Impact of a pediatric-focused medical home learning collaborative on preventable emergency department visits by publicly-insured children in Massachusetts

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Pediatric PCMH Learning Collaborative

- MassHealth contracted with National Institute for Children's Health Quality (NICHQ) to implement learning collaborative to support medical home transformation at 13 child-serving practices with Medicaid/CHIP enrolled

Research Goal

- This study assesses whether an association exists between pediatric primary care practice participation in a learning collaborative (LC) designed to develop PCMH capacities and a reduction in preventable (i.e., primary care sensitive) ED utilization by children enrolled in those practices, particularly children with chronic health conditions.
- We are *not* testing for an association between measures of “medical homeness” and preventable ED utilization.

Data

- MassHealth (Medicaid) claims, encounter, and enrollment data, extracted from MMIS data warehouse
- Two six-month outcome measurement periods:
  - Baseline: January-June 2011 (pre-LC)

Outcome Measure – Preventable ED Visits

- ED visits resulting in IP admissions excluded
- Remaining visits analyzed using NYU ED algorithm

Analytic Methods

- *Outcome:* Binary variable, had/did not have preventable ED visit in baseline/follow-up period
- *Question 1:* Repeat cross section analysis (fixed-effects logistic regression model)

  Sample - Children with CE in baseline and/or follow-up

- *Question 2:* Longitudinal regression model (general linear model with binomial distribution and logit link)

  Subsample - Children with CE in same practice type for full study period (same individuals in baseline and follow-up)

Results (Practice Characteristics)

	INTERVENTION		COMPARISON	
	#	%		%
Total	13		12	
Practice Size				
Enrollment: 0-500	3	23.10%	6	50.00%
Enrollment: 501-1000	4	30.80%	2	16.70%
Enrollment: 1001+	680%	#		

Sample Characteristics (w/ PMCA)

Characteristic	Children in Intervention Practices	Children in Comparison Practices
Repeat cross-section (Baseline)	n= 15,336	n= 7,113
Mean age (sd)	10.6 (5.1)	10.7 (5.1)
Percent with a chronic condition		

Results (Question 1)

- Repeat cross section, unadjusted percentages

Baseline (1H 2011)	Intervention	Comparison
Has ED, appropriate	5.2%	5.0%
Has preventable ED	13.5%	9.9%
No ED visit	81.2%	85.2%
Cohort size	15,336	7,113
Follow-up (2H 2013)		
Has ED, appropriate	5.7%	5.0%
Has preventable ED	11.9%	8.5%
No ED visit	82.3%	86.5%
Cohort size	18,595	8,866

Cross-Sectional Analysis Results (Question 1)

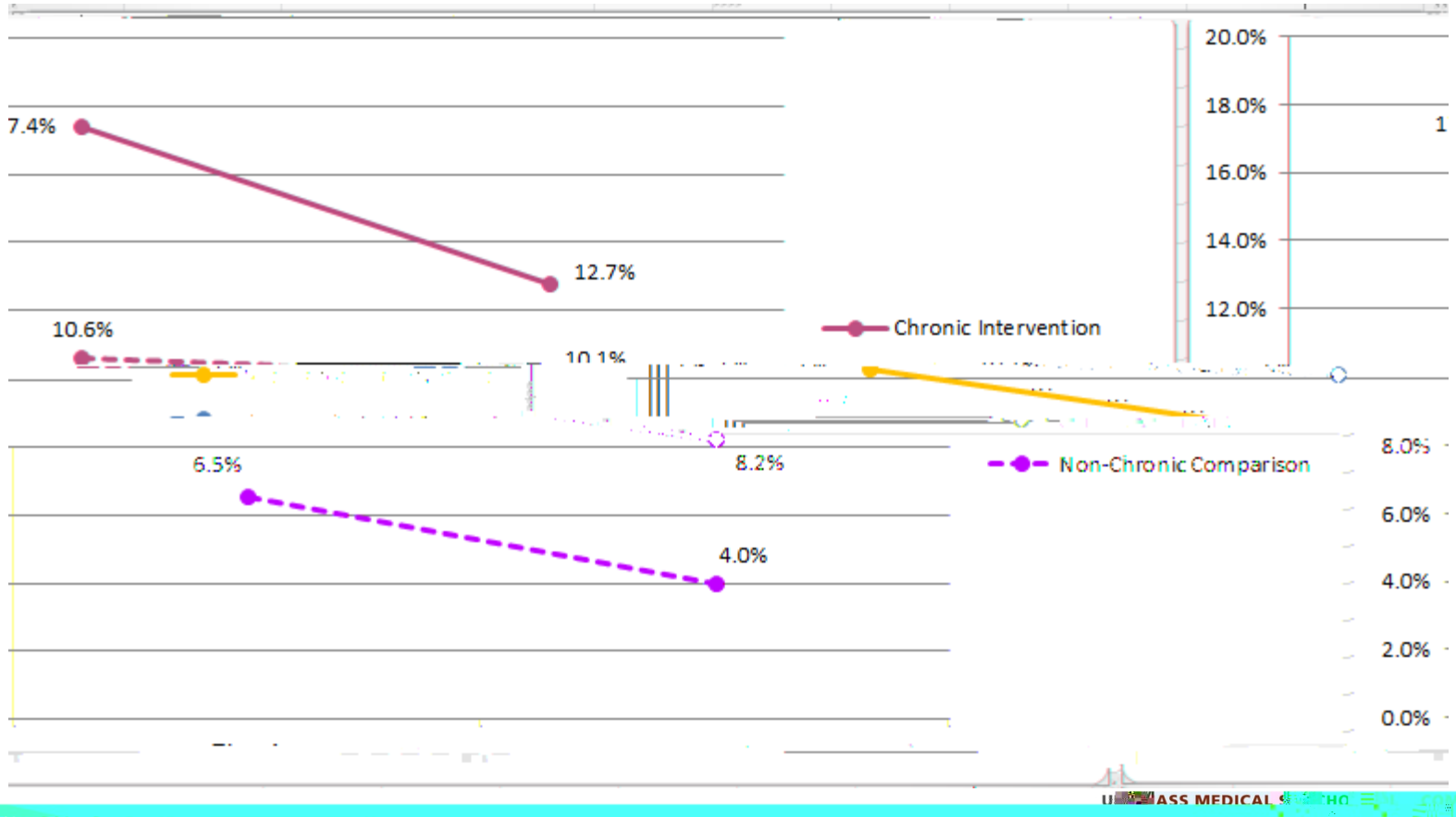
Results (Question 2)

- Longitudinal analysis, unadjusted percentages

Baseline (1H 2011)	Intervention	Comparison
Has ED, appropriate	4.6%	4..c29<4 409.02 l S Q q 1 0 0 1 429.3 197.52 c

Results (Question 2) – By PMCA Category (Chronic Disease vs. No Chronic Disease)

- Longitudinal analysis, unadjusted percentages



Longitudinal Analysis Results (Question 2)

- No difference between intervention and comparison groups in preventable ED decrease for children without chronic conditions: ($b_{time*intervention}$ = 0.22, p = 0.23)
- However, effect significantly differed for children with versus without chronic conditions: ($b_{time*intervention*health}$ = -0.52, p = 0.02)
- Test of linear combination of coefficients showed that for children with CC, ED visits decreased more in intervention than comparison practices ($b_{time*intervention}$ = -0.30, p = 0.03)

Key Conclusions

- During the LC, preventable ED use declined in both intervention and comparison groups, and among children with and without chronic conditions.
- In the repeat cross-section analysis, we see a marginal association between LC participation and greater relative reduction in preventable ED use for children with chronic conditions.
- The longitudinal analysis shows stronger effects, specifically for children with chronic conditions who maintained continuous PCP enrollment with LC participant practices.
- While all children can benefit from pediatric medical home, those with chronic conditions/special needs could receive the greatest benefit.

Questions?

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Appendix – SAS code for logistic regression model

```
proc logistic data=ed.model_final descending;
  class psize pgeo / param=ref ;
  model edvisits = age psize pgeo ptype treat intake
                   chronic treat * intake treat * chronic intake *
chronic
                   treat * intake * chronic psite_dm1 - psite_dm24/
expb;
run;
```

Appendix – SAS code for general linear model

```
proc genmod data=ed.model_ce6_final descending;
  class id_medicaid psize pgeo / param=ref ;
  model edvisits = age psize pgeo ptype treat intake
                   chronic treat * intake treat * chronic intake * chronic
                   treat * intake * chronic psite_dm1 -
psite_dm24/error=bin link=logit covb type3;
  repeated subject = id_medicaid / type = exch maxiter = 10000 -
```