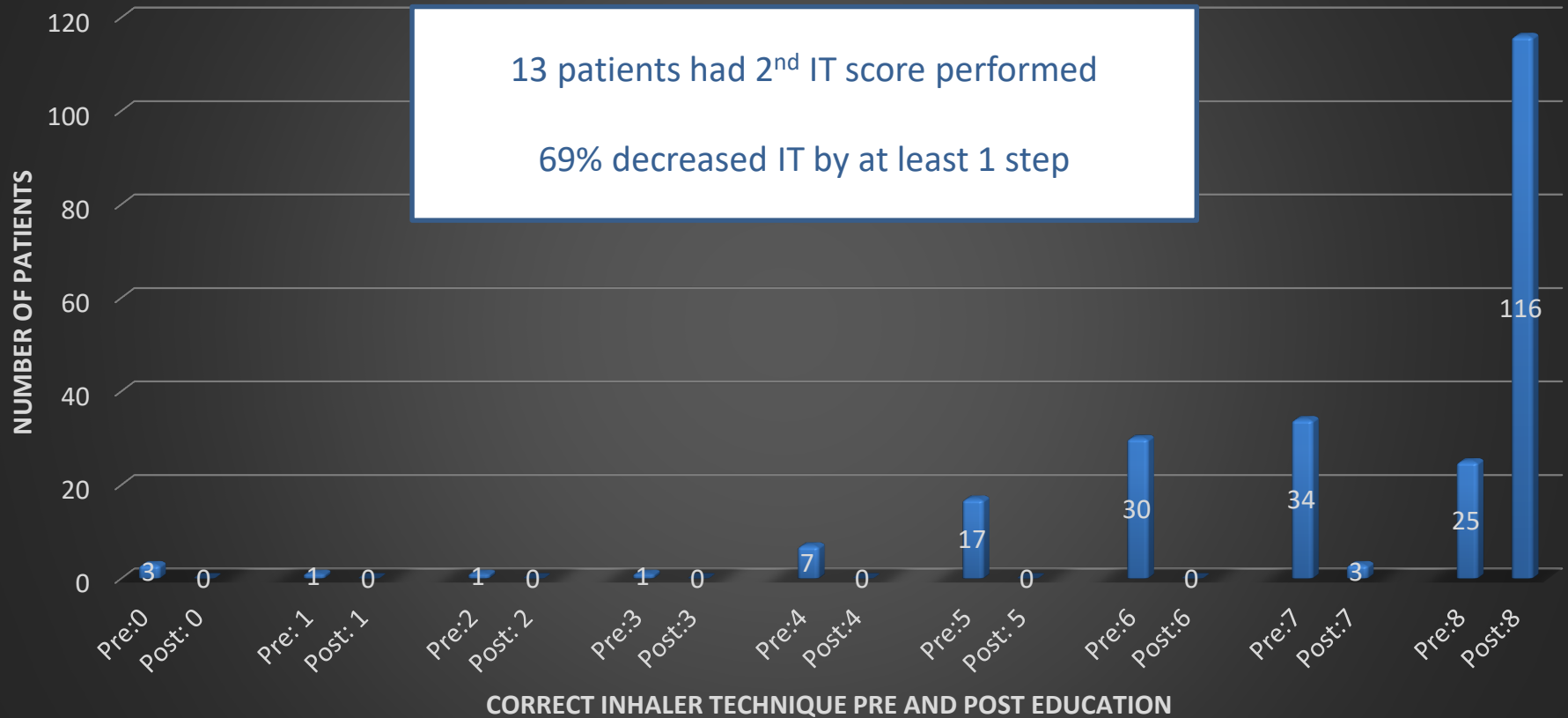
Healthy People | Families | Communities

Implementation: July-October 2018

- 518 patient visits took place during this time (patients with asthma)
- 25% of patients seen received educational programming

119 patients: 25 correct 1st attempt

Comparison of Correct IT Steps Pre vs Post Education



Asthma Control Test

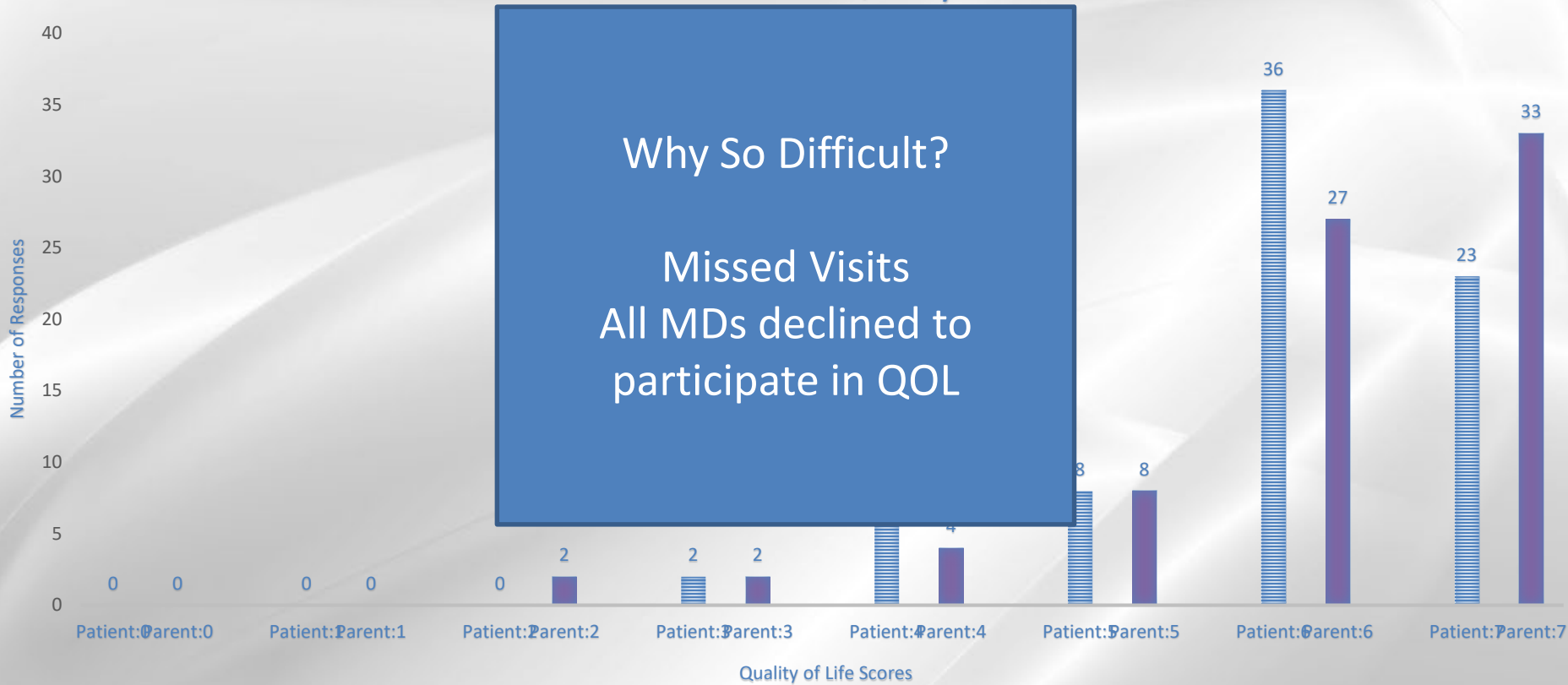
Visit	Mean Score	Range of Scores	Number of Patients
1	21	3-27	93
2	17	7-25	13

22% of patients uncontrolled asthma visit 1

23% of patients uncontrolled asthma visit 2

Quality of Life Screen

Patient and Parent Asthma Quality of Life Scores



School & Work Absences, ER/UC Visits

- Missed School Days: 0-2 reported
- Missed Days of Work: 0-2 reported
- ER/Urgent Care Visits: None
- ER/Urgent Care Noted in Chart: 36



Why So Difficult?

My methodology for data collection did not work:

“on the spot” parental recall

Number of missed chances

One urgent care in city does not send patient visit alert

Case Study

Patient I

- 3 visits total; received education each visit
- IT: improved by 1 step each visit
- ACT: 17, 19, 16
- QOL patient/parent 5 to 6
- ER: no visits

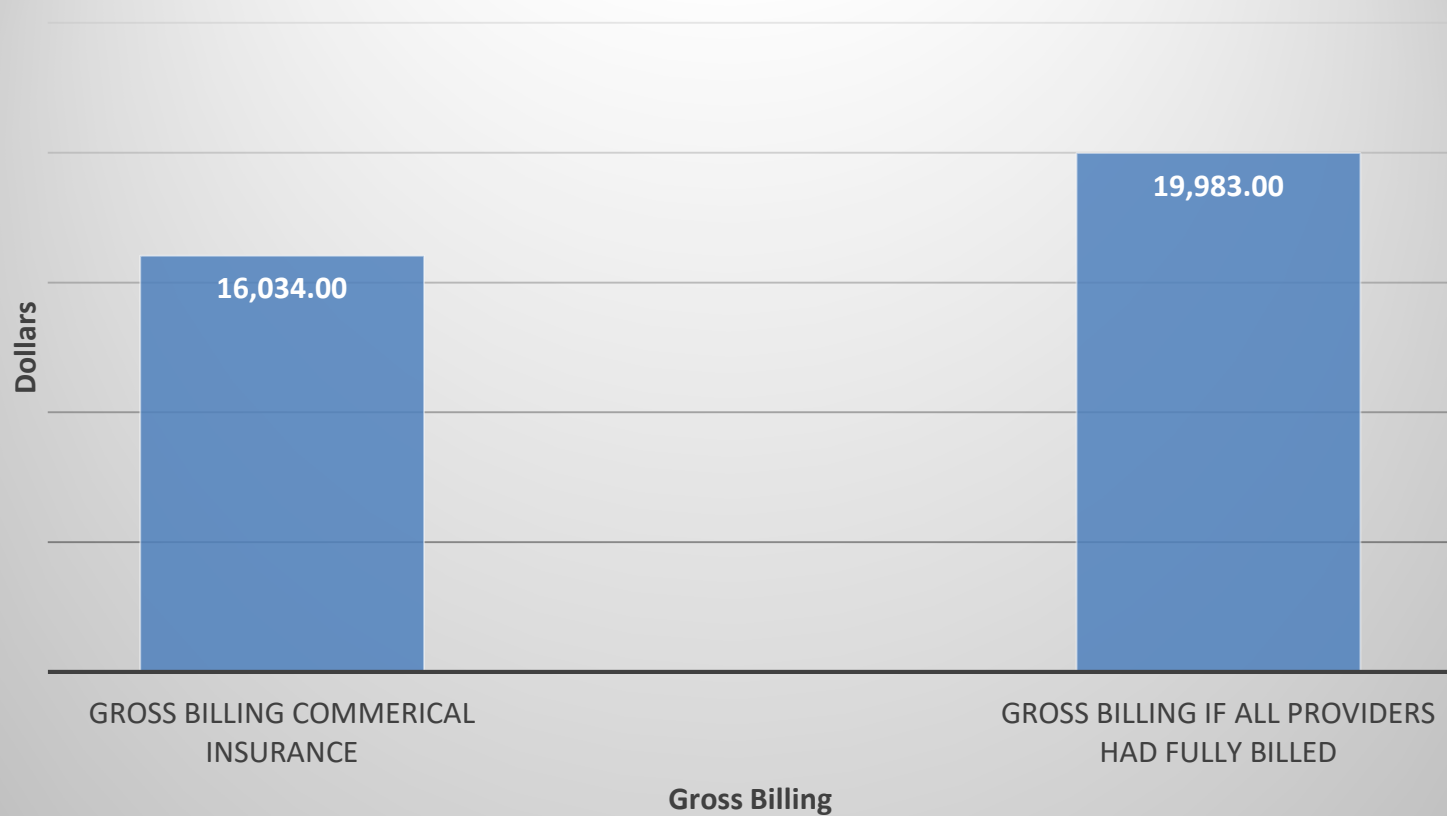
Patient M

- 8 visits total; received education twice. Otherwise missed by staff or declined by provider
- IT: decreased by 1 step
- ACT: 24 to 10
- QOL: 7 to 6; parent 7 to 4
- ER: 2 visits

PROJECT BUDGET

Activity	Amount	Total
Nursing (time w/RT, GNN, education, and patients)	\$30/hour	\$1,155.00
MA (time with GNN, education and patients)	\$15/hour	\$357.50
MD (education time, time with patients)	\$85/hour	\$1600.80
NP (education time, time with patients)	\$43/hour	\$1,132.50
GNN time with project	\$43/hour	\$5,160.00
Paper/office supplies		\$159.80
Spacers		\$500
Total:		\$10,065.60

Gross Billing for Project



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Barriers and Successes

Barriers

- Stakeholder Assessment
- Change of Employment during DNP Program (Clinic)
- Transfer from one DNP program to another
- Data retrieval/EMR
- TIME!!!

Successes

- QI initiative for office
- Awareness for baseline patient knowledge and asthma outcomes
- Patient and family statements for program
- Inhaler technique improvement!
- Patients and Spacers

Sustainability

- Address the most significant barrier:
Time
- See patients on regular/quarterly basis
- Discussion of both physical as well as socio/emotional needs of asthma care
- Continue inhaler technique training

To my PhD Colleagues:

- Current evidence calls for inhaler technique training at every patient visit. Time is a barrier to this form of care.
- How many visits does it take during a 1 year time to improve IT as well as the outcomes of this stated project?
- Sustainability: None of the evidence noted a sustainability plan
- FMHO model and ownership of care. If a child/teen can own their asthma, does this ownership translate to other areas in their life?

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