

Behavioral Health Integration in Patient-Centered Medical Homes: Effects on Emergency Department Utilization and Total Cost of Care



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Introduction

US healthcare spending is exorbitant, at 3.5 trillion in 2017, or \$10,739 per person per year¹. However, despite high levels of spending, life expectancy is two years below the OECD average², and the US fails to measure up to peer countries in health outcome measures³.

In order to move toward the triple aim of lower costs, improved outcomes, and improved patient experience, the patient-centered medical home (PCMH) movement was created. The core principles of the PCMH are to provide team-based, patient-centered care, improve care coordination and access to care, and support quality improvement and patient safety⁴.

Recently, variations on the PCMH model have been expanded to include screening and on-site treatment for behavioral health conditions. An estimated one out of every three individuals in the US suffered from a behavioral health condition in the last year⁵, however these conditions often go undiagnosed and untreated⁶. The integration of behavioral health into primary care has been associated with better patient and clinician satisfaction⁷ and improved behavioral health outcomes^{8,9}. However the effects of IBH on healthcare utilization are mixed^{10,11,12}, and there is a lack of studies looking at implementation longitudinally. **The purpose of this study was to determine the effects of a two-year facilitated IBH intervention in PCMHs on the rate of emergency department visits and total cost of care.**

Methods

Cohort Selection

- 12 PCMH sites selected through CTC-RI
- Cohort 1: January 2016-January 2018
- Cohort 2: November 2016-November 2018

Implementation

- Universal screening for depression (PHQ-9), anxiety (GAD-7), and substance use (CAGE-AID)
- Warm handoff to IBH provider for short-term treatment
- Registry creation and PDSA cycles for population management and quality improvement
- Sites provided initial financial support and performance-based payments by CTC-RI

Data Collection

Data Analysis

- Claims data collected through Rhode Island All-Payer Claims Database—includes Medicare, Medicaid, Private Insurance
- Patient and provider attribution and quality assurance performed by Onpoint Health Data
- Compared rate of ED visits (EDV) and Total Cost of Care (TCOC) patients of physicians at PCMH sites without IBH to PCMH sites with IBH from 2016-2018

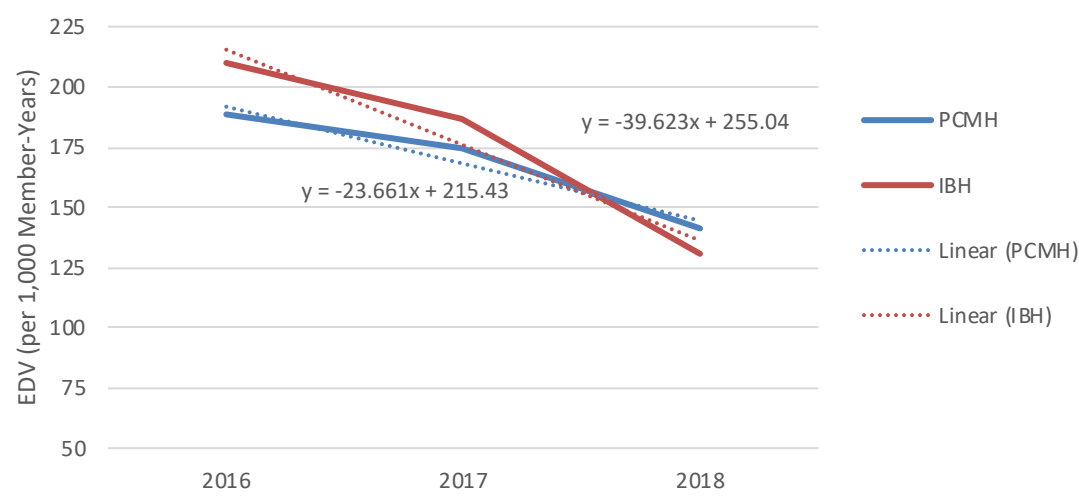
Results

Table 1: Demographic Data

	PCMH Control (2016)	IBH (2016)	PCMH Control (2017)	IBH (2017)	PCMH Control (2018)	IBH (2018)
Mean Number Patients per Practice	2995.0 (SD = 2381.0)	4265.8 (SD = 2946.6)	2905.0 (SD = 2279.2)	5048.9 (SD = 3168.5)	2664.9 (SD = 2050.7)	4257.4 (SD = 2949.1)
Mean Number Providers per Practice	4.2 (SD = 3.9)	5.5 (SD = 2.7)	4.3 (SD = 3.8)	5.6 (SD = 2.9)	4.1 (SD = 3.7)	5.5 (SD = 2.6)
Mean Age Patients (Years)	48.1 (SD = 8.9)	37.4 (SD = 11.2)	48.9 (SD = 9.1)	36.5 (SD = 11.3)	49.6 (SD = 9.2)	37.6 (SD = 11.3)
% Female	57.2%	59.6%	56.8%	58.8%	56.9%	59.7%
Mean Age Female	49 (SD = 9.0)	38.6 (SD = 10.6)	49.8 (SD = 9.1)	37.6 (SD = 10.6)	50.4 (SD = 9.3)	38.7 (SD = 10.7)
% Male	42.8%	40.4%	43.2%	41.2%	43.1%	40.3%
Mean Age Male	46.9 (SD = 9.3)	35.6 (SD = 11.9)	47.8 (SD = 9.1)	35.2 (SD = 12.7)	48.5 (SD = 9.6)	35.7 (SD = 12.0)
% Commercial Insurance	42.0%	28.4%	38.4%	25.8%	38.2%	27.9%
% Medicaid	30.0%	54.5%	31.6%	57.7%	30.9%	54.6%
% Medicare	27.9%	17.2%	30.0%	16.5%	30.9%	17.5%
Number of Practices	75	11				

Demographic data for PCMH control and IBH intervention group, divided at the practice level. Patients dually eligible for Medicare and Medicaid were counted as Medicare members.

Figure 1: Emergency Department Visit (EDV) Rate Per 1,000 Member-Years for PCMH Control and IBH

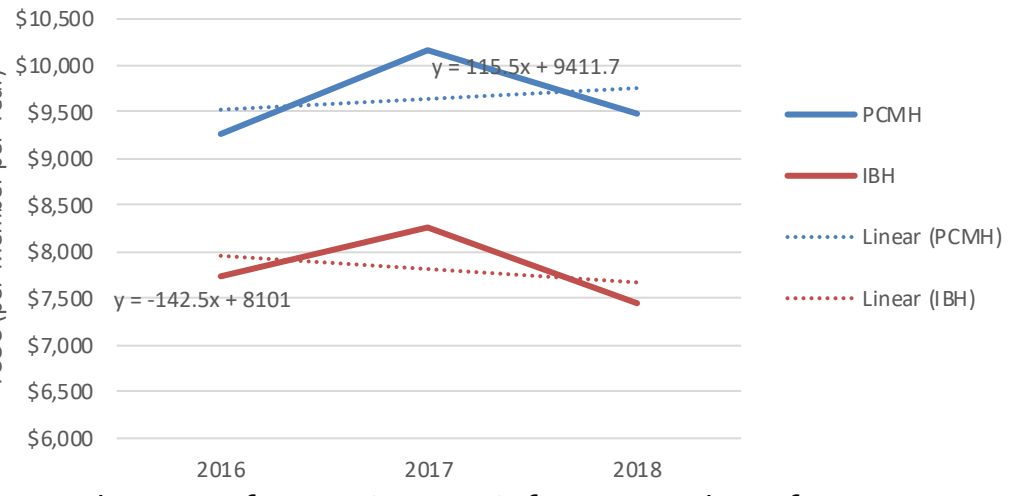


Average rate of Emergency Department Visits (EDV) for providers from PCMH Control Practices vs. IBH cohort practices, rate excludes maternity claims, includes patients ages 18+ only.

Table 2: Rates of EDV and TCOC for PCMH Control and IBH by Year

	2016	2017	2018
EDV- PCMH	188.6 (SD=100.6)	174.5 (SD = 81.5)	141.2 (SD = 82.2)
EDV- IBH	209.9 (SD = 115.7)	186.8 (SD = 88.2)	130.7 (SD = 68.1)
TCOC- PCMH	\$9266 (SD = 4051)	\$10165 (SD = 5045)	\$9497 (SD = 5132)
TCOC- IBH	\$7735 (SD = 2326)	\$8263 (SD = 2657)	\$7450 (SD = 2690)

Figure 2: Total Cost of Care (TCOC) Per-Member Per-Year (PMPY) for PCMH Control and IBH



Total cost of care (TCOC) for providers from PCMH control practices vs. IBH cohort practices, includes all covered professional, pharmacy, and hospital and ancillary care, including care related to behavioral health, excludes maternity, acupuncture, vision, and dental services, includes patients ages 18+ only.

Average rate of Emergency Department Visits (EDV) and Total Cost of Care (TCOC) for providers from PCMH control and IBH practices, means and standard deviations at provider level for attributed patients. EDV expressed per 1,000 member-years, TCOC expressed as per-member-per-year.

Limitations

- Lack of 100% participation in APCD due to entities that self-insure
- IBH cohorts 1 and 2 had different start and end dates
- These practice changes are taking place within the context of other payment reforms and initiatives
- The patients in IBH cohorts were on average younger, and utilization data is not risk-adjusted to account for this

Conclusions

- Variation in the patient demographics of PCMH and IBH practice sites: Average younger patient population and higher percentage of Medicaid patients at the IBH practice sites
- Steeper rate of decline for providers from IBH practices than for providers at PCMH control sites—IBH intervention may have led to lower ED utilization
- Total cost of care per patient increased during the study period for providers at PCMH sites, while it decreased for providers at IBH sites—IBH intervention may have led to a decrease in the need for costly healthcare services such as ED and inpatient care

Future Directions

- Perform Difference-in-Difference analysis to assess significance of results
- Investigate proportion of effect due to behavioral health utilization vs. other medical utilization
- Analyze outcomes for IBH in pediatric/adolescent population after program rollout, for example changes in patient satisfaction, healthcare utilization, or other quality measures

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