Patient-centered medical home

Intervention in brief

High and rising risk:	The **patient-centered medical home (PCMH)** is a primary care delivery model that emphasizes care coordination, enhanced access, and patient engagement by using team-based care and standardized workflows. The goal is to better manage patients to prevent escalation.
Strength of evidence	 Medium Evidence is listed as medium because program success is variable. The impact of the PCMH model grows over time, but much of the literature focuses on programs in their first few years.

Impact	• **Decreased cost:**
	  • Return on investment: 13:1
	  • Decreased total cost of care:
	  • Insignificant to $13.50, 4.2-7.9% per member per month
	  • $115 per year over four years; $482.40 per person after two years
	  • $20.50 or 4.8% per service user per quarter
	  • 4.2% (excluding pharmacy costs) for patients with 2+ comorbidities, $285 for patients with active depression and $338 for patients with diabetes after two years
	  • Decreased inpatient spend per member per month ($34.0 or 19%), per person per quarter (15.9%), and per person after two years ($217.8)
	  • Decreased outpatient hospital ($154.10) and professional services ($38.40) costs after two years
	  • Insignificant increase to $38.40 decreased pharmacy costs after two years
	  • Insignificant change in mental health, lab services, emergency, and primary care costs
	• **Decreased utilization:**
	  • Decreased hospitalization: Insignificant to 6% reduction, 1.7 fewer hospitalizations per 1,000 patients per month and 8.8 fewer per 1,000 patients per year, incident rate ratio (IRR) of 0.89 per 100 person-years
	  • Decreased hospital length of stay: 49.6 days per 1,000 patients
	  • Decreased ED visits: Insignificant to 29% reduction, 4.7 fewer ED visits per 1,000 patients per month, 0.77x the rate of ED visits per 100 person-years
	  • Decreased ambulatory-sensitive ED visits: Insignificant impact to IRR 0.77 per 100 person-years; 3.2 fewer visits per 1,000 patients per month
	  • Decreased specialty care visits: Insignificant to 1.5%, 17.3 per 1,000 patients per month
	  • Decreased use of mental health services: 13.7%
	  • Decreased use of standard imaging (42.8) and advanced imaging (14.7) images per 1,000 patients
	  • Increased use of lab services (3.2%) and emergency care (5.0%)
	  • Insignificant increase in pharmacy and radiology use
	• **Improved quality, clinical outcomes:** Insignificant to 16% increased preventive screening tests; 5.6x higher odds of patients having a documented self-care plan; 26% higher odds of patient adherence to a five-part diabetes bundle; 13% lower odds of having controlled hypertension
	• **Increased access:** Insignificant to 77.5 more visits per 1,000 patients per month; 4.3% increased primary care use; 9% higher rate of patients with an annual well visit with a PCP; 5.0% increased rate of adolescent well visits; decreased PCP encounters (IRR 0.93 per 100 person-years)
	• **Improved stakeholder satisfaction:** 49% lower emotional exhaustion scores among primary care providers; 54% lower depersonalization scores

Source: Population Health Advisor research and analysis.

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How to succeed

To build an effective medical home:
- Target the model to complex patients with one or more chronic conditions most likely to benefit from care coordination support services
- Deploy a multidisciplinary team by including non-traditional team members like care managers, pharmacists, community health workers, and behavioral health specialists
- Plan for outcomes to improve over time rather than defining success based on outcomes after initial years: providers and patients need time to learn how to leverage these services

To learn more about taking an evidence-based approach, check out our Five Steps to Build the Advanced Medical Home brief here and our Primary Care Roles 101 cheat sheets here.

Demonstrated impact

Literature review summary

Title: Synthesis of Research on Patient-Centered Medical Homes Brings Systematic Differences into Relief
Publication: Health Affairs
Date: 2017
Type: Meta-analysis
Study population: Patients attending PCMH practices involved in any of 11 primary care transformation initiatives analyzed in 17 studies. Studies didn't include clinics focused on special populations like children or Medicaid patients.
Major findings: Significantly heterogeneous studies analyzed PCMH pilots for the first 24 months, measuring:
- Insignificant change in overall cost, but reduced total cost of care (excluding pharmacy) for patients with two or more major medical comorbidities (4.2%)
- Insignificant change in primary care, emergency department, and inpatient utilization, including ambulatory-sensitive inpatient utilization
- Decreased specialty care utilization (1.5%)
- Insignificant impact on breast and colorectal cancer screening but increased cervical cancer screening (1.2%)

Source: Full article here.

Title: Association of Integrated Team-Based Care with Health Care Quality, Utilization, and Cost
Publication: JAMA
Date: 2016
Type: Retrospective analysis
Study population: 113,452 adult patients who received primary care at 113 unique Intermountain Healthcare Medical Group primary care practices from 2003 through 2005 and had yearly encounters with Intermountain through 2013. Data analyzed was from January 2010 through December 2013.
Major findings: Compared to traditional clinics, the medical home model resulted in:
- Decreased overall costs per person over four years ($115) and decreased payments for patients with active depression ($285) and diabetes ($338)
- Decreased ED visits (IRR 0.77), hospital admissions (IRR 0.89), ambulatory-sensitive ED visits (IRR 0.77); no significant impact on specialty care visits
- *Quality outcomes:*
    - Increased screening for depression among patients with active depression (91% higher odds of screening)
    - Improved adherence to a five-part diabetes bundle (26% higher odds of adherence)
    - Increased documentation of self-care plans (5.6x higher odds of having a care plan)
    - Decreased hypertension control (13% lower odds of having hypertension controlled)
- Increased proportion of patients with an annual wellness visit with a PCP (9% higher odds)

Source: Full article here.

Source: Population Health Advisor research and analysis.

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Title: Vermont's Community-Oriented All-Payer Medical Home Model Reduces Expenditures and Utilization while Delivering High-Quality Care
Publication: Population Health Management
Date: 2016
Type: Retrospective analysis
Study population: Vermont residents above age one and covered by commercial, Medicaid, or Medicare insurance who attended any of 123 primary care clinics with NCQA[1] PCMH recognition participating in the Blueprint for Vermont program or attended a non-PCMH primary care clinic
Major findings: After two years, the medical home model resulted in:

- Decreased overall per-person costs ($482.20), driven by reductions in per-person inpatient ($217.80), outpatient hospital ($154.10), professional services ($38.40) and pharmacy ($38.40) costs
- Decreased inpatient discharges (8.8 per 1,000 patients), length of stay (49.6 days per 1,000 patients), and use of standard and advanced imaging (42.8 and 14.7 images per 1,000 patients, respectively)
- Increased screening and testing rates:
    - Nephropathy screening for diabetic patients (6.8%)
    - LDL testing for diabetic patients (5.6%)
    - Diabetes eye exams for diabetic patients (4.3%)
    - HbA1c testing for diabetic patients (3.5%)
    - Cervical cancer screening (2.7%)
    - Breast cancer screening (1.9%)
- Increased rates of adolescent well visits (5.0%)

Source: Full article here.

Title: Implementation of Oregon's PCPCH Program: Exemplary Practice and Program Findings
Publication: Oregon Health Authority Report
Date: 2016
Type: Retrospective analysis
Study population: Patients across 20 primary care clinics participating in Oregon's Patient-Centered Primary Care Program. Evaluated clinics were both rural and urban, ranged in size from small (0-2 FTE PCPs) to large (10 or more FTE PCPs), and were independently owned, part of an alliance, or owned by a health system.
Major findings: After three years, the medical home model resulted in an ROI of 13:1 through:

- Decreased total costs per person per month ($13.50, 4.2%):
    - Decreased inpatient (15.9%) and specialty care (3.6%) costs
    - Increased pharmacy costs (5.1%)
- Decreased total costs per service user per quarter ($20.50, 4.8%):
    - Decreased radiology (3.2%) and emergency department care (8.6%) costs
- Decreased use of mental health care services (13.7%)
- Increased use of lab services (3.2%) and emergency care (5.0%)
- Increased primary care utilization (4.3%)

Source: Full article here.

1) National Committee for Quality Assurance.

Source: Population Health Advisor research and analysis.

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Title: Effects of a Medical Home and Shared Savings Intervention on Quality and Utilization of Care
Publication: JAMA – Internal Medicine
Date: 2015
Type: Retrospective analysis
Study population: 27 NCQA-recognized primary care practices participating in the northeast Pennsylvania Chronic Care Initiative compared to 29 non-participating primary care practices
Major findings: After three years, the medical home model resulted in:

- Decreased utilization per 1,000 patients per month:
    - All-cause hospitalization (1.7)
    - All-cause ED visits (4.7)
    - Ambulatory-sensitive ED visits (3.2)
    - Specialty visits (17.3)
    - Insignificant reduction in ambulatory care-sensitive hospitalizations
- Increased screening and testing rates:
    - Nephropathy screening (15.5%)
    - Eye exams (12.0%)
    - LDL testing (8.5%)
    - HbA1c testing (8.3%)
    - Breast cancer screening (5.6%)
    - Insignificant impact on colorectal cancer screening
- Increased rates of primary care visits (77.5 per 1,000 patients per month)

Source: Full article here.

Title: Reduced Acute Inpatient Care was Largest Savings Component of Geisinger Health System's Patient-Centered Medical Home
Publication: Health Affairs
Date: 2015
Type: Retrospective analysis
Study population: Patients ages 65 and older (average age of 76 years, HCC[1] score of 1.16) who were members of Geisinger Health Plan's Medicare Advantage plan and attended Geisinger primary care sites between January 2006 and June 2013
Major findings: The medical home model reduced total cost per member per month by $53 (7.9%) and reduced inpatient costs per member per month by $34 (19%). Longer exposure to the medical home resulted in greater magnitude of cost savings.
Source: Full article here.

Title: The Group Health Medical Home at Year Two: Cost Savings, Higher Patient Satisfaction, and Less Burnout for Providers
Publication: Health Affairs
Date: 2010
Type: Retrospective analysis
Study population: 7,018 adults (average age of 53 years, 57% female) enrolled at a Group Health prototype PCMH clinic in Puget Sound, Washington from 2006-2008
Major findings: The medical home model reduced total cost per member per month by $10.30, driven by reduced ED visits (29%) and hospitalizations (6%) after 21 months. Physicians operating under a medical home model reported lower levels of emotional exhaustion (by 49%) and depersonalization (by 54%).
Source: Full article here.

1) Hierarchical Condition Category.

Source: Population Health Advisor research and analysis.

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Appendix

- Sinaiko AD, et al., "Synthesis of Research on Patient-Centered Medical Homes Brings Systematic Differences into Relief," *Health Affairs,* 36, no. 3 (2017): 500–508, https://www.healthaffairs.org/doi/abs/10.1377/hlthaff.2016.1235.
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- Jones C, et al., "Vermont's Community-Oriented All-Payer Medical Home Model Reduces Expenditures and Utilization While Delivering High-Quality Care," *Population Health Management.,* 19, no. 3 (2016): 196-205, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4913508/.
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Source: Population Health Advisor research and analysis.