Primary Care Clinic Re-Design for Prescription Opioid Management

Michael L. Parchman, MD, MPH, Michael Von Korff, PhD, Laura-Mae Baldwin, MD, Mark Stephens, BS, Brooke Ike, MPH, DeAnn Cromp, MPH, Clarissa Hsu, PhD, and Ed H. Wagner, MD, MPH

**Background:** The challenge of responding to prescription opioid overuse within the United States has fallen disproportionately on the primary care clinic setting. Here we describe a framework comprised of 6 Building Blocks to guide efforts within this setting to address the use of opioids for chronic pain.

**Methods:** Investigators conducted site visits to thirty primary care clinics across the United States selected for their use of team-based workforce innovations. Site visits included interviews with leadership, clinic tours, observations of clinic processes and team meetings, and interviews with staff and clinicians. Data were reviewed to identify common attributes of clinic system changes around chronic opioid therapy (COT) management. These concepts were reviewed to develop narrative descriptions of key components of changes made to improve COT use.

**Results:** Twenty of the thirty sites had addressed improvements in COT prescribing. Across these sites a common set of 6 Building Blocks were identified: 1) providing leadership support; 2) revising and aligning clinic policies, patient agreements (contracts) and workflows; 3) implementing a registry tracking system; 4) conducting planned, patient-centered visits; 5) identifying resources for complex patients; and 6) measuring progress toward achieving clinic objectives. Common components of clinic policies, patient agreements and data tracked in registries to assess progress are described.

**Conclusions:** In response to prescription opioid overuse and the resulting epidemic of overdose and addiction, primary care clinics are making improvements driven by a common set of best practices that address complex challenges of managing COT patients in primary care settings. (J Am Board Fam Med 2017;30:44–51.)

**Keywords:** Ambulatory Care Facilities; Analgesics, Opioid; Chronic Pain; Drug Overdose; Leadership; Opioid-Related Disorders; Prescriptions; Primary Health Care; Registries; Research Personnel; Workflow

The current epidemic of prescription opioid overdose and deaths may be the most significant iatrogenic epidemic in the recent history of medicine in the United States.1–3 Although the responsibility for initiation of opioids for chronic pain may be attributed to primary care clinicians to some degree, the sheer numbers of patients taking a prescription opioid medication for long-term chronic pain has placed an enormous burden on primary care where the majority of opioid prescriptions are written.4 This burden may contribute to burnout and stress in primary care settings where both prescribers and clinic support staff struggle daily to balance risks and the potential for abuse and diversion with empathy for the suffering of chronic pain patients.5

As evidence accumulates to support more judicious use of COT, guidelines for prescribing opioids such as those recently released by the U.S. Center for Disease Control and Prevention have been released or updated.6 However, implementing
these recommendations will require changes to clinic systems and workflows of health care teams across the entire clinic, not just changes by individual prescribers. Systematic changes to make opioid prescribing safer have been evaluated in large integrated health care delivery systems such as Veteran’s Administration clinics and other large group practice settings. Less is known about systems approaches to improve the overuse of COT across a diversity of primary care settings.

Here we describe a framework comprised of 6 Building Blocks to guide smaller clinics in practice redesign and improvement, derived from observations of thirty primary care clinics selected for their innovations in team-based care delivery. The intent is to provide general principles and best practices that can be adapted or applied across diverse primary care clinic settings.

**Methods**

**Data Sources**

In 2012 the Robert Wood Johnson Foundation funded Primary Care Teams: Learning from Exemplar Ambulatory Practices (LEAP). The goal of LEAP was to study team-based workforce innovations across diverse primary care clinics within the United States. A national advisory committee of experts and stakeholders in primary care provided nominations. Sites were screened in a telephone interview and reviewed by members of the LEAP study team who then made recommendations to the advisory committee who made the final selection of thirty clinics for site visits.

A team of 3–4 LEAP investigators conducted a 3-day site visit to each clinic. Site visits included group interviews with the leadership team, comprehensive tours of each clinic focused on understanding workflows and general clinic functioning, detailed observations of clinic processes and team meetings, interviews with individual staff and clinicians, and shadowing of patients during their visits. Supporting documents, tools, and resources such as clinic policies, workflows, patient-facing materials, and decision tools were also collected.

**Data Coding and Analysis**

Several LEAP investigators initially coded the site visit data (DC, CH) using broad codes to capture key primary care team member roles and functions. One broad code for “medication management” included experiences with managing COT. One LEAP research team member (DC) then subcoded for opioid-related data within the broad medication management code by searching the LEAP dataset for key words such as “opioids,” “pain,” and “narcotics” to ensure that the opioid subcode would be applied to all relevant data. The opioid subcode contained 91 pages of data.

A small team of LEAP investigators (MLP, DC, CH) reviewed the coded data with the goal of identifying common components that informed clinic redesign efforts to improve COT management. These concepts were presented to the larger team (MVK, MS, LMB, EHW), who verified them and developed descriptions of each component. Themes and concepts were also compared and contrasted to a Group Health opioid improvement initiative to identify common elements and strategies. As descriptive phrases and definitions were developed, examples of activities used by the clinics to make the necessary changes were identified from the LEAP data sources.

**Results**

Twenty of the 30 LEAP clinics had made systematic improvements in COT management. (Table 1) Each site had different priorities in developing their policies and processes related to COT. These included avoiding the issue (eg, several refused to prescribe opioids for chronic pain); concerns about staff security (protecting staff from threats by drug seekers); enhancing safe management of opioids; and actively treating prescription opioid addiction. Concerns about drug seeking were a higher priority in many sites than opioid dose reduction and their COT-prescribing programs often reflected their priorities.

Across the LEAP site where COT was used for chronic noncancer pain, a common set of change principles were noted as playing an important role in addressing their priorities. Here we describe these elements as 6 Building Blocks that summarize our findings. (Table 2)

**Building Block 1: Providing Leadership Support**

“It was definitely another of those transformational efforts, because it required everyone in the organization to understand what we’re doing and so even the folks at the
<table>
<thead>
<tr>
<th>State</th>
<th>Clinic Type</th>
<th>Location</th>
<th>Payer Mix</th>
<th>Example Opioid Improvement</th>
<th>Building Block(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA</td>
<td>FQHC, nurse-led</td>
<td>Urban</td>
<td>4% Medicare, 58% Medicaid, 14% commercial, 23% uninsured</td>
<td>Chronic pain group therapy</td>
<td>4,5</td>
</tr>
<tr>
<td>WV</td>
<td>FQHC, AHEC</td>
<td>Rural</td>
<td>17% Medicare, 25% Medicaid, 22% commercial, 30% uninsured</td>
<td>Chronic pain group visits, Pain registry, Chronic opioid prescribing policy and pathway</td>
<td>1,2,3,5</td>
</tr>
<tr>
<td>SC</td>
<td>FQHC</td>
<td>Rural</td>
<td>32% Medicaid, 12% Medicare, 15% Other</td>
<td>Standard care plans, In house physical therapy, Suboxone</td>
<td>2,3,4</td>
</tr>
<tr>
<td>OR</td>
<td>FQHC, residency</td>
<td>Urban</td>
<td>20% Medicare, 50% Medicaid, 0% commercial, 30% uninsured</td>
<td>Chronic pain group visit, In-house CAM therapy, Revised policies, Random urine drug tests, Patient agreements, Suboxone, Suboxone, 28-day refills</td>
<td>2,3,4</td>
</tr>
<tr>
<td>NH</td>
<td>MMG</td>
<td>Rural</td>
<td>45% Medicare, 2% Medicaid, 50% commercial, 3% uninsured</td>
<td>Patient agreements, Opioid QI team, Revised policies</td>
<td>2,5</td>
</tr>
<tr>
<td>WA</td>
<td>MMG</td>
<td>Rural, Suburban</td>
<td>20% Medicare, 9% Medicaid, 61.5% commercial, 9.5% uninsured</td>
<td>Chronic pain re-design team, Suboxone, Pain registry, Patient agreements, Random urine drug screens, Workflow for refills</td>
<td>2,4</td>
</tr>
<tr>
<td>MA</td>
<td>MMG</td>
<td>Suburban</td>
<td>23% Medicare, 5% Medicaid, 70% commercial, 2% uninsured</td>
<td>Patient agreements, Revised clinic policies, Suboxone, Chronic pain group visits, Random urine drug screens</td>
<td>2,3,4</td>
</tr>
<tr>
<td>NM</td>
<td>FQHC</td>
<td>Frontier/ Rural</td>
<td>28% Medicaid, 30% commercial, 19% Medicare</td>
<td>Chronic pain group visits, Behavioral health integration on teams, Mental health “first aid” training for staff</td>
<td>3,4</td>
</tr>
<tr>
<td>CO</td>
<td>FQHC</td>
<td>Rural</td>
<td>47% Sliding Scale, 17% Medicaid, 15% Medicare, 18% commercial, 6% self pay</td>
<td>Revised policies, Routine PDMP check with refills, Patient agreements, No refills on Fridays</td>
<td>2</td>
</tr>
<tr>
<td>ME</td>
<td>MMG</td>
<td>Suburban</td>
<td>35% Medicare, 4.4% Medicaid, 45% commercial, 5.4% uninsured</td>
<td>Registry with chronic pain manager, Chronic pain group visits, Revised policies</td>
<td>2,3,4</td>
</tr>
</tbody>
</table>

Continued
<table>
<thead>
<tr>
<th>State</th>
<th>Clinic Type</th>
<th>Location</th>
<th>Payer Mix</th>
<th>Example Opioid Improvement</th>
<th>Building Block(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO</td>
<td>MMG</td>
<td>Urban, Suburban, Frontier/ Rural</td>
<td>20% Medicare, 21% Medicaid, 50% commercial, 9% self-pay</td>
<td>Patient agreements, Pre-visit preparation in daily huddle, Random urine drug test, Track PEG scores and PHQ-9, Suboxone</td>
<td>2,3,4</td>
</tr>
<tr>
<td>OH</td>
<td>FQHC</td>
<td>Urban</td>
<td>50% Medicaid, 20% uninsured, 20% commercial, 10% Medicare</td>
<td>Random urine drug test, State PDMP check with refills, Clinic refill policies</td>
<td>2,3,4</td>
</tr>
<tr>
<td>PA</td>
<td>PVT</td>
<td>Suburban</td>
<td>90% commercial, 8% Medicare, 1% uninsured, 1% Medicaid</td>
<td>Patient agreements, Revised policies</td>
<td>2</td>
</tr>
<tr>
<td>ME</td>
<td>FQHC, residency</td>
<td>Suburban</td>
<td>26% Medicare, 25% Medicaid, 40% commercial, 9% uninsured</td>
<td>Provider support and learning group, Suboxone, Revised policies</td>
<td>2,4</td>
</tr>
<tr>
<td>WA</td>
<td>MMG, residency</td>
<td>Suburban</td>
<td>10% Medicare, 50% Medicaid, 30% commercial, 10% uninsured</td>
<td>Chronic pain registry with dedicated MA registry manager, Revised policies, Patient agreement, Nurse intake for new patients on opioids, Random urine drug test, State PDMP check, PEG scores, Referral for high risk</td>
<td>1,2,3,4</td>
</tr>
<tr>
<td>WI</td>
<td>MMG</td>
<td>Rural</td>
<td>17.7% Medicare, 5.5% Medicare, 73.8% commercial, 3% uninsured</td>
<td>Patient agreement, Revised refill policies</td>
<td>2</td>
</tr>
<tr>
<td>MA</td>
<td>CHC (hospital network)</td>
<td>Urban</td>
<td>40% Public, 40% uninsured, 20% private</td>
<td>Physical therapy assistant, Chronic pain group visits led by social worker</td>
<td>2,4</td>
</tr>
<tr>
<td>DC</td>
<td>FQHC</td>
<td>Urban</td>
<td>63% Medicaid, 6% Medicare, 20% DC Alliance, 6% commercial, 5% uninsured</td>
<td>Chronic pain group visits, Massage therapy</td>
<td>4</td>
</tr>
<tr>
<td>NY</td>
<td>AHC, residency</td>
<td>Urban</td>
<td>10% Medicare, 50% Medicaid, 30% commercial, 8% uninsured</td>
<td>Revised clinic policies, Patient agreements, Behavioral Health Social Worker</td>
<td>2,4</td>
</tr>
<tr>
<td>CA</td>
<td>FQHC</td>
<td>Rural</td>
<td>50% Medicaid, 17% Medicare, 3% commercial, 28% uninsured</td>
<td>Chronic pain group visits, Revised clinic policies, Pre-visit planning in daily huddle, Patient agreements</td>
<td>2,3,4</td>
</tr>
</tbody>
</table>

Abbreviations: AHC, Academic Health Center; AHEC, Area Health Education Center; CHC, community health center; FQHC, Federally Qualified Health Center; MMG, Multi-specialty Medical Group or part of large system; PVT, Private Practice; RHC, Rural Health Center; THC, Teaching Health Center.
Leadership played an essential role by both prioritizing the work and facilitating a consensus-building process to help providers and staff reach a shared understanding about standards of care for COT patients. Consensus building often started around defining who qualified as a COT patient and discussions about the growing evidence of harm for their patients. Many times this took the form of a story about a patient from their own clinic who experienced harm from COT use.

Building Block 2: Revising Clinic Policies, Patient Agreement, and Workflows

“We’ve become aware of the evidence and the research indicating that providing opiates has a lot of risk associated with it and there’s better ways of dealing with chronic pain than just providing prescriptions…. So we put a lot of time into defining what kind of system should we put in place to make sure we evaluate people appropriately, that we monitor use, and we have a system and act when we discover an issue or a problem with potential misuse…. So that took some years, I guess, doing that.”

–Medical Director, LEAP site

The work often began with revising 2 documents, clinic policies, and patient agreements. The table below outlines the six building blocks to guide management of chronic opioid therapy:

<table>
<thead>
<tr>
<th>Building Block</th>
<th>Description</th>
<th>Examples of Action Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Provide Leadership Support</td>
<td>Leadership can build organization-wide consensus to prioritize safe, more selective, and more cautious opioid prescribing</td>
<td>Identify clinical champions to spearhead COT practice change initiatives.</td>
</tr>
<tr>
<td>2. Revise Policies, Patient Agreements and Workflows</td>
<td>Revise and implement clinic policies and define standard work for health care team members to achieve safer opioid prescribing and COT management in each clinical contact with COT patients.</td>
<td>Provide protected time and space for providers and staff to discuss and agree upon short and long-term goals for COT practice change initiatives.</td>
</tr>
<tr>
<td>3. Implement a Registry for Population Management</td>
<td>Implement pro-active population management before, during, and between clinic visits of all COT patients to ensure that care is safe and appropriate and provide measure to track COT improvement activities.</td>
<td>Convene a team from each area of the clinic to revise existing policies or write new ones.</td>
</tr>
<tr>
<td>4. Conduct Planned Patient-Centered Visits</td>
<td>Conduct pre-visit planning and support patient-centered, empathic communication for COT patient care.</td>
<td>Review patient agreement and revise to ensure alignment with clinic policies.</td>
</tr>
<tr>
<td>5. Identify Resources for Complex Patients</td>
<td>Develop resources to ensure that patients who develop complex opioid dependence, are identified and provided with appropriate care</td>
<td>Discuss with all staff and clinicians and modify roles, responsibilities and workflows accordingly.</td>
</tr>
<tr>
<td>6. Measure Progress</td>
<td>Continuously monitor progress and improve with experience.</td>
<td>Enter all existing COT patients and their relevant enrollment data into a COT registry.</td>
</tr>
</tbody>
</table>

COT, chronic opioid therapy.
Building Block 3: Implementing a Registry for Population Management

“My registry… is kind of helpful because it has everything. It says what the patient has and if they are out of compliance, like they need a new pain agreement that expired 2 months ago.” –Pain Registry Manager, LEAP Site

A registry or some form of tracking system was commonly used to monitor COT patients between visits and manage refill requests. A few had a designated registry manager, usually a medical assistant or nurse, with protected time each week or month to update the registry and identify patients with care gaps. In several clinics, reports from the registry were reviewed during previsit planning such as a morning huddle to prepare for a visit. Some sites routed COT refill requests through the registry manager to identify care gaps and address them in between visits. In addition, data from the registry was commonly used to track agreed-on measures for quality improvement in the area of COT management. Some of the items included in a typical registry are found in Table 4.

### Table 4. Common Elements Seen in registries

| Date of renewal of patient agreement (signed by patient) | Current morphine medication equivalent dose of opioid medications |
| Date of most recent PDMP check | Date and result most recent urine drug screen |
| PEG scores (trended at regular intervals) | Opioid risk tool score |
| Medication list reviewed for concurrent use of sedatives | PHQ screen for depression |

PDMP, prescription drug monitoring program; PEG, pain, enjoyment, general activity; PHQ, patient health questionnaire.

doi: 10.3122/jabfm.2017.01.160183
Building Block 4: Conducting Planned Patient-Centered Visits
Clinics often used huddles or some type of chart review the day before to prepare for visits with chronic pain patients. They identified care gaps such as an out-of-date patient agreement or an overdue check of the state PDMP and used the visit as an opportunity to close those gaps. Staff and clinicians would occasionally rehearse how to have difficult conversations with patients about aberrant refill behaviors or abnormal urine drug tests.

“And it was also the process of learning how to say no in a kind way, because it is very difficult when somebody who is misusing—it is much easier when somebody who is not misusing, but when somebody is misusing and they know they are misusing, they get very confrontational. The staff over the past 7 years has learned how to not inflame that.” –Nurse Practitioner, LEAP Site

They often shared “scripts” with each other about language they used in talking with patients who “expect” their prescription pain medications and are reluctant to hear about alternative treatments.

One important patient-centered component that LEAP sites often mentioned was moving away from the traditional visual-analog pain scale to assess the effectiveness of current management strategies to a more robust patient-centered assessment of pain, function, and enjoyment of life. The Pain, Enjoyment, General activity (PEG) scale was becoming more widely used across sites. Several providers mentioned that tracking the PEG scale at every visit helped them avoid inappropriate COT dose escalation and sometimes led to conversations about tapering the dose.

Building Block 5: Identifying Resources for Complex Patients
“Both patients and providers were very concerned that they did not have access to traditional resources such as Physical Therapy to support patients with chronic pain so we created group clinics for chronic pain staff by a behavioral health consultant, a physical therapy assistant… and a health coach from our clinic.” –Behavioral Health Social Worker, LEAP Site

Clinics recognized that some patients required more support and treatment for addiction, opioid use disorder, or mental/behavioral health issues than was currently available within their clinic system. Some identified existing community resources and built stronger linkages with them. Others developed resources within their setting to deliver these services to the patient directly. A few clinics used shared appointment (group) visits with a standard curriculum to improve patient self-efficacy around managing their chronic pain. In 1 LEAP site patients on high-dose opioids were required to attend these sessions to refill their opioid medication. Seven of the clinics had a buprenorphine prescriber who provided medication-assisted therapy.

Building Block 6: Measuring progress
“My [work with] chronic pain [patients] is my favorite part of my job because I love to feel like I can help them.” –Medical Assistant Registry Manager, LEAP Site

Clinics often had improvement teams with a specific focus on COT use. They selected process measures such as proportion of patients with an up-to-date agreement in the chart, proportion of patients with a PDMP check twice in the past year. Important outcome measures that clinics found valuable to track included: average PEG scale scores, the proportion of patients on high-dose COT (eg, daily morphine-equivalent dose ≥90), and the monthly number of patients who transitioned from opioids for acute pain to those on COT. Clinics reported these measures and discussed them during monthly staff meetings and leadership team meetings.

Discussion
Through data gathered from site visits to primary care clinics that exemplified team-based models of care, we identified 6 common change strategies or ‘building blocks’ used by innovative primary care clinics to improve COT management. The themes that emerged consolidate and systemize best practice approaches to addressing the complex challenge of managing COT patients in primary care settings. These findings are not meant to be comprehensive or exclusive of other approaches or strategies that might be equally effective or necessary and clearly must be adapted to local context and resources.

Ongoing challenges faced by smaller primary care clinic settings included a lack of validated clinical performance measures for improving care provided to COT patients, difficulty identifying adequate community resources such as access to mental/behavioral health and addiction services, and concerns about a paucity of evidence-based
alternatives to COT for chronic pain. At least 1 LEAP site made the decision to no longer prescribe opioids for managing chronic pain because of these and other concerns. Providers in many of the LEAP sites that made systematic changes to support safer opioid prescribing reported that tackling these challenges restored a sense of joy and fulfillment in their daily work.

The recent release of new COT-prescribing guidelines combined with growing evidence of patient harm with use of COT for chronic noncancer pain will require changes in workflow and clinic-wide systems to adopt and implement the new standards. Changing systems of care is different from changing provider prescribing habits, but experience suggests that system change in primary care settings is a critical component to sustained change in provider behaviors. The practical steps and strategies represented in the 6 Building Blocks were used by innovative clinics to address the use of COT in their patient population and should be considered in designing improvement initiatives in other primary care settings. It is important to note, however, that these new guidelines and the associated workflow redesigns to implement them cause burdens of their own. Unless they can be demonstrated to significantly improve patient outcomes, while also decreasing provider and staff burnout, there may be resistance to implementation. In addition, primary care clinics alone cannot stem the tide of opioid overuse within local communities; it will require community-wide initiatives that include all prescribers.

The content is solely the responsibility of the authors and does not necessarily represent the official views of the Robert Wood Johnson Foundation or the Agency for Health Care Research and Quality. The authors thank the members of the RWJF LEAP National Advisory Committee, the site visit teams, and the leadership and staff of the 30 exemplar practices.

To see this article online, please go to: http://jabfm.org/content/30/1/44.full.

References


An Introduction to Population Health and Use of Registries to Improve Outcomes for your Patients

Dec 5, 2018
Webinar Logistics: Asking Questions

- Click the arrow to expand or collapse this pane.
- Click the hand to “raise your hand”.
- Click Questions to expand or collapse the Questions box.
- Messages and links from staff will appear here.
- To share a comment or question with staff, type here and click Send.

(Please keep in mind: at our discretion staff may address your comment/question publicly during the webinar, privately during the webinar, or privately at a later time.)
Webinar Logistics: Speaking

If you would like to ask a question directly please ‘raise your hand’ and we will unmute you to ask your question

- If you plan to speak, join the webinar via computer or the GoToWebinar smart phone app.

- If joining audio by dialing the number (not the IOS or Android app), you will need to enter your “Audio PIN” to speak. Otherwise, you will be in listen-only mode.

- “Raise your hand” in the GoToWebinar control panel when you want to talk; the meeting organizer can unmute your line.

- Check that your computer or phone is not muted, and talk.
An Introduction to Population Health and Use of Registries to Improve Outcomes for your Patients

Jeff Hummel, MD, MPH
Michelle Glatt, MPH, PA-C
Dec 5, 2018
Goals for this session

By the end of this session, hopefully you will understand

- the essential role registries play in population management
- the range of tools available for creating registries
- the content of registries, who uses them, and how they are used
Introduction: Why are we talking about Population Health?

2008 - Institute for Healthcare Improvement

Triple/Quadruple Aim

- Patient Experience of Care
- Care Team Satisfaction
- Per Capita Cost
- Population Health

High Value Care
Step #1: Defining the Population

1. Who are the patients/clients?
2. Which communities do they come from?
3. What barriers to health might they have?
4. What health conditions might they need treatment for?
5. What services might they need to maintain optimal health?
The one way to define a population that ISN’T really practicing population health:

Defining the population as (only) the patients/clients that walk through the doors of your organization that day
Registry Basics
Registries

What is a registry?
- A list of all people in a specific population
- Key information on the care of each person

What is a registry used for?
- Identify action the care team need to take

Who uses a registry?
- Care team member/Care or Case Manager

When is a registry used?
- At an interval determined by the population
The Importance of Registries

- Ability to see key health parameters of an entire population in a single view
- The value of care is determined by outcomes and cost at a populations level
- If we’re going to manage care we need to see the care gaps must be closed to
  - Improve clinical outcomes
  - Reduce avoidable costs due to ED use and hospitalization
<table>
<thead>
<tr>
<th>#NAME?</th>
<th>Last Name</th>
<th>Date of Birth</th>
<th>Patient Identifier</th>
<th>Date Schedule II Agreement</th>
<th>Recent Office Visit</th>
<th>Date most recent contact</th>
<th>Recent PDMP Review</th>
<th>MDE Date</th>
<th>MDE Value</th>
<th>MAT Status Date</th>
<th>MAT Status</th>
<th>Most Recent Urine Testing Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>FName 1</td>
<td>Lname 1</td>
<td>DOB 1</td>
<td>Identifier 1</td>
<td>Schedule II Date 1</td>
<td>OV Date 1</td>
<td>Contact Date 1</td>
<td>PDMP Date 1</td>
<td>MDE Date 1</td>
<td>&lt; 50</td>
<td>MAT Date 1</td>
<td>MAT Status 1</td>
<td>Urine Testing Date 1</td>
</tr>
<tr>
<td>FName 2</td>
<td>Lname 2</td>
<td>DOB 2</td>
<td>Identifier 2</td>
<td>Schedule II Date 2</td>
<td>OV Date 2</td>
<td>Contact Date 2</td>
<td>PDMP Date 2</td>
<td>MDE Date 2</td>
<td>&lt; 50</td>
<td>MAT Date 2</td>
<td>MAT Status 2</td>
<td>Urine Testing Date 2</td>
</tr>
<tr>
<td>FName 3</td>
<td>Lname 3</td>
<td>DOB 3</td>
<td>Identifier 3</td>
<td>Schedule II Date 3</td>
<td>OV Date 3</td>
<td>Contact Date 3</td>
<td>PDMP Date 3</td>
<td>MDE Date 3</td>
<td>&lt; 50</td>
<td>MAT Date 3</td>
<td>MAT Status 3</td>
<td>Urine Testing Date 3</td>
</tr>
<tr>
<td>FName 4</td>
<td>Lname 4</td>
<td>DOB 4</td>
<td>Identifier 4</td>
<td>Schedule II Date 4</td>
<td>OV Date 4</td>
<td>Contact Date 4</td>
<td>PDMP Date 4</td>
<td>MDE Date 4</td>
<td>&lt; 50</td>
<td>MAT Date 4</td>
<td>MAT Status 4</td>
<td>Urine Testing Date 4</td>
</tr>
<tr>
<td>FName 5</td>
<td>Lname 5</td>
<td>DOB 5</td>
<td>Identifier 5</td>
<td>Schedule II Date 5</td>
<td>OV Date 5</td>
<td>Contact Date 5</td>
<td>PDMP Date 5</td>
<td>MDE Date 5</td>
<td>&lt; 50</td>
<td>MAT Date 5</td>
<td>MAT Status 5</td>
<td>Urine Testing Date 5</td>
</tr>
<tr>
<td>FName 6</td>
<td>Lname 6</td>
<td>DOB 6</td>
<td>Identifier 6</td>
<td>Schedule II Date 6</td>
<td>OV Date 6</td>
<td>Contact Date 6</td>
<td>PDMP Date 6</td>
<td>MDE Date 6</td>
<td>&lt; 50</td>
<td>MAT Date 6</td>
<td>MAT Status 6</td>
<td>Urine Testing Date 6</td>
</tr>
<tr>
<td>FName 7</td>
<td>Lname 7</td>
<td>DOB 7</td>
<td>Identifier 7</td>
<td>Schedule II Date 7</td>
<td>OV Date 7</td>
<td>Contact Date 7</td>
<td>PDMP Date 7</td>
<td>MDE Date 7</td>
<td>&lt; 50</td>
<td>MAT Date 7</td>
<td>MAT Status 7</td>
<td>Urine Testing Date 7</td>
</tr>
<tr>
<td>FName 8</td>
<td>Lname 8</td>
<td>DOB 8</td>
<td>Identifier 8</td>
<td>Schedule II Date 8</td>
<td>OV Date 8</td>
<td>Contact Date 8</td>
<td>PDMP Date 8</td>
<td>MDE Date 8</td>
<td>&lt; 50</td>
<td>MAT Date 8</td>
<td>MAT Status 8</td>
<td>Urine Testing Date 8</td>
</tr>
<tr>
<td>FName 9</td>
<td>Lname 9</td>
<td>DOB 9</td>
<td>Identifier 9</td>
<td>Schedule II Date 9</td>
<td>OV Date 9</td>
<td>Contact Date 9</td>
<td>PDMP Date 9</td>
<td>MDE Date 9</td>
<td>&lt; 50</td>
<td>MAT Date 9</td>
<td>MAT Status 9</td>
<td>Urine Testing Date 9</td>
</tr>
<tr>
<td>FName 10</td>
<td>Lname 10</td>
<td>DOB 10</td>
<td>Identifier 10</td>
<td>Schedule II Date 10</td>
<td>OV Date 10</td>
<td>Contact Date 10</td>
<td>PDMP Date 10</td>
<td>MDE Date 10</td>
<td>&lt; 50</td>
<td>MAT Date 10</td>
<td>MAT Status 10</td>
<td>Urine Testing Date 10</td>
</tr>
<tr>
<td>FName 11</td>
<td>Lname 11</td>
<td>DOB 11</td>
<td>Identifier 11</td>
<td>Schedule II Date 11</td>
<td>OV Date 11</td>
<td>Contact Date 11</td>
<td>PDMP Date 11</td>
<td>MDE Date 11</td>
<td>&lt; 50</td>
<td>MAT Date 11</td>
<td>MAT Status 11</td>
<td>Urine Testing Date 11</td>
</tr>
<tr>
<td>FName 12</td>
<td>Lname 12</td>
<td>DOB 12</td>
<td>Identifier 12</td>
<td>Schedule II Date 12</td>
<td>OV Date 12</td>
<td>Contact Date 12</td>
<td>PDMP Date 12</td>
<td>MDE Date 12</td>
<td>&lt; 50</td>
<td>MAT Date 12</td>
<td>MAT Status 12</td>
<td>Urine Testing Date 12</td>
</tr>
<tr>
<td>FName 13</td>
<td>Lname 13</td>
<td>DOB 13</td>
<td>Identifier 13</td>
<td>Schedule II Date 13</td>
<td>OV Date 13</td>
<td>Contact Date 13</td>
<td>PDMP Date 13</td>
<td>MDE Date 13</td>
<td>&lt; 50</td>
<td>MAT Date 13</td>
<td>MAT Status 13</td>
<td>Urine Testing Date 13</td>
</tr>
<tr>
<td>FName 14</td>
<td>Lname 14</td>
<td>DOB 14</td>
<td>Identifier 14</td>
<td>Schedule II Date 14</td>
<td>OV Date 14</td>
<td>Contact Date 14</td>
<td>PDMP Date 14</td>
<td>MDE Date 14</td>
<td>&lt; 50</td>
<td>MAT Date 14</td>
<td>MAT Status 14</td>
<td>Urine Testing Date 14</td>
</tr>
<tr>
<td>FName 15</td>
<td>Lname 15</td>
<td>DOB 15</td>
<td>Identifier 15</td>
<td>Schedule II Date 15</td>
<td>OV Date 15</td>
<td>Contact Date 15</td>
<td>PDMP Date 15</td>
<td>MDE Date 15</td>
<td>&lt; 50</td>
<td>MAT Date 15</td>
<td>MAT Status 15</td>
<td>Urine Testing Date 15</td>
</tr>
<tr>
<td>FName 16</td>
<td>Lname 16</td>
<td>DOB 16</td>
<td>Identifier 16</td>
<td>Schedule II Date 16</td>
<td>OV Date 16</td>
<td>Contact Date 16</td>
<td>PDMP Date 16</td>
<td>MDE Date 16</td>
<td>&lt; 50</td>
<td>MAT Date 16</td>
<td>MAT Status 16</td>
<td>Urine Testing Date 16</td>
</tr>
<tr>
<td>FName 17</td>
<td>Lname 17</td>
<td>DOB 17</td>
<td>Identifier 17</td>
<td>Schedule II Date 17</td>
<td>OV Date 17</td>
<td>Contact Date 17</td>
<td>PDMP Date 17</td>
<td>MDE Date 17</td>
<td>&lt; 50</td>
<td>MAT Date 17</td>
<td>MAT Status 17</td>
<td>Urine Testing Date 17</td>
</tr>
<tr>
<td>FName 18</td>
<td>Lname 18</td>
<td>DOB 18</td>
<td>Identifier 18</td>
<td>Schedule II Date 18</td>
<td>OV Date 18</td>
<td>Contact Date 18</td>
<td>PDMP Date 18</td>
<td>MDE Date 18</td>
<td>&lt; 50</td>
<td>MAT Date 18</td>
<td>MAT Status 18</td>
<td>Urine Testing Date 18</td>
</tr>
<tr>
<td>FName 19</td>
<td>Lname 19</td>
<td>DOB 19</td>
<td>Identifier 19</td>
<td>Schedule II Date 19</td>
<td>OV Date 19</td>
<td>Contact Date 19</td>
<td>PDMP Date 19</td>
<td>MDE Date 19</td>
<td>&lt; 50</td>
<td>MAT Date 19</td>
<td>MAT Status 19</td>
<td>Urine Testing Date 19</td>
</tr>
<tr>
<td>FName 20</td>
<td>Lname 20</td>
<td>DOB 20</td>
<td>Identifier 20</td>
<td>Schedule II Date 20</td>
<td>OV Date 20</td>
<td>Contact Date 20</td>
<td>PDMP Date 20</td>
<td>MDE Date 20</td>
<td>&lt; 50</td>
<td>MAT Date 20</td>
<td>MAT Status 20</td>
<td>Urine Testing Date 20</td>
</tr>
<tr>
<td>FName 21</td>
<td>Lname 21</td>
<td>DOB 21</td>
<td>Identifier 21</td>
<td>Schedule II Date 21</td>
<td>OV Date 21</td>
<td>Contact Date 21</td>
<td>PDMP Date 21</td>
<td>MDE Date 21</td>
<td>&lt; 50</td>
<td>MAT Date 21</td>
<td>MAT Status 21</td>
<td>Urine Testing Date 21</td>
</tr>
<tr>
<td>FName 22</td>
<td>Lname 22</td>
<td>DOB 22</td>
<td>Identifier 22</td>
<td>Schedule II Date 22</td>
<td>OV Date 22</td>
<td>Contact Date 22</td>
<td>PDMP Date 22</td>
<td>MDE Date 22</td>
<td>&lt; 50</td>
<td>MAT Date 22</td>
<td>MAT Status 22</td>
<td>Urine Testing Date 22</td>
</tr>
<tr>
<td>FName 23</td>
<td>Lname 23</td>
<td>DOB 23</td>
<td>Identifier 23</td>
<td>Schedule II Date 23</td>
<td>OV Date 23</td>
<td>Contact Date 23</td>
<td>PDMP Date 23</td>
<td>MDE Date 23</td>
<td>&lt; 50</td>
<td>MAT Date 23</td>
<td>MAT Status 23</td>
<td>Urine Testing Date 23</td>
</tr>
<tr>
<td>FName 24</td>
<td>Lname 24</td>
<td>DOB 24</td>
<td>Identifier 24</td>
<td>Schedule II Date 24</td>
<td>OV Date 24</td>
<td>Contact Date 24</td>
<td>PDMP Date 24</td>
<td>MDE Date 24</td>
<td>&lt; 50</td>
<td>MAT Date 24</td>
<td>MAT Status 24</td>
<td>Urine Testing Date 24</td>
</tr>
<tr>
<td>FName 25</td>
<td>Lname 25</td>
<td>DOB 25</td>
<td>Identifier 25</td>
<td>Schedule II Date 25</td>
<td>OV Date 25</td>
<td>Contact Date 25</td>
<td>PDMP Date 25</td>
<td>MDE Date 25</td>
<td>&lt; 50</td>
<td>MAT Date 25</td>
<td>MAT Status 25</td>
<td>Urine Testing Date 25</td>
</tr>
<tr>
<td>FName 26</td>
<td>Lname 26</td>
<td>DOB 26</td>
<td>Identifier 26</td>
<td>Schedule II Date 26</td>
<td>OV Date 26</td>
<td>Contact Date 26</td>
<td>PDMP Date 26</td>
<td>MDE Date 26</td>
<td>&lt; 50</td>
<td>MAT Date 26</td>
<td>MAT Status 26</td>
<td>Urine Testing Date 26</td>
</tr>
<tr>
<td>FName 27</td>
<td>Lname 27</td>
<td>DOB 27</td>
<td>Identifier 27</td>
<td>Schedule II Date 27</td>
<td>OV Date 27</td>
<td>Contact Date 27</td>
<td>PDMP Date 27</td>
<td>MDE Date 27</td>
<td>&lt; 50</td>
<td>MAT Date 27</td>
<td>MAT Status 27</td>
<td>Urine Testing Date 27</td>
</tr>
<tr>
<td>FName 28</td>
<td>Lname 28</td>
<td>DOB 28</td>
<td>Identifier 28</td>
<td>Schedule II Date 28</td>
<td>OV Date 28</td>
<td>Contact Date 28</td>
<td>PDMP Date 28</td>
<td>MDE Date 28</td>
<td>&lt; 50</td>
<td>MAT Date 28</td>
<td>MAT Status 28</td>
<td>Urine Testing Date 28</td>
</tr>
<tr>
<td>FName 29</td>
<td>Lname 29</td>
<td>DOB 29</td>
<td>Identifier 29</td>
<td>Schedule II Date 29</td>
<td>OV Date 29</td>
<td>Contact Date 29</td>
<td>PDMP Date 29</td>
<td>MDE Date 29</td>
<td>&lt; 50</td>
<td>MAT Date 29</td>
<td>MAT Status 29</td>
<td>Urine Testing Date 29</td>
</tr>
<tr>
<td>FName 30</td>
<td>Lname 30</td>
<td>DOB 30</td>
<td>Identifier 30</td>
<td>Schedule II Date 30</td>
<td>OV Date 30</td>
<td>Contact Date 30</td>
<td>PDMP Date 30</td>
<td>MDE Date 30</td>
<td>&lt; 50</td>
<td>MAT Date 30</td>
<td>MAT Status 30</td>
<td>Urine Testing Date 30</td>
</tr>
</tbody>
</table>
Data Definitions Used to Define Target Population

- Demographic data: Age, Gender
- Health condition: Problem List entry
- High Risk Medications: opioids, warfarin
- Care transitions: ADT data from Hosp/ED
- Pay attention to criteria for entering and leaving the population
  - Some turn over slowly, some rapidly
  - Criteria different for each target population
## Entering and Leaving a Population

<table>
<thead>
<tr>
<th>Entering Definition</th>
<th>Length of time In the Population</th>
<th>Leaving Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes</td>
<td>Dx Code</td>
<td>Long Term</td>
</tr>
<tr>
<td>Depression</td>
<td>PHQ-9</td>
<td>Episode of Care</td>
</tr>
<tr>
<td>Anti coagulation</td>
<td>Rx/Lab</td>
<td>Episode of Care</td>
</tr>
<tr>
<td>Children 0 - 5</td>
<td>Birth</td>
<td>In age range</td>
</tr>
<tr>
<td>Pregnant Women</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; PNV</td>
<td>Episode of Care</td>
</tr>
<tr>
<td>D/C Planning</td>
<td>Admission</td>
<td>Indeterminant</td>
</tr>
<tr>
<td>High Need/High Cost</td>
<td>&gt; 5 ED/Yr</td>
<td>Long term</td>
</tr>
<tr>
<td>Cognitive Impairment</td>
<td>MMS &lt; 25</td>
<td>Lv Practice</td>
</tr>
</tbody>
</table>

- Diabetes
- Depression
- Anti coagulation
- Children 0 - 5
- Pregnant Women
- D/C Planning
- High Need/High Cost
- Cognitive Impairment

### Definitions

- **Dx Code**: Long Term Practice
- **PHQ-9**: Episode of Care
- **Rx/Lab**: Episode of Care
- **Birth**: In age range
- **1<sup>st</sup> PNV**: Episode of Care
- **Admission**: Indeterminant
- **> 5 ED/Yr**: Long term
- **MMS < 25**: Lv Practice

---

**HealthierHere**

*Equity | Community | Partnership | Innovation | Results*
There are Many Ways to Make a Registry

- **Spread Sheet**
  - Enter into Excel by hand
  - Patient List functionality in EHR export to Excel
- **Canned reports from EHR**
- **Queries run from EHR data base**
- **Third Party Registry Vendors**
- **The right way for the situation depends on**
  - Available technology
  - Available skills
  - Cost
Using a Registry to Manage a Population

Who is in the target population?

Who have we assessed?

What did we find?

What did we do?

Care Gap 1

Care Gap 2

Who has F11 on problem list?
Presence in registry
Who has received ≥ 2 opioid refills within past 90 days?

Documentation at last visit of
Morphine Dose Equivalent
Pain Enjoyment General Activity (PEG) Score
Prescription Drug Monitoring Program
Whose MDE is ≥ 50/90?
Who is also on sedative/hypnotic?
Who has had a fall or near fall in the last month?

Follow up MDE in 1 month?
Follow up MDE improving?
If not improving next step?
Reporting from a Registry to Track Improvement

- The denominator is everyone in the population
- Care gap 1 is difference between people who have been assessed (numerator) everyone in the population (denominator)
- Care gap 2 is the difference between people meeting the clinical goal and the total number assessed
- A registry gives us a way to track care gap closure over time
Who is in the Target Population?

Number of Anticoagulation Patients

- **Number**
  - 550
  - 500
  - 450
  - 400
  - 350
  - 300
  - 250
  - 200
  - 150
  - 100
  - 50
  - 0

- **Date Range**
  - Jan-04 to Aug-05

The graph shows the number of anticoagulation patients over a period from January 2004 to August 2005.
Who Have We Assessed?

Percent with INR Monitored within 35 days

- January 2004: 0%
- February 2004: 10%
- March 2004: 20%
- April 2004: 30%
- May 2004: 40%
- June 2004: 50%
- July 2004: 60%
- August 2004: 70%
- September 2004: 80%
- October 2004: 90%
- November 2004: 80%
- December 2004: 70%
- January 2005: 60%
- February 2005: 50%
- March 2005: 40%
- April 2005: 30%
- May 2005: 20%
- June 2005: 10%
- July 2005: 0%
- August 2005: 10%
What did we find?

Percent with INR at Target Range

Percent

Use Case 1: Managing a Chronic Opioid Therapy Population in Primary Care
Setting

• Primary Care Clinic part of a 5-clinic system managing patients on Chronic Opioid Therapy using 6 building blocks approach
• The clinic does not present itself as an opioid treatment facility
• At least 1 provider in each clinic is trained on buprenorphine induction and management
  • They do not encourage referrals from outside their delivery system
  • Once induction is complete, patients are managed by their own PCP
• Purpose of Registry: Management of population to prevent overdose
Defining the Population

- **Clinical Concept:** People on chronic opioid therapy
- **Data definition:**
  - Add to registry if
    - F11 code on Problem List and ≥ 2 Opioid refills in PDMP in quantity sufficient for 30 days in past 3 months
    - Positive answer to opioid screening question on SBIRT
  - Remove from registry if Chronic Opioid Therapy managed elsewhere
    - F11 Code not on Problem List, or
    - Patient is has received no refills for opioid in past 90 days
Information to include in the Registry

- Demographic information
- Data to identify care gaps
  - Date controlled substance contract signed
  - Date last office visit/contact of any type
  - Morphine Dose Equivalent MDE - date & value
  - Date PDMP last checked
  - Concurrent sedative hypnotics
  - Medication Assisted Therapy status
  - Date of last urine drug test - date & value
How the Registry is Used

- Chronic Disease Population Manager uses the registry on a weekly basis to find care gaps
  - Follow a protocol in closing care gaps
  - Confer with care team
  - Outreach to patient
  - Scheduling follow up
  - Referral to community-based resources

- Medical Assistants use registry on daily basis in prep for huddle patients on schedule
Use Case 2: Managing People with Opioid Use Disorder Receiving Care at Behavioral Health Clinic
Setting

- Behavioral Heath Agency without co-located primary care services
- Formal referral agreement with FQHC that has capacity for Medication Assisted Therapy for Opioid Use Disorder
- Community-based resources for treatment of other Substance Use Disorders
Defining the Population

- Clinical Concept:
  - Client receiving care at Behavioral Health Agency who has an Opioid Use Disorder

- Data Definition:
  - Add to registry if:
    - Opioid use disorder documented in chart (Dx code)
    - Positive answer to opioid screening question on SBIRT
  - Remove from registry if:
    - Successfully treated and off opioids (removed Dx code)
Information to include in the Opioid Use Registry

- Demographic information
- Data for decision-making
  - Currently using – within past 7 days: Yes/No
  - If yes, has Naloxone
  - If yes, willing to participate in Substance Use Disorder treatment including Medication Assisted Therapy
  - If Yes, Change Readiness Assessment Using Prochaska model
  - If in Action Stage then referral for Opioid Use Disorder
  - Follow up to determine if referral completed
How the Registry is Used

• Care Manager reviews registry clinicians on weekly basis regular basis to identify
  • People for whom substance use disorder assessment to be done at next visit
  • People needing Naloxone
  • People due for change readiness assessment
  • People in contemplative stage: date follow-up evaluation scheduled
  • People in action stage: date & status of referral for Substance Use Disorder treatment
Other Behavioral Health Populations to Consider using a Registry

- Population defined by
  - Suicidal Ideation
  - Eating Disorder
  - Self Harming Behavior

- Registry use
  - Who is in the target population
  - Who has been assessed for severity using a validated tool
  - Tracking improvement using validated tools
  - Identifying people lost to follow up
Use Case 3: Managing Depression in Adults with Diabetes in a Primary Care Clinic with the Collaborative Care Model
Setting

• Primary Care Clinic part of a 5-clinic system
• Each clinic has:
  • A centralized diabetes management program
  • An onsite social worker who is a member of a collaborative care BH team with other team members at local BHA
Defining the Population

- Clinical Concept: Adults with diabetes
- Data definition:
  - Diagnostic code for diabetes on problem list
  - Process for identifying diabetes patients without problem list entry
Information to include in the Registry

- Demographic information
- Evidence-based data for decision-making
  - Date & value most recent depression screen with PHQ-2 and if positive PHQ-9
  - If PHQ-9 > 10 date of follow up visit
  - Date & value most recent HbA1c
  - Date & value most recent BP
  - Dates and values for other evidence-based monitoring standards for diabetes
How to Use the Registry

- Care Manager reviews registry on weekly basis to identify people due for assessment:
  - Depression screening: everyone is screened at least once a year
  - Everyone with PHQ – 9 $> 10$ gets an evidence-based intervention using shared decision-making
  - PHQ-9 follow up – everyone with PHQ – 9 $> 10$ is scheduled for 1 month follow up to see if the intervention worked
  - Reminders to Primary Care teams about patients on schedule for the day and gaps to close during the visit
Improved Management of Depression

- Denominator
- PHQ screen
- PHQ9 score >10
- Scheduled Followup
- Referral success

Total number of Patients with Diabetes

- 16-Apr
- 11-May
- 15-Jun
- 27-Jul
- 12-Oct
Now that we’ve seen some use cases, let’s go back to basics:

- Who are the patients/clients?
- Which communities do they come from?
- What barriers to health might they have?
- What health conditions might they need treatment for?
- What services might they need to maintain optimal health?

Patient Registry
Registries are the foundational step for both population management and quality improvement activities.

- **Collect information**
- **Organize patient by patient information (a registry!)**
- **Plan for Updates**

**Basic Population Management**
- Improving care by focusing on a set of services, tests, or goals that an individual patient might need/want
- Patient outreach and care coordination

**Basic Quality Improvement**
- Improving care by deciding as an organization what good care looks like and transparently driving toward that goal over time via systems improvements
- Driving Performance for better health outcomes
Population Management & Quality Improvement

**Basic Population Management**

- Define an ideal set of goals for members of the population
  - Self-Management Goals Set?
  - Community and Social Support Linkages Made?
  - Medical Referrals Complete?
  - HbA1c tests, Blood pressure, INR complete/controlled?
  - Follow-ups completed as recommended?

**Organized Evidence Based Care**

- The percent of patients in this population that have met the goals
  - Share transparently by care team, location, organization, county, state
  - Use to measure systems changes made using some kind of process improvement or quality improvement methodology

**Basic Quality Improvement**

- Patient outreach and care coordination
- Driving Performance for better health outcomes

---

Equity | Community | Partnership | Innovation | Results
Moving beyond traditional registries - Identifying Complex Populations

- **Multi-Condition**: Patients with Diabetes, Depression and hypertension

- **Unengaged**: Patients without colon, breast or cervical cancer screening

- **Social determinants of Health**: Patients with housing insecurity, food insecurity, and/or transportation issues

- **Multi**: Patients with housing insecurity with diabetes, depression, and an elevated risk score

- **Risk**: Using a risk calculation to determine which of your patients might need the most support

- **Risk**: Patients without colon, breast or cervical cancer screening

- **Risk**: Patients assigned by the MCO without establishing care

It is often the case that we are not collecting the information that we actually think is important in a systematic way.
Summary

• Registries help care managers see a target population and care gaps for the population.
• They require data definitions
  • Membership in the population
  • Looking for gaps in an evidence-based standard of care
  • Follow up to see whether gaps were closed
• Registries require a population health infrastructure
  • The technology can be simple or complex
  • It requires a team approach to care with someone dedicated to the job of
  • *maintaining the accuracy of information in the registry*
  • *using the registry to guide evidence-based actions to close care gaps*