A Medicaid-Funded Statewide Diabetes Quality Improvement Collaborative: Ohio 2020–2022

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We used a collective impact model to form a statewide diabetes quality improvement collaborative to improve diabetes outcomes and advance diabetes health equity. Between 2020 and 2022, in collaboration with the Ohio Department of Medicaid, Medicaid Managed Care Plans, and Ohio's seven medical schools, we recruited 20 primary care practices across the state. The percentage of patients with hemoglobin A1c greater than 9% improved from 25% to 20% over two years. Applying our model more broadly could accelerate improvement in diabetes outcomes. (*Am J Public Health*. 2023;113(12): 1254–1257. https://doi.org/10.2105/AJPH.2023.307410)

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To improve hemoglobin A1c (A1c) levels and reduce the rate of complications and costs for Medicaid enrollees with diabetes,[1] the Ohio Department of Medicaid partnered with the Ohio Colleges of Medicine Government Resource Center, Medicaid Managed Care Plans (MCPs), and the seven Ohio medical schools to develop a statewide diabetes collaborative focused on improving diabetes outcomes and advancing diabetes health equity.

INTERVENTION AND IMPLEMENTATION

Partners participated in a planning year using the collective impact model as a mechanism for shared power to address complex challenges.[2] The collective impact model[2] has five key elements:

1. a common agenda (i.e., shared vision, mission and project aims),
2. shared measurement (i.e., electronic health record [EHR] data queries),
3. mutually reinforcing activities (i.e., intervention and implementation strategies),
4. continuous communication (i.e., routine steering committee meetings every two weeks), and
5. backbone support (i.e., organizational structure and roles for all partners).

During this year, we also developed a key driver diagram and toolkit to reflect the theory for improvement and guide the quality improvement (QI) activities.[3]

Partners recruited 20 primary care practices across 11 health systems to participate in the QI project. All participating practices served a high volume of Medicaid patients, and health systems were given $25 000 in stipends to submit EHR data. The overall aim of the QI project was to decrease the percentage of adults with diabetes with A1c greater than 9% from 25% to 21% overall. To supplement the QI activities, the Ohio Department of Medicaid requested that the six MCPs align their QI projects with the activities of the QI practices to catalyze improvements in outcomes over time. In response to barriers to diabetes care voiced by providers and patients, Medicaid payers added coverage for Diabetes Self-Management Education and Support, three payers removed prior authorization requirements for continuous glucose monitors, and all payers aligned quantity limits on diabetes supplies and piloted home A1c testing. These MCP interventions enhanced equity to Medicaid enrollees by making

it easier to obtain and afford diabetes supplies and resources, especially during the COVID-19 pandemic.

Implementation strategies included audit and feedback, peer-to-peer learning, QI coaching, and subject matter expert consultation. After the planning year, a half-day virtual kick off was held with the participating primary care practices, Medicaid MCPs, and other partners. This was followed by monthly QI coaching calls with each of the practices and monthly one-hour webinars or "action period calls" with the practices and MCPs to share aggregate practice-level data, discuss evidence-based best practices, and promote peer-to-peer learning. In addition, there were two virtual learning sessions held to increase peer-to-peer learning. Lastly, we held monthly one-hour collaborative calls with the MCPs and a subset of clinical practices and partners to enhance their collaborative planning.

Practices submitted EHR data every two weeks to the Ohio Colleges of Medicine Government Resource Center, which developed an online dashboard for practices to monitor progress when conducting continuous QI. Key interventions tested by the practices included (1) A1c testing for those with no test within the last 12 months, (2) timely follow-up in team-based care—defined as follow-up scheduled virtually or in person with a primary care provider or team member (e.g., a clinical pharmacist, dietitian, or diabetes educator) at least every 30 days until the glucose level was at goal, (3) outreach to re-engage patients with A1c greater than 9% and no upcoming appointment, and (4) social drivers of health interventions (e.g., community health worker engagement, referrals to resources for healthy food, mobile vans, or virtual care).

PLACE, TIME, AND PERSONS

The QI project started in June 2020, with the previous 12 months considered the preintervention period (June 1, 2019, to May 31, 2020). Hence, year 1 of the QI project extended from June 1, 2020, through April 2021, and year 2 extended from May 1, 2021, to June 30, 2022. We included a total of 35 151 patients with type 2 diabetes. We included patients with type 2 diabetes identified from the EHR using *International Classification of Diseases, Ninth Revision, Clinical Modification* (Hyattsville, MD: National Center for Health Statistics; 1980) codes 250.0–250.9, 357.2, 362.0, and 366.41 and *International Classification of Diseases, 10th Revision* (Geneva, Switzerland: World Health Organization; 1992) codes E10.0–E14.9. The mean age of patients with diabetes was 56.7 (SD = 14.7) years, 52.8% were female, 48.4% had hypertension, and 25% had baseline A1c greater than 9%. Self-reported race/ethnicity was 47.0% White, 38.9% non-Hispanic Black, 7.4% Hispanic, and 6.7% other, and the primary insurance type was 39.6% Medicare, 27.4% Medicaid, 31.1% commercial, and 1.9% uninsured or self-pay.

PURPOSE

Our primary aim was to align primary care practices and MCPs to improve diabetes health outcomes, with a specific initial focus on improving A1c levels.

EVALUATION AND ADVERSE EFFECTS

We evaluated the QI project impact using the following aggregated measures: (1) A1c tested in the last 12 months for all patients with diabetes, (2) follow-up visit scheduled virtually or in person if A1c was greater than 9%, and (3) most recent A1c greater than 9% (primary outcome). We measured outcomes longitudinally using repeated cross-sections of EHR data and presented results as statistical process control charts with upper and lower confidence limits. We placed a shift in the mean when eight consecutive points were above the upper confidence limit on the control chart, and this corresponded to a new intervention implemented at the practices according to the methodologies set forth in *The Health Care Data Guide*.[4] We used three times the standard deviation as the confidence limits.

We did not have a balancing measure to determine adverse effects because all other EHR measures had some relation to diabetes care, although these measures like depression screening improved or stayed the same indicating no clear adverse effect (data not shown).

Figure 1 demonstrates that adults with diabetes and A1c greater than 9% seen at the primary care practices improved from 25% at baseline to 20% by the end of the intervention. A1c levels worsened initially during the COVID-19 pandemic, returned to baseline, and then improved beyond baseline as the practices were able to implement protocols to improve glycemic control in the context of COVID-19. Figures A and B (available as supplements to the online version of this article at https://ajph.org) demonstrate the process improvements in A1c testing and scheduled follow-up in team-based care. We were unable to measure processes related to social drivers of health interventions and MCP interventions because of the challenges in capturing these data.

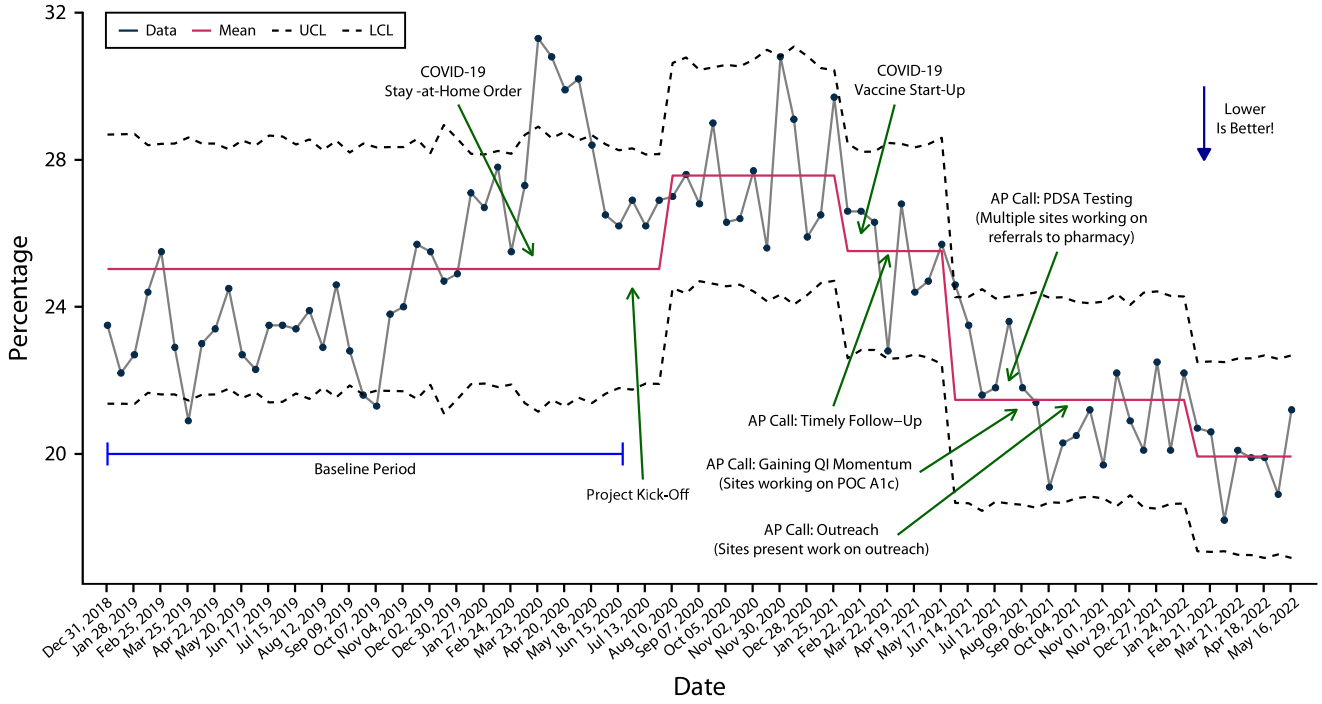

FIGURE 1— Percentage of Adults With Diabetes Whose Most Recent Hemoglobin A1c Was Greater Than 9% for All Sites Combined by Month: Ohio, 2020–2022

Note. AP = action period call or webinar; LCL = lower confidence limit; PDSA = plan, do, study, act; POC A1c = point of care A1c testing; QI = quality improvement; UCL = upper confidence limit. Monthly sample size: median = 1730; minimum = 1099; maximum = 2361.

SUSTAINABILITY

As a mechanism for sustaining gains and for larger spread across Medicaid enrollees, the Ohio Department of Medicaid is currently funding regional QI hubs at each of the seven medical schools and encouraging recruitment of 10 to 25 practices initially in each region, with an eventual goal of reaching at least 50% of Medicaid enrollees in each of the seven regions. Data on whether practices were able to maintain gains were not captured and were outside the scope of this project. However, similar implementation strategies within the context of a regional QI collaborative led to sustained improvements in blood pressure control for more than two years.[5,6]

PUBLIC HEALTH SIGNIFICANCE

At a time of great chaos within health care associated with worsening of chronic conditions because of COVID-19,[7] we succeeded in establishing a statewide diabetes QI collaborative to improve A1c control in patients with diabetes at primary care practices with a high volume of Medicaid enrollees throughout Ohio. Using evidence-based data-driven interventions tailored to the practice and patient is essential for successful large-scale QI efforts in primary care. While many QI efforts for diabetes have been successful, there are no statewide models for diabetes improvement. A statewide model avoids policy barriers that may exist across states for payers and health care systems and has the potential for larger benefit than regional approaches within a state. This model for statewide health improvement for populations with a high volume of Medicaid enrollees could be expanded within a state by using medical schools or other trusted clinical and QI organizations. AJPH

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CONTRIBUTORS

S. D. Bolen and J. J. Joseph were involved in project design, implementation, data analysis and interpretation, and writing and revising the article. K. M. Dungan, E. A. Beverly, A. T. Perzynski, K. Jenkins, A. Lorenz, K. M. Adams, and M. S. Applegate were involved in project design, implementation, data analysis interpretation, and critically revising the article. D. Einstadter was involved in project design; implementation; data extraction, analysis, and interpretation; and critically revising the article. J. Fiegl was involved in data analysis and interpretation, and in writing and critically revising the article. T. E. Love was involved in project design, data analysis and interpretation, and critically revising the article. D. Spence and S. J. Uddin were involved in data extraction, analysis, and interpretation, and in critically revising the article. M. W. Konstan was involved in project design, data analysis interpretation, and critically revising the article.

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Note. The authors are solely responsible for this article's contents, findings, and conclusions, which do not represent the views of the state of Ohio, Ohio Department of Medicaid (ODM), or any federal programs. Readers should not interpret any statement in this report as an official position of ODM or of Health and Human Services.

CONFLICTS OF INTEREST

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HUMAN PARTICIPANT PROTECTION

While the Diabetes QI Project was deemed not human participant research, we did have an institutional review board (IRB) and data use agreement to evaluate the retrospective electronic health record data from the project at Case Western Reserve University under IRB STUDY20191098.

REFERENCES

1. Centers for Medicare and Medicaid Services. Comprehensive diabetes care: hemoglobin A1c (HbA1c) poor control (>9.0%): ages 18 to 75. Available at: https://www.medicaid.gov/state-overviews/scorecard/comprehensive-diabetes-care/index.html. Accessed February 25, 2023.
2. Kania J, Kramer M. Collective impact. *Stanf Soc Innov Rev*. 2011;9(1) 36–41. https://doi.org/10.48558/5900-KN19
3. Bolen SD, Beverly EA, Khoury S, et al. Forming Cardi-OH: a statewide collaborative to improve cardiovascular health in Ohio. *Cureus*. 2022;14(8):e28381. https://doi.org/10.7759/cureus.28381
4. Provost L, Murray S. *The Health Care Data Guide: Learning From Data for Improvement*. Hoboken, NJ: John Wiley & Sons; 2011.
5. Pfoh ER, Martinez K, Vakharia N, Rothberg M. Impact of a system-wide quality improvement initiative on blood pressure control: a cohort analysis. *BMJ Qual Saf*. 2020;29(3):225–231. https://doi.org/10.1136/bmjqs-2018-009032
6. Bolen SD, Love TE, Einstadter D, et al. Improving regional blood pressure control: a positive deviance tiered intensity approach. *J Gen Intern Med*. 2021;36(6):1591–1597. https://doi.org/10.1007/s11606-020-06480-z
7. Nielsen VM, Song G, Ojamaa LS, Blodgett RP, Rocchio CM, Pennock JN. The COVID-19 pandemic and access to selected ambulatory care services among populations with severely uncontrolled diabetes and hypertension in Massachusetts. *Public Health Rep*. 2022;137(2):344–351. https://doi.org/10.1177/00333549211065515