



Tools for Clinics:

Four Health Centers Use Chronic Disease Management Systems

Introduction

Many providers are finding value in using chronic disease management systems (CDMS) for population-based care management. A CDMS tracks multiple chronic conditions such as asthma, diabetes, hypertension, and depression, and can collect and present data for thousands of patients at a time. Also known as an advanced registry or population health management system, a CDMS can improve preventive care by automating recall processes based on periodicity, risk factors, or lab results. It can enable providers to scale up their quality improvement processes to a level that is unattainable through traditional chart audits.

This issue brief profiles four health centers in California across a continuum of CDMS implementation and use. The populations served by these health centers are low-income, underserved, and most vulnerable to disparities in treatment for chronic conditions. Each case study demonstrates some common principles and success factors as well as individualized approaches to quality improvement.

South Central Family Health Center

Located in a densely populated urban area of Los Angeles is the South Central Family Health Center (SCFHC). Diabetes is an epidemic in this community of 1.1 million. CEO Felix Aguilar estimated that at least one-third of SCFHC's patients are affected. Since April 2004, the center has participated in the Bureau of Primary Health Care's Health Disparities Collaborative, which includes use of the Patient Electronic Care System (PECS) registry for managing diabetes patients. All providers use the flow sheets and data generated from the registry. The population in the PECS registry has grown from 150 in 2004 to 625.

Diabetic Program Coordinator Sheree Gordon achieved a great deal with this technology system despite some early resistance from some providers. "At first, a lot of the providers didn't like the forms that were coming out of PECS," she said. "But we kept stressing the urgency of...collecting the data in a uniform way, and why the information was so valuable despite an awkward format. We were very persistent." Gordon oversees PECS

"The Diabetic Group Session is very vital. Before I started attending the class I did not understand what diabetes was. I was not taking care of myself the way I should to make my life span longer.

I feel empowered now because I know how to check my blood sugar, I'm taking my medication the way the doctor wants me to, and I now exercise 30 minutes a day."

— MANUEL SANTOS, SCFHC PATIENT

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data entry for accuracy and timeliness. Charts are flagged with a blue folder to indicate a patient classified as “uncontrolled”—defined by SCFHC as an HgA1c greater than 7.

Under Aguilar’s leadership, SCFHC has expanded diabetes care from individual visits and patient education sessions to a model of diabetic disease management visits. On Tuesdays and Saturdays, 15 to 35 patients attend a session that includes education, lab tests (including an on-the-spot check from a portable HgA1c machine), foot exams, and retinal screenings. Ophthalmology consultations are provided via a store-and-forward teleophthalmology program. Patients also receive peer support and a consultation with a provider.

Self-management goals are tracked in PECS and information from the group visit guides each individual visit. “Education and self-management goals are integral to better patient care,” said Aguilar. “Patient feedback tells us they are happy with the education they receive. They are enthusiastic about the visits and feel empowered by the education. Many times they weren’t aware of the disease state and what they can do at home.” To enhance

reinforcement for patient self-management, Gordon solicits donations from local merchants and provides incentive gift packs; each includes a pedicure set, sugar-free snacks, and a glucose monitor.

Aguilar said data and technology help the staff to arrive at consensus-driven decisions. “I don’t push changes because the providers are the agents who have to carry them out,” he said. “Technology systems help us to validate the degree to which the changes have been successful, but patient response is also a big influence on our decision-making.”

SCFHC plans to obtain a more advanced CDMS through a foundation grant. “We’ll be so much more efficient,” said Information Technology Manager Rodrigo Ibarra. “With interfaces to our practice management system, both our reference labs and our inhouse pharmacy system, we can expand tracking efforts to hypertensive patients and women’s health programs with less effort than we now expend on the diabetes program data entry.” Aguilar and Ibarra said CDMS has brought the center a step closer to electronic health records. It also promotes the organization’s plan to integrate home visits and a

South Central Family Health Center

Location: Los Angeles, CA

Mission: To improve the quality of life for the diverse community of inner-city Los Angeles by providing affordable and comprehensive health care and education in a welcoming multicultural environment.

Services: Comprehensive health care for adults and children, including screening, diagnosis, treatment, health maintenance, preventive care, prenatal, well-child and adolescent care, adult education/counseling, behavioral health services, and outpatient care. Dispensary and lab on premises.

INFORMATION SYSTEM	PRODUCT(S)	DATE IMPLEMENTED
Practice management system	MegaWest	2004
CDMS	PECS	2005
EHR	N/A	N/A
Lab interface	Quest, WestCliff	Planned Q1 2009
Other interfaces	CarePoint, HealthPort i2iTracks, RxAssist	Planned Q4 2008

Site type: Urban
FQHC: Yes
Number of sites: 2
Annual patients: 10,151*
Annual encounters: 44,362*
FTE providers: 15.07*

*2007 OSHPD data.

†2007 OSHPD data. FTE primary care providers include: physicians, PAs, FNP’s, certified nurse practitioners, certified nurse midwives, nurses, dentists, psychologists, LCSWs, other providers billable to Medi-Cal, and other certified CPSP providers.

“promotora” (community health worker) program into diabetes care management.

Family HealthCare Network

Family HealthCare Network is a ten-site federally qualified health center located in Tulare County, in the heart of California’s Central Valley. Implementing a CDMS was delayed while the organization upgraded its practice management system and stabilized its billing processes. “You need to know how much change and chaos your organization can deal with at one time,” said Norma Verduzco, operations project director. In September 2008, Family HealthCare Network launched a pilot of i2iTracks, an advanced CDMS. The health center plans to begin with diabetes management and expand to other chronic diseases.

Verduzco and Information Systems Project Director Blanca Schmitz manage daily activities while updating the project plan that guides implementation, including interface development and testing, workflow analysis, data conversions, and training. “In community health centers, everyone wears many hats,” said Ruben Chavez, vice president of operations. “We realized that if we didn’t dedicate resources specifically for management of strategic projects, we’d be setting up these projects to fail. It’s not something you can ask someone to do in their spare time.”

The project is run by a cross-departmental team of director-level staff, with help from front-line staff as needed. “The CDMS is an organization-wide system that will be used in some way by nearly everyone, so the project team must be truly multidisciplinary,” said Verduzco. “Staff must be engaged and take ownership of their assigned areas to make the implementation successful.” To ensure good communication, the project co-directors involve supervisors through public site meetings. Said Schmitz, “We need people to know that i2iTracks is not a technology project—it’s a tool to improve care processes.”

Know What You Want

Medical Director Christopher Rodarte is the clinician champion for the project. He said it is critical to know what is desired from a CDMS before the process begins: “Everyone has their own perspective on how the system should be used and what they want out of it. These needs have to be acknowledged and reconciled.” Rodarte said an administrator may only need to know that diabetic patients are getting their HgA1c measured every six months, but a clinician needs to know how those values are trending. “If an HgA1c remains at 7 over and over, that tells me I’m not doing enough for the patient,” said Rodarte. “We may be meeting standards of care from a reporting perspective, but is that enough?” Unless the data are used to drive the care process, emphasizes Rodarte, health centers are “buying a Porsche and just driving it around the block.”

Two years ago, Family HealthCare Network restructured in order to standardize clinic processes and establish data quality, a decision that now serves it well in its CDMS implementation. Director-level positions were created to ensure greater accountability. A clinic manager was appointed for each site and a database analyst was hired to manage data, run data audit reports, and keep accounts accurate. This process focuses on quality assurance for Uniform Data System (UDS) measures but also identifies duplicate patients, inactive patients, and monitors other data elements from demographic profiles (e.g., language code, birth date errors).

Each month, a “mud list” of accounts with erroneous or suspicious data is produced. The report is sorted by site, and clinic managers are responsible for correcting site accounts. Accounts are then audited by another staff member to verify accuracy and completeness. Director of Operations Nancy Banuelos estimated that nearly 10,000 duplicate accounts have been corrected in two years. She emphasized addressing data quality on the front end and setting expectations for accurate data during new employee orientations. “There is a quality mindset that

must be created to ensure clean data,” said Banuelos. “Processes and systems have been created to communicate this to staff and supervisors. If data is entered correctly the first time, there is no need to go back and clean it, which is time-consuming and redundant.” Consistent problem areas are brought to the attention of the staff, and data accuracy trends are shared in monthly meetings with clinic managers. Director of Quality Improvement Marisol de la Vega said the next major data quality initiative will focus on accurate coding of encounters.

Although some smaller organizations have dedicated care coordinators at each clinic site to enter the data elements not automatically interfaced to i2iTracks, Family HealthCare Network has instead focused on intensive training for its medical assistants, known as patient care assistants, or PCAs. The project team members agree that PCA buy-in is crucial. Training Director Roger Kirton and five staff members designed an intensive, role-specific training program with an eight-module curriculum for PCAs, and a 22-module training curriculum for front office staff. Each clinic manager will be fully versed in the set-up, data standards, and quality improvement processes that the CDMS automates. As the system is rolled out,

each site will have a super-user who can provide frontline support.

The project team has taken a hands-on approach to developing interfaces and data conversion. Schmitz organized a conference call with i2i Systems (CDMS), HealthPort (practice management), and Quest (lab results). Data elements from HealthPort to i2iTracks were discussed and mapped. To verify the accuracy of the conversion process, a small, 5,000-record test file was converted and examined. Although the spot-checking and verification of information took hours to complete, it resulted in the health center being well prepared for the full data conversion. The test highlighted inaccuracies and expanded the team’s knowledge of the process and its possibilities. It also allowed the team to estimate the amount of time and system memory that would be required for the full 200,000-record conversion.

Another interface will be developed to send demographic data from HealthPort to Quest. Lab technicians will be able to enter information on the 60 percent of patients whose lab specimens are processed locally, without having to re-enter demographic information at the risk

Family HealthCare Network

Location: Visalia, CA

Mission: We provide quality health care to everyone in the communities we serve. FHCN serves nearly 20 percent of the population in Tulare County, making us the county’s largest provider of primary health care services.

Services: Preventive, acute, and chronic care services, including family medicine, internal medicine, pediatrics, OB/gyn, family planning, dentistry, clinical laboratory, radiology, mammography, ultrasound, integrated complementary alternative medicine, pharmacy, health education, translation, integrated behavioral health, nutritional counseling, community outreach, and transportation services.

INFORMATION SYSTEM	PRODUCT(S)	DATE IMPLEMENTED
Practice management system	HealthPort v11.07	Upgrade 2008
CDMS	i2iTracks	September 2008
EHR	N/A	N/A
Lab interface	Quest	Pilot November 2008
Other interfaces	Dentrix	July 2007

Site type: Urban/rural
FQHC: Yes
Number of sites: 11 clinical; 2 administrative
Annual patients: 97,828*
Annual encounters: 389,234*
FTE providers: 91.28†

*2007 OSHPD data.

†2007 OSHPD data. FTE primary care providers include: physicians, PAs, FNPs, certified nurse practitioners, certified nurse midwives, nurses, dentists, psychologists, LCSWs, other providers billable to Medi-Cal, and other certified CPSP providers.

of data entry errors. Family HealthCare Network is the first health center to attempt this type of two-way interface. “Interfaces are really a partnership between all participants,” said Verduzco, “but in the end the accountability rests with us to make sure we get what we want.”

San Ysidro Health Center

San Ysidro Health Center (SYHC) is a nine-site federally qualified health center serving more than 65,000 patients annually in the greater San Diego area. For a year and a half, it has been using a CDMS to manage diabetes patients at its main clinic site and to enable a comprehensive quality improvement program. After seeing a demonstration of i2iTracks, SYHC eagerly moved forward with Chief Medical Officer Matthew Weeks as clinician sponsor and Quality Manager Gabriela Alvarado as implementation manager. They quickly saw the value of using the program. “Traditional quality assurance programs are based on pulling doctors out of clinic to review charts,” said Weeks, “whereas i2iTracks makes peer review so much easier. The number of chart pulls required is drastically reduced. Statistics show that each time you pull a chart it costs between \$5 and \$10.”

Like many federally qualified health centers, SYHC began monitoring diabetes patients through the federal Health Disparities Collaborative, using PECS as its registry. The target population has grown from 100 in the PECS registry to nearly 400 monitored with i2iTracks over the past year, with two providers participating.

Outreach to patients through appointment reminders and letters is difficult because between 40 and 50 percent are returned due to bad addresses. Instead, SYHC focuses on being ready for each patient as he or she comes through the door. Diabetes patients are assigned a tracking code that makes it possible to run a daily report showing which diabetes patients will be seen the next day. Medical assistants working with providers in the diabetes management program prepare visit summaries that

highlight overdue action items such as retinal exams, foot exams, dental visits, and HgA1c checks. Because SYHC offers dental services, patients are encouraged to make dental appointments at checkout.

Medical assistants have adapted to the new technology and workflow easily, according to Director of Nursing Margarita Espinosa. “Because they work as a care team, now they really feel like they are more involved in the patient’s health,” she said. In fact, the visit summaries have contributed to improvements in average hemoglobin A1c measurements from 8 to 7.7. CMO Weeks predicts, “We’ll eventually want to have a patient visit summary for all patients.”

Remaining Roadblocks

Some challenges persist. There have been data integrity issues with the practice management system, leading to problems with the interface between the two systems. “It really hit me that the data quality in the PM system was very poor,” said Weeks. In addition, PECS data entry error rates were between 7 and 8 percent, even with graduate students entering the data. With medical assistants doing the data entry into i2iTracks in the course of a busy day, clinic staff is concerned about higher error rates. The clinic plans to address these issues before expanding the program to more patients. The team views data integrity issues as an opportunity to clean up the demographic and coding data that drive so many decisions and processes.

While working through data integrity, workflow, and conversion issues, SYHC has instituted innovations using searches and queries in the CDMS. Quality Manager Gabriela Alvarado (who displays more than 40 searches, or report templates, on her monitor) and Weeks discovered the power of querying the data collected through the practice management system and brought into the CDMS through the interface. The intent is to set up these searches to correspond to the performance standards they have derived from national guidelines,

HEDIS indicators, or internal standards of care, and run the reports for benchmarking purposes on a regular basis. One search creates a list of new health plan members requiring comprehensive health assessments so that they can be encouraged to make appointments. In addition, i2iTracks is used to provide a weekly report for the Border Infectious Disease Surveillance project of the San Diego Department of Public Health. “If I didn’t have a system like this, I don’t know what I’d do,” said Alvarado. “Otherwise, I’d have to request reports from the IT department, fill out a work order, make a formal request, and have it go into the queue to be prioritized with so many other requests. This is quick, easy, and I have the information at my fingertips.”

In addition, Weeks has developed a search protocol for the county’s Health Care Coverage Initiative, which targets diabetes and hypertension. The goal is to establish a medical home for enrollees who inappropriately utilize emergency departments. The CDMS query finds patients who are scheduled for visits, are uninsured, and whose records indicate one or both targeted conditions. Typically, the search identifies 100 to 125 patients per week, representing 20 to 25 patients per day, who could be eligible for this funding. Weeks alerts physicians that

they will be seeing patients the next day who are eligible for the Coverage Initiative. The query took him less than an hour to write and has the potential to increase patient care as well as revenue. “We’ve taken i2iTracks out of the chronic disease pigeon-hole and turned it into a tool to promote insurance coverage,” said Weeks.

“Most health care organizations devote less than 1 percent of their budget to quality. Think about it: Would you buy a product from a company that devoted less than 1 percent of its budget to quality?”

— MATTHEW WEEKS, M.D.

Based on experience with rolling out a referrals module, SYHC recommends going slowly. “We tried to do too much too fast and it didn’t go well,” said Weeks. “You need to ask yourself, ‘How much disruption can the organization handle?’” The next goal involves HIV care. “We’ve looked at the tables for HIV care in i2iTracks, and it’s really well-suited for this,” said Alvarado.

San Ysidro Health Center

Location: San Ysidro, CA

Mission: To improve the health and well-being of our community’s traditionally underserved and culturally diverse people.

Services: Primary and specialty care, OB/gyn, dental care, mental health services, hearing screening, nutrition services, pharmacy, vision screening, podiatry, HIV/AIDS services, immunizations, WIC, and preventive care. Enabling services include case management, eligibility assistance, health education, outreach, and transportation.

INFORMATION SYSTEM	PRODUCT(S)	DATE IMPLEMENTED
Practice management system	HealthPort	January 2000
CDMS	i2iTracks	June 2007
EHR (1 site)	HealthPort	February 2003
Lab interface	Quest Diagnostics	June 2007

Site type: Urban
FQHC: Yes
Number of sites: 9
Annual patients: 52,050*
Annual encounters: 182,764*
FTE providers: 61.63†

*2007 OSHPD data.

†2007 OSHPD data. FTE primary care providers include: physicians, PAs, FNPs, certified nurse practitioners, certified nurse midwives, nurses, dentists, psychologists, LCSWs, other providers billable to Medi-Cal, and other certified CPSP providers.

Redding Rancheria Indian Health Services Center

Redding Rancheria Indian Health Services Center in Northern California provides “womb to tomb” care for members of Native American households. In 2002, Ron Sisson, senior health services director, saw a demonstration of i2iTracks. Sisson, who has an IT background, understood the potential of this system to help the health center obtain meaningful data from its practice management system. Redding Rancheria received special help from i2i Systems to aggregate and present data in the format required by the Federal Government Performance and Results Act (GPRA). Federal reporting, notes Sisson, is critical to the clinic’s funding: “If there’s no data, there’s no proof.”

Based on the high prevalence of diabetes in Redding Rancheria’s population, the clinic obtained grant funding to purchase the system in 2002. The diabetes educator saw how i2iTracks could be used for abstracting information from large volumes of charts, thereby freeing up patient care resources. The CDMS was implemented with the diabetes educator serving as implementation lead and with support from Sisson, Medical Director Paul Davies, and IT Manager Ed McCarthy.

The importance of accurate data was obvious to the team. “Tracks is immediately populated with all the data from the practice management interface,” said Quality Coordinator Hal Paquin, R.N., “and you will be amazed at what you find.” For example, the data revealed that for two years, billers had submitted claims for Td immunizations (tetanus, diphtheria) because that was easier than billing for Tdap immunizations (tetanus, diphtheria, pertussis). The consequence of inaccurate data was like having “the Sword of Damocles hanging over you, but you just don’t know it,” said Paquin. The CDMS has enabled the clinic to move from what Paquin describes as a passive approach to a much more active system of patient management, including screening for depression, domestic violence, and all GPRA measures.

The data entry process was originally assigned to medical assistants as part of the patient visit process, but this did not work well, and the clinic hired Trina Arreola, a medical assistant, to serve as the “Tracks Officer.” “We needed someone who can read the chart, who knows what the data means, who had worked on the floor with providers, who is detail-oriented and appreciates the consequences of inaccurate or missing data,” said Sisson. All charts go through Arreola, who enters critical data elements from each encounter into the CDMS database. For the average 100 visits per day, data entry is accurate and up-to-date within 24 hours. Arreola said, “I can go back to a nurse immediately and say ‘you forgot to mark this.’ It serves as a great feedback loop while it’s still fresh in their minds. It’s the teachable moment.”

Award-Winning Program

Family Nurse Practitioner Carrie McLaughlin, who heads the diabetes management efforts at Redding Rancheria, is pleased with the impact on patient care. “Having one knowledgeable, dedicated person assigned to tracking data is extremely helpful and makes the process easier and reliable,” she said. Using the CDMS, Redding Rancheria has built an award-winning diabetes management program, earning them a place as one of 25 IHS clinics to participate in the national Healthy Heart Program. CDMS use has been expanded to immunization and women’s health. Next up: pharmacy management.

Medical Director Paul Davies acknowledges the important role that technology has played in quality improvement. “Previously, to track diabetes required an annual chart audit. It was tedious and you couldn’t manipulate the data. In women’s health, Paps were being tracked by index cards. Now, we have automated that process and expanded our abilities.” The clinic also tracks childhood immunizations and does outreach to patients, contacting them via secure mailers to make sure children are up-to-date with their immunizations. Because of the success of the childhood immunization program, the clinic is now

tracking prenatal care and adolescent immunizations. Asthma patients will be next.

“Ten years ago we were not providing true primary care,” said Davies. “We were putting out fires. There was no active health maintenance, preventive care, or chronic disease management. Now we can say that we’re truly a primary care clinic.”

After five years of experience, Paquin offers this advice to new CDMS users:

1. **Define your goal.** Pick one thing to track and give it adequate time for development. Set a timeline to see whether the goal was met.
2. **Use a flow chart.** You will identify all the “black holes” through this process.

Sisson added “Be very proactive about the data. Understand the cost of good data and build that into your operating expenses. Good data can cost more to maintain, but for research, grant funding, and patient care, data is king. This is a core value of the health center—data and technology systems are right up there.”

Conclusion

A chronic disease management system is a very valuable tool, but for it to work, every employee must participate. Properly used, a CDMS becomes part of the daily routine and organizational culture. Critical success factors include:

- The organization must have a vision for quality improvement communicated by its leaders with clear lines of authority and opportunities for input from all employees.
- Data have the potential to be used to improve clinical, financial, and workflow processes on an ongoing basis, and can be used in unexpected and creative ways.
- Data are only as good as the individuals entering them and, therefore, identifying dedicated resources and accountability structures is essential for data quality.

Implementing any new system is best done incrementally and at a pace appropriate to each organization’s abilities. Because implementing a new system requires changes in workflow and culture, moving slowly but steadily is best.

Redding Rancheria Indian Health Clinic

Location: Redding, CA

Mission: To develop and provide responsive, cost-effective, high-quality health care services that meet the needs of the Redding Rancheria Tribal members and other Native American Indians residing in the service area. We are committed to excellent care, a compassionate, respectful attitude, and full involvement of the patient and family in health care decisions.

Services: A full spectrum of men’s and women’s health, behavioral health, contract health services, outreach programs, nutritional services, diabetic education, pharmacy, transportation, substance abuse counseling, Indian child welfare, and traditional healing.

INFORMATION SYSTEM	PRODUCT(S)	DATE IMPLEMENTED
Practice management system	NextGen	May 2007
CDMS	i2iTracks	March 2002
EHR	None	
Lab interface	LabCorp/i2i	January 2007
Other interfaces	Pharmacy/i2i	January 2007

Site type: Urban
FQHC: No
Number of sites: 1
Annual patients: 5,000–7,000*
Annual encounters: 16,000–18,000*
FTE providers: 12 [†]

*2007 OSHPD data.

[†]2007 OSHPD data. FTE primary care providers include: physicians, PAs, FNPs, certified nurse practitioners, certified nurse midwives, nurses, dentists, psychologists, LCSWs, other providers billable to Medi-Cal, and other certified CPSP providers.

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