

An Evaluation of Montana's Patient-Centered Medical Home (PCMH) Program

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I. Summary

Improving the quality of primary care is an important goal in U.S. health policy. In recent years, the patient-centered medical home (PCMH) concept emerged as a promising means to achieve this goal. Medical homes rely on multidisciplinary care teams, care managers, patient registries, electronic medical records, and other tools to expand access, promote prevention, and coordinate patient care. Proponents argue that PCMHs will improve patient experience, improve population health, and lower healthcare costs.

While some nascent PCMH initiatives existed in Montana starting in 2009, the passage of Senate Bill 84 in 2013 created a larger statewide program. Senate Bill 84 encouraged payers to participate in PCMH by providing a “safe-harbor” from anti-trust restrictions. It assigned rule-making authority for PCMH to the state insurance commissioner (CSI), and it created the PCMH Stakeholder Council to help create standards, qualify providers and insurers, and promote the program. Senate Bill 84 requires CSI consult with all interested parties in association with carrying out the previously mentioned duties.

In this report, we evaluate Montana’s PCMH program using data from the first two years of implementation. As will become clear, the available data are unable to support a conclusion about the effectiveness of Montana’s PCMH program. While several problems hinder our analysis, the most significant problem is that we lack sufficient information to construct a reasonable picture of what would have happened in the absence of PCMH (a counterfactual). Without a reasonable counterfactual, we cannot determine how PCMH outcomes differ from what would have occurred in the absence of the PCMH program.

Another significant limitation is time. Two years may not provide sufficient time for PCMH programs to generate meaningful effects. The literature on PCMH tends to find larger effects the longer the program has been in place.

Even though the available data is not sufficient to support meaningful conclusions about Montana’s PCMH program, the existing literature on PCMH programs provides strong evidence that PCMH programs *can* generate their intended effects. While not every PCMH evaluation finds clear evidence that PCMH programs will improve patient experience, improve population health, and/or lower healthcare costs, many do. For instance recent studies have found:

- An evaluation of the Colorado Multi- Patient-Centered Medical Home Pilot documented a 9.3% reduction in emergency department visits.¹
- The Minnesota Health Care Homes initiative demonstrated modest improvements in vascular care, diabetes care, and asthma care.²

¹ Rosenthal, M. B., Alidina, S., Friedberg, M. W., Singer, S. J., Eastman, D., Li, Z., & Schneider, E. C. (2015a). A difference-in-difference analysis of changes in quality, utilization and cost following the Colorado multi- patient-centered medical home pilot. *Journal of general internal medicine*, 1-8.

² Wholey, D. R., Finch, M., Shippee, N.D., White, K.M., Christianson, J., Kreiger, R., Wagner, B., Grude, L. (2015) Evaluation of the State of Minnesota’s Health Care Homes Initiative: Evaluation Report for the Years 2010-2014. <http://www.health.umn.edu/sites/default/files/UM%202015%20HCH%20Evaluation%20Final%2007Feb2016.pdf>

- Geisinger Health System patient-centered medical home, which generated a 7.9% total cost savings over a 90-month study period.³

II. Background and History

The one sentence summary of healthcare in the United States has long been, “The U.S. spends more than other places on healthcare, but does not have better health outcomes.” Estimates suggest that as much as 30 percent of U.S. healthcare spending is inefficient, representing overuse, underuse, or misuse of healthcare resources.⁴

To improve the efficiency and quality of healthcare, many argue that we need to improve primary care. Only 4-7% of U.S. healthcare spending goes toward primary care, and evidence suggests that places with better primary care have better outcomes.⁵ For instance, in the U.S., places with more primary care physicians per capita have lower hospital admissions rates, fewer avoidable emergency room visits, and more favorable health outcomes.⁶

The patient-centered medical home (PCMH) is a core component of efforts to improve primary care. Medical homes rely on multidisciplinary care teams, care managers, patient registries, electronic medical records, and other tools to expand access, promote prevention, and coordinate patient care. Proponents argue that PCMHs will improve patient experience, improve population health, and lower healthcare costs (the Triple Aim).

It took a long time for the ideas that underlie PCMH to coalesce into a single concept and begin to permeate healthcare. The earliest concepts for PCMH were developed in the 1960’s including the “medical home” supported by the American Academy of Pediatrics (AAP) to centralize medical information of children with special healthcare needs and “primary care” proposed by the American Medical Association (AMA) to support a primary physician for every individual.⁷

The ideas for PCMH continued to percolate and advance slowly, but it was not until the early 1990’s that the AAP revisited its earlier stance and established guiding principles for the medical

³ Maeng, D. D., Khan, N., Tomcavage, J., Graf, T. R., Davis, D. E., & Steele, G. D. (2015). Reduced Acute Inpatient Care Was Largest Savings Component Of Geisinger Health System’s Patient-Centered Medical Home. *Health Affairs*, 34(4), 636-644.

⁴ Berwick, D. M., & Hackbarth, A. D. (2012). Eliminating waste in US health care. *Jama*, 307(14), 1513-1516.

⁵ Goroll, A.H., Berenson, R.A., Schoenbaum, S.C., & Gardner, L.B. (2007). Fundamental reform of payment for adult primary care: comprehensive payment for comprehensive care. *Journal of General Internal Medicine*, 22(3), 410–415. doi: 10.1007/s11606-006-0083-2; Phillips, R. L., Jr., & Bazemore, A.W. (2010). Primary care and why it matters for U.S. health system reform. *Health Affairs*, 29(5), 806-10. doi: 10.1377/hlthaff.2010.0020; Health Care Cost Institute. (2014). 2013 *Health care cost and utilization report appendix, table A1: expenditures per capita by service category and region (2011-2013)*. Retrieved from <http://www.healthcostinstitute.org/files/2013%20HCCUR%2010-28-14.pdf>

⁶ UnitedHealth Center for Health Reform and Modernization (2014) *Advancing Primary Care Delivery: Practical, Proven, and Scalable Approaches*.

⁷ Sia, C., Tonniges, T., Osterhus, E., & Taba, S. (2004). History of the Medical Home Concept. *Pediatrics*, 1473-1478.

home, including care that was accessible, continuous, comprehensive, family-centered, coordinated, compassionate, and based on trusting relationships.⁸

However, it took several more years of rapidly rising healthcare costs and movement of physicians toward specialty practices before a widespread, collaborative push for primary care and PCMH began to emerge. The Patient-Centered Primary Care Collaborative (PCPCC), a collaboration of physician groups, national employers, national health plans, consumer groups and healthcare quality improvement organizations, acted as the driving force behind this development. PCPCC pushed for the development of the Joint Principles in 2007. These formed the basis of the patient-centered medical home programming adopted by the American Academy of Family Physicians (AAFP), the AAP, the American College of Physicians (ACP), and the American Osteopathic Association.

PCPCC continued to be the catalyst for establishing the PCMH concept, drafting eligibility criteria for facilities to gain recognition as a PCMH. In 2008, the National Committee for Quality Assurance (NCQA) adopted these eligibility criteria to create industry standards and facilitate provider reimbursement. Similar criteria were adopted by other accrediting bodies including the Accreditation Association for Ambulatory Health Care, URAC, and the Joint Commission.⁹

The development of standards, recognition, and reimbursement allowed for PCMH concepts to gain traction and become more common. As recently as 2009, the Commonwealth Fund identified only 26 PCMH initiatives that included external payment incentives for participating providers. These initiatives covered only 5 million patients. A 2013 follow-up study identified 119 initiatives that included 26 million patients. Today, there are hundreds of PCMH initiatives across all 50 states.¹⁰

III. PCMH in Montana

The earliest group effort to build toward PCMH began in 2009 when Montana Medicaid was awarded a National Academy for State Health Policy (NASHP) grant to promote medical homes for Medicaid and CHIP participants. NASHP helped Montana Medicaid convene a medical home working group to define PCMH in Montana.

Also in 2009, Blue Cross Blue Shield of Montana began its PCMH pilot program. This program began with chronic disease management patients only. Additional preventive care bonuses and quality of care incentive payments were added in 2012.

In 2011, Montana was selected to participate in North Carolina's Infrastructure for Maintaining Primary Care Transformation (IMPACT) State Learning Community. Through learning opportunities and facilitation by the North Carolina project, members of the medical home working group joined forces with other key stakeholders to form the Insurance Commissioner's Patient-Centered Medical Home Advisory Council (PCMH-AC). This council built a medical home model through studying other PCMH models across the country, gathering

⁸ Kilo, C. M., & Wasson, J. H. (2010). Practice Redesign and The Patient-Centered Medical Home: History, Promises, and Challenges. *Health Affairs at the Intersection of Health, Health Care and Policy*, 773-778.

⁹ Arend, J., Tsang-Quinn, J., Levine, C., & Thomas, D. (2012). The Patient-Centered Medical Home: History, Components, and Review of the Evidence. *Mount Sinai Journal of Medicine*, 433-450.

¹⁰ <https://www.pcpcc.org/initiatives/list>

input from primary care providers and collaborating with other key organizations previously working on implementing primary care practice transformation strategies including: Mountain-Pacific Quality Health, Montana Area Health Education Centers and the Montana Primary Care Association. The advisory council laid groundwork by making recommendations to the Commissioner on quality improvement measures, framework for payment guidance, and program structure for legislation.

In 2013, the passage of Senate Bill 84 encouraged payers to participate in PCMH by providing for a “safe-harbor” from anti-trust restrictions. It assigned administration of PCMH to the state insurance commissioner in consultation with the PCMH Stakeholder Council. Together, they create standards, qualify providers and insurers, and promote the program.

The stakeholder council formalized its vision for the Montana PCMH program in its charter and mission statement:

“A patient-centered medical home in Montana is a model of healthcare that is directed by a primary care provider offering family-centered, culturally effective care that is coordinated, comprehensive, continuous, and, whenever possible, located in the patient’s community and integrated across systems; characterized by enhanced access, with an emphasis on prevention, improved health outcomes, and satisfaction; qualified by the commissioner as meeting the standards of patient-centered medical home; and reimbursed under a payment system that recognizes the value of services and clinical prevention services.”

The stakeholder council and CSI also outlined provider and payer standards, developed an application for qualification, and began to qualify providers and approve payers.

Providers: The insurance commissioner issued a call to interested entities for applications in December 2013. Although all PCMH pilot entities could choose from one of three accreditation bodies, all applicants sought recognition under the NCQA standards. The initial pool had 28 qualified entities with an additional 34 provisionally qualified. Since the initial call, the set of qualified PCMHs has grown. There are now 62 qualified and 7 provisionally qualified facilities. These facilities reported seeing over 350,000 unique patients in 2014.¹¹

Payers: Four payers actively participate in the PCMH reimbursement structure. They are encouraged to implement payment methods, approved by Montana’s PCMH program as meeting improved design, to encourage care according to PCMH standards. A variety of reimbursement methods are in use. Two payers reimburse PCMH facilities on a per member per month membership agreement. One payer reimburses through the fee for service method with expanded service codes to include non-traditional patient visits. The fourth payer offers grants to recognized facilities to facilitate delivery system innovation in addition to paying for care coordinators and engaging in shared savings with PCMHs.

Reporting: Beyond meeting qualification standards, participants (both providers and payers) are required to report annually to the Montana PCMH Program on specific criteria, which could demonstrate improved health outcomes and reduction in health costs. Providers must report on

¹¹ However, most of these patients do not meet the criteria for attribution created by the payers. The data from the payers with attributed populations indicate only 309,808 PCMH member months in 2015 (dividing by 12 this indicates roughly 25,800 attributed patients).

three out of five common health metrics: control of blood pressure among those diagnosed with hypertension, blood glucose levels among diabetics, smoking cessation counseling for adults, age-appropriate childhood immunization delivery, and depression screening and follow-up plans.¹² Payers report on emergency room visits and hospital admissions. These particular criteria were chosen due to their link with the types of chronic illness that were both manageable and attributed highly to the overall cost of healthcare.

Data reporting is allowed at the patient-level data, the aggregate level data, or clinics could submit a combination of both. Participants are encouraged to report at the patient-level wherever feasible due to its more comprehensive nature and greater accuracy, however, many entities were not technically capable of reporting at this level in the first and second years. Data was reported for the first complete year and Commissioner Lindeen presented the first annual public report of the Montana Patient-Centered Medical Home Program in August of 2015. We report on some of the data received from 2014 and 2015 in section V below.

IV. What do the experiences from other PCMH initiatives suggest may happen in Montana?

While a consensus estimate for the effects of PCMH does not yet exist, ample evidence suggests that PCMH initiatives can generate improvements. To date, evaluators have documented improvements in utilization, cost, access, and/or quality across dozens of PCMH initiatives. We cannot point to these studies and project what will likely occur in Montana, given the existence of studies that do not document similar effects; however, we can look to these studies to identify what may be possible.

Evaluations of other PCMH programs – particularly those that employ similar methods and serve a similar population – provide a glimpse of what PCMH may do for healthcare in Montana. These evaluations examine larger populations, with better data, and a more robust evaluation methodology than are available in Montana. As such, they may provide a more statistically robust view of the effects of PCMH. Some evaluations also have the advantage of examining programs that developed many years ago, and thus show what may happen in PCMH programs as they develop over time.

Many studies help to illustrate the potential effects of PCMH. A growing body of research emerged along with the rapid growth in the number of PCMH initiatives. To date, researchers have published dozens of evaluations of PCMH programs.¹³ Three widely cited (though slightly dated) systematic reviews of PCMH evaluations reach the same conclusion: the evidence for the

¹² Specifically, the metrics are: control of blood pressure among adults with diagnosed hypertension; screening for tobacco use and tobacco cessation intervention for adults; age appropriate immunization for children who turned age three during the reporting year; poor control of A1C levels in adults with diagnosed diabetes. A fifth metric has also been added – screening for clinical depression and follow-up plan for individuals age 12 and older.

¹³ PCPCC has an excellent interactive resource with summaries and links to a large body of PCMH evaluations, available at <https://www.pcpcc.org/initiatives/evidence>

effects of PCMH is inconclusive.¹⁴ While some evaluations of PCMH programs demonstrate reductions in hospital or emergency department admissions, cost savings, and/or improved healthcare quality, some evaluations do not find effects. Furthermore, the pattern of observed effects is not consistent. That is, not every study that finds effects finds the same pattern of effects. Thus, the research on PCMH remains inconclusive. We do not yet have a consensus set of estimates that describes what PCMH affects and how large the effects are.

The lack of conclusive results is not surprising. PCMH evaluations face several challenges that make it difficult to develop consensus estimates. These challenges include:

- (1) Inconsistency in the definition and implementation of PCMH. A PCMH is not a specific, uniform thing.¹⁵ That is, every practice that identifies as a PCMH is not doing the same exact things, and the standards that define PCMHs continue to evolve.¹⁶ Different PCMH initiatives also include different payment schemes and incent different behaviors. Thus, two separate PCMH evaluations may evaluate very different programs.
- (2) Insufficient time for effects to emerge. PCMHs are relatively new (and continue to evolve after implementation). Most evaluations, though, focus on results from two or fewer years of implementation. However, it may take time to fully transform a practice into a successful PCMH. Consistent with this observation, studies of longer-lived programs are more likely to demonstrate positive results.¹⁷
- (3) Differences in the populations served by different interventions. The populations studied in different evaluations are not identical, and different populations may experience larger benefits from participating in a PCMH. For instance, some research finds that people with chronic conditions benefit more from PCMH.¹⁸ Thus patient mix may affect results.
- (4) Insufficient power. Many PCMH evaluations are “underpowered.” That is, in some studies the number of patients and providers is insufficient to reliably detect small or

¹⁴ Hoff, T., Weller, W., & DePuccio, M. (2012). The Patient-Centered Medical Home A Review of Recent Research. *Medical Care Research and Review*, 69(6), 619-644; Jackson, G. L., Powers, B. J., Chatterjee, R., Bettger, J. P., Kemper, A. R., Hasselblad, V., ... & Gray, R. (2013). The patient-centered medical home: a systematic review. *Annals of internal medicine*, 158(3), 169-178; Peikes, D., Zutshi, A., Genevro, J. L., Parchman, M. L., & Meyers, D. S. (2012). Early evaluations of the medical home: building on a promising start. *Am J Manag Care*, 18(2), 105-116.

¹⁵ Gans, D.N. (2014). *A Comparison of the national patient-centered medical home accreditation and recognition programs*. Medical Group Management Association. Retrieved from <http://www.medicalhomesummit.com/readings/A-Comparison-of-the-National-Patient-Centered-Medical-Home-Accreditation-and-Recognition-Programs.pdf>; Tirodkar M.A., Morton S., Whiting T., Monahan P., McBee E., Saunders R., & Scholle S.H. (2014). There’s more than one way to build a medical home. *The American Journal of Managed Care*, 20(12).

¹⁶ For instance, the NCQA PCMH standards have changed. Several evaluations are based on earlier standards that have subsequently changed. NCQA (2015) Latest Evidence: Benefits of Patient Centered Medical Home <https://www.ncqa.org/Portals/0/Programs/Recognition/NCQA%20PCMH%20Evidence%20Report,%20June%202015.pdf>

¹⁷ Nielsen, M., Gibson, L., Buelt, L., Patel, K., & Nichols, L.M.. (2016). The Patient-Centered Medical Home’s Impact on Cost and Quality, Review of Evidence, 2014-2015. Accessed June 6.

¹⁸ David, G., Gunnarsson, C., Saynisch, P. A., Chawla, R., & Nigam, S. (2015). Do Patient-Centered Medical Homes Reduce Emergency Department Visits?. *Health services research*, 50(2), 418-439; Neal, J., Chawla, R., Colombo, C. M., Snyder, R. L., & Nigam, S. (2014). Medical homes: cost effects of utilization by chronically ill patients. *The American journal of managed care*, 21(1), e51-61.

medium-sized effects.¹⁹ Thus, many of the studies that do not report conclusive PCMH effects, do not demonstrate that PCMH had no effect. Rather, these studies simply lack the statistical power to determine whether the PCMH initiative evaluated had positive or negative effects with sufficient precision.

Ultimately, it will take more time and more research to clearly understand the effects of PCMH. In particular, more research will need to explore why PCMHs appear to succeed in some places and contexts and not in others.

A. Utilization

PCMH evaluations regularly (though not ubiquitously) find that PCMH initiatives reduce hospital admissions and/or emergency room visits. For instance:

- An evaluation of the Care Transformation Collaborative of Rhode Island found an 11.6% reduction in ambulatory care-sensitive emergency department visits.²⁰
- An evaluation of the Colorado Multi- Patient-Centered Medical Home Pilot documented a 9.3% reduction in emergency department visits.²¹
- An evaluation of Vermont Blueprint for Health found a reduction in inpatient days per 1000 members of nearly 8%.²²
- An evaluation of the Cincinnati Aligning Forces for Quality Multi- Patient-Centered Medical Home Pilot documented a 23% reduction in ambulatory care-sensitive emergency department visits.²³
- An evaluation of the Hudson Valley Comprehensive Primary Care Initiative found a 6% reduction in hospitalizations (and a 9% reduction among high-risk patients).²⁴

B. Quality

¹⁹ Berra, A. (2012) “How can PCMH impact be ‘inconclusive’?” <https://www.advisory.com/research/health-care-advisory-board/blogs/the-blueprint/2012/03/how-can-pcmh-impact-be-inconclusive> [accessed June 4, 2016].

²⁰ Rosenthal, M. B., Friedberg, M. W., Singer, S. J., Eastman, D., Li, Z., & Schneider, E. C. (2013). Effect of a multi patient-centered medical home on health care utilization and quality: the Rhode Island chronic care sustainability initiative pilot program. *JAMA internal medicine*, 173(20), 1907-1913.

²¹ Rosenthal, M. B., Alidina, S., Friedberg, M. W., Singer, S. J., Eastman, D., Li, Z., & Schneider, E. C. (2015a). A difference-in-difference analysis of changes in quality, utilization and cost following the Colorado multi- patient-centered medical home pilot. *Journal of general internal medicine*, 1-8.

²² Jones, C., Finison, K., McGraves-Lloyd, K., Tremblay, T., Mohlman, M. K., Tanzman, B., ... & Samuelson, J. (2015). Vermont's Community-Oriented All- Medical Home Model Reduces Expenditures and Utilization While Delivering High-Quality Care. *Population health management*.

²³ Rosenthal, M. B., Alidina, S., Friedberg, M. W., Singer, S. J., Eastman, D., Li, Z., & Schneider, E. C. (2015b). Impact of the Cincinnati Aligning Forces for Quality Multi-Payer Patient Centered Medical Home Pilot on Health Care Quality, Utilization, and Costs. *Medical Care Research and Review*, 1077558715618566.

²⁴ Taylor, E. F., Dale, S., Peikes, D., Brown, R., Ghosh, A., Crosson, J., ... & Shapiro, R. (2015). Evaluation of the Comprehensive Primary Care initiative: first annual report. *Mathematica Policy Research (January 2015)*.

Results from evaluations that examine the effects of PCMH initiatives on the quality of care people receive are mixed. Evaluators have examined the effects of PCMH on a wide variety of quality metrics (e.g., HbA1c testing for diabetics, cervical and colon cancer screenings, eye exams). Findings from selected multi-payer evaluations include:

- The Colorado Multi- Patient-Centered Medical Home Pilot showed improvements in cervical cancer screening (but reductions in colon cancer screenings and no effects on a variety of other quality metrics, like HbA1c testing).²⁵
- Evaluation of PCMH in the Hudson Valley found modest improvements in eye examinations and Hemoglobin A1c testing and improvements over time for nephropathy screening for diabetics and chlamydia screening for women (but not differences in breast cancer screening, colorectal cancer screening, low-density lipoprotein cholesterol testing for diabetics, and appropriate asthma medication).²⁶
- Evaluation of the Cincinnati Aligning Forces for Quality Multi- Patient-Centered Medical Home Pilot a 3.3% improvement in lipid testing in diabetics.²⁷
- The Minnesota Health Care Homes initiative demonstrated modest improvements in vascular care, diabetes care, and asthma care.²⁸

C. Spending/ROI

Evaluations that examine the effects of PCMH on total healthcare spending also offer mixed results. Some studies (like the Colorado Multi- Patient-Centered Medical Home Pilot and the Center for Medicare and Medicaid Services' Comprehensive Primary Care Initiative) document significant savings from reduced hospital admissions and emergency department use, but these savings were offset by increased costs elsewhere (either increases in other forms of care or the cost of implementing the program).²⁹ Other studies found lower patient costs, but argue that it takes several years for lower patient costs to offset implementation costs.³⁰ A few studies, though, appear to have generated large healthcare savings and a large return on investment. These include:

- Minnesota Health Care Homes, which reduced medical costs for attributed patients by 9% and reduced overall spending on Medicaid, Medicare, and Dual Eligibles by \$1 billion dollars (over the period 2010-2014).³¹

²⁵ Rosenthal et al (2015a)

²⁶ Taylor et al (2015)

²⁷ Rosenthal et al (2015b)

²⁸ Wholey, D. R., Finch, M., Shippee, N.D., White, K.M., Christianson, J., Kreiger, R., Wagner, B., Grude, L. (2015) Evaluation of the State of Minnesota's Health Care Homes Initiative: Evaluation Report for the Years 2010-2014.

<http://www.health.umn.edu/sites/default/files/UM%202015%20HCH%20Evaluation%20Final%2007Feb2016.pdf>

²⁹ Rosenthal et al (2015) & Taylor et al (2015)

³⁰ Lemak, C. H., Nahra, T. A., Cohen, G. R., Erb, N. D., Paustian, M. L., Share, D., & Hirth, R. A. (2015). Michigan's fee-for-value physician incentive program reduces spending and improves quality in primary care. *Health Affairs*, 34(4), 645-652.

³¹ Wholey et al (2015)

- Vermont Blueprint for Health, which reported savings of approximately \$482 per member per year or \$5.8 million for every \$1 million spent on the initiative.³²
- Geisinger Health System patient-centered medical home, which generated a 7.9% total cost savings over a 90-month study period.³³
- Community Care of North Carolina, which reported 9% reductions in spending for non-elderly Medicaid beneficiaries.³⁴
- Blue Cross Blue Shield of Michigan Physician Group Incentive Program, which found PMPM spending fell by \$4.00 or 1.1%.³⁵

Finally, it is worth noting, that the longest period evaluated in any of these studies is 7.5 years. It is very possible that some portion of the healthcare savings generated by PCMH programs may take decades to show up in the data (e.g., if a PCMH program helps prevent someone from developing chronic conditions).

Combined, the PCMH literature and the illustrative results highlighted above suggest that Montana’s PCMH program may improve healthcare delivery and reduce healthcare costs. However, given that other studies do not yield the same effects, we cannot confidently predict the likelihood or magnitude of the effects of Montana’s PCMH program. To date, there is relatively little literature that attempts to explain why some PCMH programs generate stronger results than others. As such, we cannot match Montana’s program specific attributes to a range of estimates for similar programs (although, for the most part, the results listed above are drawn from multi-payer initiatives that serve a wide range of the population). However, in order to provide context, if Montana is able to generate results towards the higher end of the results described above (e.g. cost savings of 8-9%), Montana’s PCMH would generate savings of tens (and possibly even hundreds) of millions of dollars each year.

V. What do Montana’s data show?

As discussed in section III, PCMH providers and payers report quality metrics and utilization data. Payers and providers also respond to a variety of questions as part of an Annual Report submitted to the Montana PCMH Program. In this section, we briefly summarize the data collected to date. We note at the outset, however, that these data do not support meaningful conclusions about the effects of Montana’s PCMH initiative for a variety of reasons which we discuss below.

A. Annual Reports

1. Payers

In their annual reports, payers respond to 14 questions. Many of these questions relate to technical aspects of their PCMH initiatives (e.g., incentives, information reported to clinics, barriers to implementation). A few questions, though, nod toward evaluation, e.g., questions that

³² Jones et al (2015)

³³ Maeng, D. D., Khan, N., Tomcavage, J., Graf, T. R., Davis, D. E., & Steele, G. D. (2015). Reduced Acute Inpatient Care Was Largest Savings Component Of Geisinger Health System’s Patient-Centered Medical Home. *Health Affairs*, 34(4), 636-644.

³⁴ <http://www.ncauditor.net/EPSSWeb/Reports/FiscalControl/FCA-2014-4445.pdf>

³⁵ Lemak et al (2015)

ask about patient satisfaction or questions about the effects of PCMH on quality of care, utilization, and medical expenditures.

In 2016, none of the four payers reported having patient satisfaction data to report (although one reported that they were beginning to collect patient data).

Two of the payers report information about quality, utilization, and cost. One payer reports differences in quality of care and utilization between PCMH and non-PCMH patients. Specifically, this payer notes decreased ER visits, hospitalizations, and length of stays in the PCMH population. One other payer claimed differences in quality of care, but provided no additional details. Three of the four payers also report that they intend to conduct more formal analysis of the effects of PCMH on quality, utilization, and expenditures in the future.

We also note that all four payers indicate that they hope to expand their PCMH program. This provides evidence that payers believe in the program.

2. Providers

The provider annual reports include (mostly) open-ended responses to 21 questions. While long text responses to 21 questions from over 60 providers are difficult to analyze or summarize, a few useful themes emerge in these reports. First, these reports describe how providers believe PCMH has improved care processes. For instance, providers report:

- Dividing care more efficiently among team members with a primary care provider team leader
- Greater integration, tracking, and sharing of patient data and better planning for patient care via team “huddles”
- Greater focus on key care metrics (e.g., childhood vaccinations, depression screening)
- More resources/focus devoted to patients with chronic illnesses (e.g., scheduling more time for patients with chronic illnesses, developing/implementing new tools to help educate/engage patients)
- Identification of and focus on addressing gaps in care

While this illustrative list does not prove that the PCMH initiative is affecting care outcomes, it does suggest that PCMH practices believe that PCMH is changing how they provide care. Changing care is likely necessary (though perhaps insufficient) to achieve the triple aim goals of PCMH.

Second, the providers’ reports also describe their beliefs about how patients benefit from their transition to PCMH. While different providers focus on different benefits, the list of benefits identified in the Annual Reports include:

- Increased same-day access to care
- Better planning for patient visits
- Better follow-up care (due to written treatment plans and/or nurse follow-up contacts)
- Access to online health records
- More patient-provider trust (in part due to more consistent access to the same provider team)

As with the list above, this illustrative list suggests that PCMH providers believe that PCMH is changing how they provide care and that these changes provide some benefits to their patients.

Perhaps the most direct evidence of how PCMH may affect patient care and patient outcomes comes from responses to the question, “Please share a patient success story that resulted from your clinic's PCMH implementation.” Several of the responses to this question argue that a clear link exists between PCMH implementation, patient care, and patient outcomes. In order to illustrate some of the links providers see, we present five responses to this question below:

- (1) Patient care coordination is a vital component of our Patient-Centered Medical Home. Previously, a patient would need to call the Central Appointment Desk (CAD) and would potentially receive recommendations to be seen in the Emergency Department or Same Day Care for any acute complaints listed on the CAD triage protocol. Currently, those established patients are now receiving Registered Nurse triage within their Medical Home team to better coordinate care. For example, an established patient called the nursing team with complaints of left upper quadrant pain with vomiting over the past three days. The patient received an urgent appointment with the team who scheduled an urgent ultrasound and lab work. The Radiologist and Internist collaborated over the radiology reports to determine diagnosis and next steps. The Internist then communicated with the Surgeon on call and the patient was seen by both the Surgeon and Internist in a shared appointment to discuss a plan of care. The patient was then directly admitted to a hospital observation bed and taken to surgery within 4 hours of the first contact to the Medical Home team. Comparatively, an Emergency Department Visit could potentially increase time to Operating Room, not include the patient's Medical Home Team, and increase the patient's out of pocket costs while decreasing the patient's overall experience. Collaboration among interdisciplinary teams and coordinated care by the Patient-Centered Medical Home has both increased patient experience and satisfaction and the medical team's job satisfaction as evidenced by the organizations engagement surveys, safety surveys, and patient surveys.
- (2) One area that we have improved on is the care for our patients with diabetes. We identified a gap in care which resulted in hiring a RN Navigator who is instrumental in obtaining the evidence based information needed for optimum care of these patients. On investigation, we were missing eye exams, foot exams and lab work. We realized that we had no idea when these patients had appointments but we now have a diabetic appointment report being generated and emailed to us weekly. This report identifies what care is missing in this patient population. Also, the report identified a need for a Diabetic protocol, which we now have and allows the RN Navigator to enter appropriate lab tests per protocol, obtain eye exams and notifies the providers and nursing staff when the foot exam is due. Concerning the foot exam, the nursing staff are now asking these patients to remove their footwear prior to the provider entering the room. This has triggered the provider to complete this part of their care.
- (3) With the addition of case management we have offered weight loss counseling. We have empaneled a few members of our PCMH family who had a BMI > 40. These individuals come in weekly and meet with our case manager who provides them with education, support, weekly goal settings etc. These few individuals have had a

positive experience and we have addressed many barriers to care with them such as educating on healthy alternatives, enabler identification as well as support for them. The case manager works directly with the providers and care teams, and updates them on their progress. When no progress is made, new recommendations are given by the providers which is followed through by the case manager. The patients are being seen more frequently by their providers as well due to this process.

- (4) Through our Quality Management project to help improve diabetic outcomes, our healthcare team focused on a particular patient who seemed noncompliant with this treatment plan. Whenever he came in for visits, he could not repeat what his medication regimen was, could not tell us when he checked his blood sugars or what the readings were and could not give us examples of what a balanced meal plan looks like. The team was starting to become exasperated with this patient's care. We had our RN contact the patient at home and asked him to bring every medication he had in his home to the clinic. We asked him to include all prescription, over-the-counter, supplements, vitamins, etc. When he returned to the clinic, we realized he was confused because he had multiple medications or varying doses that had been filled in the U.S. or mailed to him from Mexico from a family member. He was not clear which medications he should be taking. Our RN helped the patient sort through all of his medications. She explained the differences and similarities between each medication and set up a written administration plan using posters. The patient took the posters home and hung them on the wall above the couch where he sleeps. At his next clinic visit, the patient smiled and told us how proud he was that he knew what medications he should be taking and had them all organized according to these posters. He expressed delight that his healthcare team cared enough about him to go this extra distance in improving his care. We are all anxiously awaiting his next HgbA1c to see if his measure of his health is also improving.
- (5) Prior to our drive toward PCMH certification we had the ability to refer patients for Care Management. However, it was cumbersome and rarely occurred. The care management staff were located in the Hospital and their responsibilities were primarily there. One patient who has marked psychiatric issues, as well as financial limitations, had seen various psychiatrists and providers at Western Montana Mental Health (WMMH); however, she was coming to her primary care physician for medication management and coordination of the Pharma program by which she was able to pay for the more expensive of her psychiatric medications. As part of PCMH our in-house care manager was able to get her connected to behavioral counseling at WMMH, stabilize her relationship with psychiatry at WMMH and allow her primary care physician to begin focusing on neglected other aspects of her medical care. The patient's psychiatric state and medical conditions are all more stable and better addressed than they had been prior to PCMH implementation.

These anecdotes (and the others reported in the various Annual Reports) suggest that Montana's PCMH program is changing how care is provided and improving patient outcomes.

B. Utilization data

As discussed in section III, payers report three utilization measures to Montana’s PCMH program: rate of emergency room visits, rate of emergency room visits that lead to a hospitalization, and rate of inpatient admissions. It is important to collect data separately on ER visits that do and do not lead to hospitalizations because Center for Medicare and Medicaid Services and PCMHs feel that they are more able to limit ER visits that do not lead to hospitalization. It is those types of visits that should and could be handled with enhanced or afterhours access to care by PCMHs. In 2015, for most of these metrics, two payers reported these data for people attributed to a PCMH and for their total book of business. For the other two payers we have data for an attributed PCMH population for only one year.

Tables 1, 2, and 3 summarize the data available. Table 1 presents the results for the rate of emergency department (ED) admissions and the rate of ED visits that do not result in an admission³⁶ for all payers for 2015. For one payer, PCMH participants have a lower rate of ED admissions than non-PCMH participants. For two other payers, PCMH participants have a higher rate of ED admissions. It is important to note that Payer A’s total population is approximately 60% children. According to Center for Disease Control and Prevention National Center for Health Statistics, over one-third of ED visits made by children were injury related in 2009-2010. Injury related ED visits are not preventable by PCMH. Also, note that 75% of Payer A’s PCMH population is attributed to a Federally Qualified Health Center (FQHC) or Community Health Center (CHC). FQHCs and CHCs serve low-income, underserved and vulnerable populations that will often have higher utilization rates due to higher risk scores linked to their socioeconomic disadvantages. For one payer, we do not have data that allows us to compare this rate for the PCMH population to the payer’s total population.

Table 1: Emergency department visits per 1000 member months, 2015

	ED visits/1000		ED visits that do not lead to a hospitalization/1000	
	PCMH	All	PCMH	All
Payer A	867.22	646.41	783.72	587.79
Payer B	160	162.11	138.91	143.34
Payer C	275	170	225	150.6
Payer D	N/A	137.4	N/A	N/A

Table 2 presents emergency department (ED) utilization rates over time. The time trend also does not present a clear picture consistent with expectations. ED utilization decreased slightly in some populations but increased slightly in others. These trends are affected by factors beyond

³⁶ Payers report the number that result in an admission; however, PCMH research typically focuses on ED visits that do not result in an admission. Therefore, we compute the rate of ED visits that do not result in an admission by subtracting the number that result in an admission from the total number of ED visits and dividing by the number of member months.

just PCMH. These outside factors may help explain what is going on. For instance, some changes in use may stem from changes to insurance coverage. The uninsured population decreased substantially over this period due to increased access to the individual market and premium assistance and cost sharing reductions were implemented by the federal government. The newly insured had pent-up demand and also were unfamiliar with how to use their health plan. Many of the previously uninsured population were accustomed to seeking healthcare in emergency rooms because they could not be turned away there. Also, some of the changes may be attributable to the population of PCMHs (and thus the patients attributed to PCMHs) changing as new providers qualified (and some dropped out).

Table 2: Emergency department visits per 1000 member months, 2014-2015

	Payer B PCMH	Payer B All	Payer A All	Payer C All	Payer D All
2014	146.84	156.75	658.50	174.5	129.9
2015	159.99	162.11	646.41	170	137.4

Table 3 presents the results for the rate of hospitalizations. Two payers report lower rates in 2015 than they reported in 2014 in their overall populations. Two payers for whom we have an inpatient admissions rate for an attributed population report higher inpatient admissions rates for their attributed populations than for their overall populations, and hospital admissions rates for the PCMH population increased over time (for the one payer from which we have trend data). However, the same mitigating factor concerning socio-economic status applies to Payer A as was stated above concerning ER rates. Also, the issues created by the pent-up demand of the previously uninsured may be affecting the numbers of Payer B.

Table 3: Hospitalizations per 1000 member months, 2014-2015

	Payer B		Payer A		Payer C	Payer D
	PCMH	All	PCMH	All	All	All
2014	35.14	28.87	N/A	59.3	65.1	27.4
2015	35.41	28.09	93.8	55.63	56.1	28.9

While it may be tempting to conclude that Montana’s PCMH program is not having the intended effects based on these results, it is difficult to draw meaningful conclusions from these data. To draw conclusions from the comparisons above, one must make several unsupported assumptions.

First, to draw conclusions from the comparison of the attributed population to the full population, one must assume that the full population provides a reasonable proxy for what would have happened to the attributed population in the absence of PCMH. The fact that the attributed population reports higher rates of utilization for some payers may reflect the fact that different providers serving different populations choose to become PCMHs. For instance, we received a limited set of demographics from one payer, and for this payer, the attributed population with

employer provided insurance is much older than the non-attributed population. Similarly, the attributed population for this payer has slightly higher risk scores, which would cause the higher utilization rates. This may reflect the fact that sicker people are more likely to visit the doctor and thus more likely to be attributed to a PCMH than a healthy person who seldom (if ever) goes to the doctor.

Second, to draw inference from a comparison of the attributed to the full population, one must make an assumption about what happens at non-PCMH practices. While we know that practices that qualify as PCMHs meet certain thresholds, we do not know the extent to which non-PCMH practices have implemented PCMH-like attributes. Thus, we do not have a clear sense of how much PCMH practices differ from non-PCMH practices. In the absence of such information, interpreting observed differences is difficult.

Third, it is unreasonable to expect that the effects of Montana's PCMH program will show up in the data after only two years. As discussed above, it takes several years for the effects of PCMH programs to make a population healthier, which decreases utilization, and then decreases cost. To date, PCMH is still new in Montana, and relatively few patients are attributed to PCMH providers. Among payers whose data include both total member months and PCMH member months, between 3 and 11 percent of member months were attributed to a PCMH in 2015. One of the payers with an attributed PCMH population calculated just over 29,000 members in PCMH clinics as of April 2016. The other payer with an attributed population had 8,586 members enrolled in their PCMH program as of April 2016. The observed effects of PCMH may evolve as practices become more adept at PCMH and more patients participate.

At a minimum, to understand the effects of Montana's PCMH program, we would like to observe data from all payers and providers for several years before and after PCMH implementation. With these data, we would understand how PCMH providers differed from non-PCMH providers prior to PCMH and to understand how PCMH patients differed from non-PCMH patients prior to PCMH. Then, we could compare how each group changed over time. With such comparisons, we can address important questions like, "Did implementation increase the differences between PCMH and non-PCMH practices or patients? If so, it is plausible that observed differences stem from PCMH."³⁷ Unfortunately, the data required for such comparisons are not available (and in some cases do not exist) in Montana. Furthermore, Montana's healthcare sector is simultaneously undergoing many other changes in addition to PCMH. Thus, separating changes due to PCMH from changes due to other factors may be difficult, if not impossible. Under these conditions, estimating the effects of Montana's PCMH program at this time is difficult (and likely impossible).

C. Quality data

As discussed in section III, providers report data on at least three of the following four quality metrics: (1) Blood pressure control among adults diagnosed with hypertension; (2) Control of A1C levels in adults diagnosed with diabetes; (3) Screening for tobacco use and tobacco cessation counseling for adults; (4) Age-appropriate immunizations for children. A fifth metric --

³⁷ However, one must also assume that nothing else changed over this period that could have also changed the outcomes examined and disproportionately affected PCMH practices or patients.

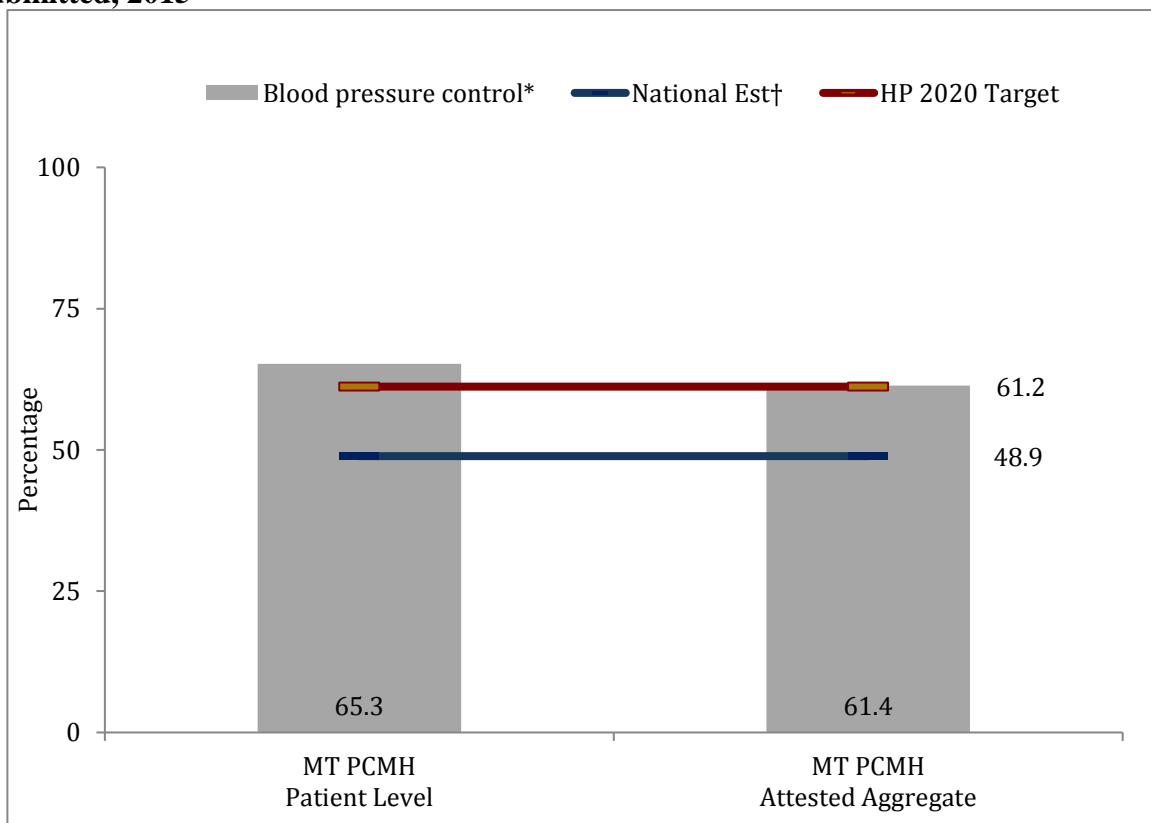
screening for clinical depression and follow-up plan for individuals age 12 and older – has recently been added, and in the future providers will report on four of these five metrics. At present, some providers report these data at the patient-level (i.e., they provide records for each patient in the practice) while others provide attested aggregate data (i.e., for the relevant population, they report the number of patients and the number with the relevant characteristic). Montana’s PCMH program hopes to have all practices report patient-level data (which is more informative and accurate) by 2017.

1. Blood pressure control

At Montana’s PCMHs clinics, 31.2% of patients at clinics that report patient-level data and 27.5% of patients at clinics that report aggregate data have a hypertension diagnosis. These rates straddle the national rate of 29% (and a simple average of the two numbers equals 29%). However, these rates are above the Healthy People 2020 goal of 26.9%.

Montana’s PCMH clinics perform well at blood pressure control. Among Montana’s PCMH patients diagnosed with hypertension, 65.3% at clinics that report patient-level data and 61.4% at clinics that report aggregate data have blood pressure below the target threshold. This is well above the national rate (48.9%) and above the Healthy People 2020 goal of 61.2%.

Figure 1: Documented Blood Pressure Control Rate among Montana PCMH Clinics Compared to the National Estimate and Healthy People 2020 Target, by Type of Data Submitted, 2015



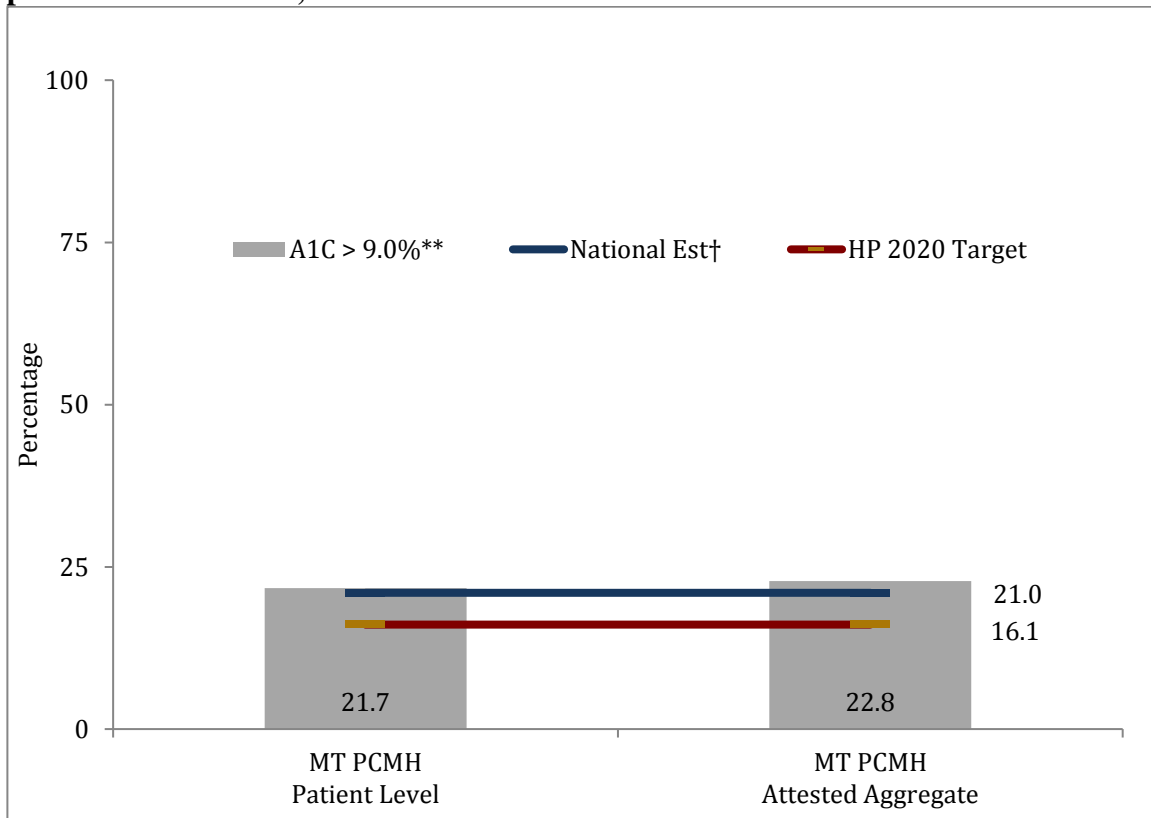
Notes: *Percentage of adults aged ≥ 18 through 85 years in the PCMH patient population**, who had documented systolic and diastolic blood pressure < 140 mmHg and < 90 mmHg respectively, at most recent outpatient visit, during the reporting period; **Who (a) have the diagnosis of hypertension, including ICD-9 code groups 401.0, 401.1, 4.1.9 or ICD-10 I10 and (b) had one or more outpatient visits during the reporting period: calendar year 2015; † Data Source: National Health and Nutrition Examination Survey 2009-2012

2. Control of A1C level among diabetics³⁸

At Montana’s PCMH clinics in 2014, 8.9% of patients at clinics that reported patient-level data and 11.1% of patients at clinics that reported aggregate data had a diabetes diagnosis. This rate is higher than the national rate of 8.5%.

The share of diabetics with A1C levels above the target threshold of 9% is high relative to the US level and the Healthy People 2020 goal. At Montana’s PCMH clinics, 21.7% of diabetics at clinics that report patient-level data and 22.8% of diabetics at clinics that report aggregate data have A1C levels above the target threshold. This is slightly above the national rate (21%), and above the Healthy People 2020 goal (16.1%).

Figure 2: Documented Rate of A1C >9.0% for Patients with Diabetes among Montana PCMH Clinics Compared to the National Estimate and Healthy People 2020 Target, by Type of Data Submitted, 2015



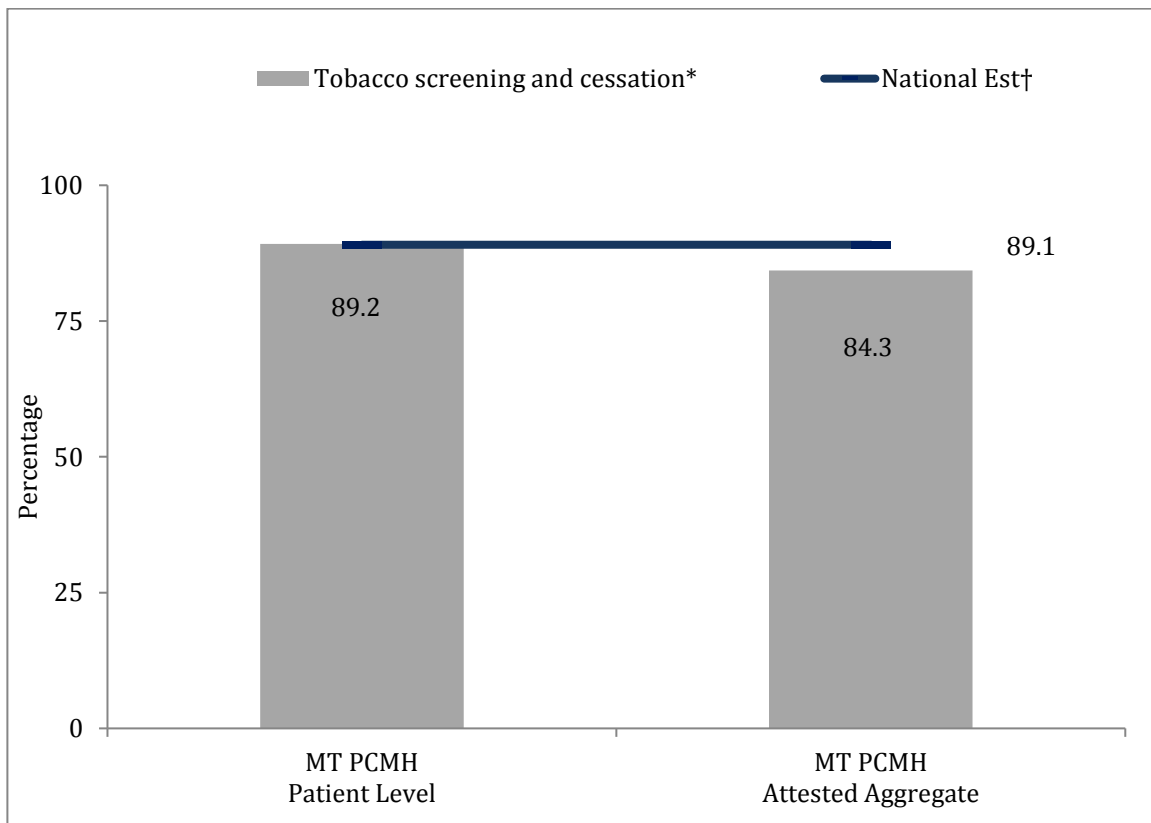
³⁸ The A1C test is a blood test that provides information about a person's average levels of blood glucose, also called blood sugar, over the past 3 months. Someone who's had uncontrolled diabetes for a long time might have an A1C level above 8 percent.

Notes: *Percentage of adults aged ≥ 18 through 75 years in the PCMH patient population who (a) have the diagnosis of diabetes type 1 or 2. For diagnosis codes refer to <http://csimt.gov/wp-content/uploads/2016PCMHQualityMetricsGuidancePacket.pdf> and (b) had one or more outpatient visits during the reporting period: calendar year 2015; **Percentage of the adults described above, for whom the most recent documented A1C during the reporting period was $>9.0\%$ or there was no measured A1C; † Data Source: National Health Interview Survey 2011 for estimate of prevalence of diabetes among adults and National Health and Nutrition Examination Survey 2009-2012 for estimate of proportion of diabetic patients with A1C $> 9.0\%$

3. Screening for tobacco use and cessation counseling

89.2% of adult patients at Montana PCMH clinics that report patient-level data and 84.3% of adult patients at Montana PCMH clinics that report aggregate data were screened for tobacco use at least once during that past 24 months and received tobacco cessation counseling if identified as a tobacco user. This is marginally above or slightly below the national level of 89.1%.

Figure 3: Documented Tobacco Screening and Cessation Intervention Rate among Montana PCMH Clinics Compared to the National Estimate, by Type of Data Submitted, 2015



Notes: *Percentage of adults in the PCMH patient population** who were screened for tobacco use at least once within 24 months AND who received tobacco cessation intervention if identified as tobacco users; **Patients aged ≥ 18 who had a visit during the reporting period: calendar year 2015; † Data Source: CMS Benchmarks For Measures Included in the Performance Year 2015 Quality and Resource Use Reports

4. Age-appropriate immunizations for children

Immunization rates for children at Montana PCMHs are typically close to the rates prevalent statewide and nationally. Montana PCMHs report higher rates for some (e.g., 4+ DTAP) and lower rates for others (e.g., 3+ HepB). However, looking at the combined series, Montana PCMHs perform well. 75.7% of children at Montana PCMH clinics that report patient-level data and 80.6% of children at Montana PCMH clinics that report aggregate data received the combined series of immunizations. These rates are well above the statewide rate (67.1%) and the national rate (71.6%).

Table 4: Percentage of children aged 36 months* who received all age-appropriate doses of selected vaccines recommended by the Advisory Committee on Immunization Practices, 2015.

	MT PCMH patient-level	MT PCMH Attested Aggregate	Montana†	United States†
4+ DTAP	86.9	89.2	83.1	84.2
3+ HepB	88.7	90.8	92.1	91.6
3+ Hib	88.5	90.6	93.8	92.6
3+ IPV	89.7	92.1	94.9	93.3
1+ MMR	92.3	94.5	93.4	91.5
4+ PCV	80.9	86.5	82.4	82.9
1+ Var	89.7	93.1	90.9	91.0
Combined series§	75.7	80.6	67.1	71.6

Notes: *All children in the PCMH population who had a 3rd birthday during January 1, 2015 through January 1, 2016 and who had one or more outpatient visit during 2015; DTaP = diphtheria and tetanus toxoids and acellular pertussis vaccine; HepB = hepatitis B vaccine; Hib = Haemophilus influenzae type B conjugate vaccine; IPV = inactivated poliovirus vaccine; MMR = measles, mumps, and rubella vaccine; PCV = pneumococcal vaccine; VAR = varicella vaccine; §Combined series (4:3:1:3:3:1:4) includes ≥4 doses of DTaP, ≥3 doses of IPV, ≥1 dose of MMR, full series of Hib (≥3 doses for PCMH data, 3 or 4 doses for NIS depending on product type), ≥3 doses of HepB, ≥1 dose of VAR, and ≥4 doses of PCV; †Data Source: National Immunization Survey (NIS); estimated immunization coverage for children aged 19–35 months during 2014.

5. Trends

The data above describe a snapshot from 2015. The Montana Patient-Centered Medical Home Program: 2015 Public Report describes similar data for 2014. Comparing the 2015 data to the 2014 data yields a few clear trends. The biggest change was a dramatic increase in the share of patients who received a tobacco cessation intervention. In 2014, 42.7 percent of patients at clinics who report at the patient-level and 59.8 percent of patients at clinics who report at the aggregate level received a tobacco intervention. As noted above, these percentages increased to 89.2 and 84.3 percent in 2015. The second area that saw improvement was childhood vaccinations. In 2014, 67.2 percent of children at patient-level clinics and 77.4 percent of

children at attested aggregate clinics received the combined series. As discussed above, in 2015 these values increased to 75.7 at patient-level and 80.6 percent at aggregate level clinics. The remaining two metrics do not reveal clear trends. Rates for blood pressure control remained constant at patient-level clinics, but fell at attested aggregate clinics (from 66.6 percent to 61.4 percent). The share of patients with uncontrolled diabetes increased from 17.8 percent to 21.7 percent in the patient-level clinics, but fell from 23.6 to 22.8 percent in the attested aggregate clinics. Caution should be used when interpreting these trends because the population is not consistent. As such, changes may be related to changes in clinic participation, clinic reporting type, patient participation, or changes due to PCMH.

Cumulatively, these data indicate that Montana's PCMH clinics have areas where they perform well and areas for improvement. While these data provide some evidence about the level of quality at Montana's PCMH clinics, they provide relatively limited information about the effects of PCMH on quality. That is, we do not have sufficient data to estimate the counterfactual – what level of care would PCMH patients have received in the absence of PCMH? As such, we cannot draw conclusions about whether the PCMH initiative changed the quality of care from what would have occurred in the absence of PCMH.

While these data do not support any conclusion about the effectiveness of PCMH, it is important to emphasize that these results do not indicate that PCMH is not working. They do not provide clear evidence one way or another. In light of the lack of specific quantitative evidence on Montana's program, individuals seeking to understand Montana's program should look to the anecdotal evidence from Montana and the more rigorous quantitative evidence from other evaluations. Both of these sources provide evidence that PCMH can work. Anecdotes from Montana's PCMH providers provide evidence that providers believe that PCMH is improving outcomes, and many formal evaluations of programs in other states find evidence that PCMH improves patient experience, improves population health, and lowers healthcare costs.