

Measurement Strategies and Tools

Chapter FastFACTS

- 1.** The PDSA cycle can be used for simple measures as well as more complicated ones.
- 2.** Patient registries, whether paper-based or electronic, are key tools for effective measurement.
- 3.** “Pre-loaded”, disease-specific computerized registries often contain data endorsed by national quality organizations or included in national incentive programs.
- 4.** High-priority measures recommended by AAFP include unhealthy alcohol use screening, colon cancer screening, and pharmacologic therapy for asthma.
- 5.** Considering quality when choosing an EHR ensures that your system matches your QI needs.

Seeking to improve outcomes for its diabetes patients, Summit Medical Group in Berkeley Heights, N.J., created a diabetes registry two years ago. Based on that data, the group learned the percentage of its diabetes patients who had poor blood glucose control (HbA1c greater than 7), then homed in on the out-of-control group. Individual physicians—about 40% of the group’s more than 250 physicians are in primary care—contacted patients who had not been in the office in the last six months or more to invite them to make an appointment. Those who did were asked to have any needed lab tests performed in advance so that results could be discussed at the visit. The group reasoned that directing more resources toward getting patients seen and preparing for visits would lead to better patient

In patients with type 2 diabetes, the TITRATE® study demonstrates

Once-daily Levemir® gets the majority of patients to goal safely¹

64% of patients achieved A1C goal <7% with once-daily Levemir®*

The Levemir® TITRATE trial shows how a majority of patients with type 2 diabetes taking a basal insulin, some with A1C levels as high as 9%, achieved the ADA-recommended target of A1C <7%.^{1,2} Patients experienced a mean A1C decrease of -1.2%* and achieved goal safely with low rates of hypoglycemia, nearly all of which were minor or symptoms only.^{1†}

*70 to 90 mg/dL group.



Model is for illustrative purposes only.

To see how Levemir® can help your patients achieve their goals, and to learn more about TITRATE, visit TITRATEstudy.com.

[†]Minor hypoglycemia rates were 0.42 (70-90 mg/dL) and 0.26 (80-110 mg/dL) per patient-month. A single major hypoglycemic event was reported in the 70 to 90 mg/dL group; no major hypoglycemic events in the 80 to 110 mg/dL group.¹

Results from a 20-week, randomized, controlled, multicenter, open-label, parallel-group, treat-to-target trial using the PREDICTIVE® 303 self-titration algorithm in insulin-naïve patients with type 2 diabetes, A1C ≥7% and <9% on OAD therapy randomized to Levemir® and OAD (1:1) to 2 different FPG titration targets (70-90 mg/dL, [n=121] or 80-110 mg/dL, [n=122]).¹

PREDICTIVE = Predictable Results and Experience in Diabetes through Intensification and Control to Target: an International Variability Evaluation.

Indications and usage

Levemir® is indicated for once- or twice-daily subcutaneous administration for the treatment of adult and pediatric patients with type 1 diabetes mellitus or adult patients with type 2 diabetes mellitus who require basal (long-acting) insulin for the control of hyperglycemia.

Important safety information

Levemir® is contraindicated in patients hypersensitive to insulin detemir or one of its excipients.

Levemir® should not be diluted or mixed with any other insulin preparations.

Hypoglycemia is the most common adverse effect of all insulin therapies, including Levemir®. As with other insulins, the timing of hypoglycemic events may differ among various insulin preparations. Glucose monitoring is recommended for all patients with diabetes. Levemir® is not to be used in insulin infusion pumps. Any change of insulin dose should be made cautiously and only under medical supervision. Concomitant oral antidiabetes treatment may require adjustment.

Needles and Levemir® FlexPen® must not be shared.

Inadequate dosing or discontinuation of treatment may lead to hyperglycemia and, in patients with type 1 diabetes, diabetic ketoacidosis. Insulin may cause sodium retention and edema, particularly if previously poor metabolic control is improved by intensified insulin therapy. Dose and timing of administration may need to be adjusted to reduce the risk of hypoglycemia in patients being switched to Levemir® from other intermediate or long-acting insulin preparations. The dose of Levemir® may need to be adjusted in patients with renal or hepatic impairment.

Other adverse events commonly associated with insulin therapy may include injection site reactions (on average, 3% to 4% of patients in clinical trials) such as lipodystrophy, redness, pain, itching, hives, swelling, and inflammation. Less common but more serious are severe cases of generalized allergy, including anaphylactic reaction, which may be life threatening.

Please see brief summary of Prescribing Information on adjacent page.

References: 1. Blonde L, Meriläinen M, Karve V, Raskin P, for the TITRATE™ Study Group. Patient-directed titration for achieving glycemic goals using a once-daily basal insulin analogue: an assessment of two different fasting plasma glucose targets—the TITRATE™ study. *Diabetes Obes Metab*. 2009;11(6):629-631. 2. American Diabetes Association. Standards of medical care in diabetes—2010. *Diabetes Care*. 2010;33(suppl 1):S11-S61.



Levemir®

insulin detemir (rDNA origin) injection



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Levemir® (insulin detemir [rDNA origin] injection)

Rx ONLY

BRIEF SUMMARY. Please see package insert for full prescribing information.

INDICATIONS AND USAGE: LEVEMIR® is indicated for once- or twice-daily subcutaneous administration for the treatment of adult and pediatric patients with type 1 diabetes mellitus or adult patients with type 2 diabetes mellitus who require basal (long acting) insulin for the control of hyperglycemia.

CONTRAINDICATIONS: LEVEMIR® is contraindicated in patients hypersensitive to insulin detemir or one of its excipients.

WARNINGS: Hypoglycemia is the most common adverse effect of insulin therapy, including LEVEMIR®. As with all insulins, the timing of hypoglycemia may differ among various insulin formulations. Glucose monitoring is recommended for all patients with diabetes. LEVEMIR® is not to be used in insulin infusion pumps. Any change of insulin dose should be made cautiously and only under medical supervision. Changes in insulin strength, timing of dosing, manufacturer, type (e.g., regular, NPH, or insulin analogs), species (animal, human), or method of manufacture (rDNA versus animal-source insulin) may result in the need for a change in dosage. Concomitant oral antidiabetic treatment may need to be adjusted. Needles and LEVEMIR® FlexPen® must not be shared.

PRECAUTIONS: General: Inadequate dosing or discontinuation of treatment may lead to hyperglycemia and, in patients with type 1 diabetes, diabetic ketoacidosis. The first symptoms of hyperglycemia usually occur gradually over a period of hours or days. They include nausea, vomiting, drowsiness, flushed dry skin, dry mouth, increased urination, thirst and loss of appetite as well as acetone breath. Untreated hyperglycemic events are potentially fatal. LEVEMIR® is not intended for intravenous or intramuscular administration. The prolonged duration of activity of insulin detemir is dependent on injection into subcutaneous tissue. Intravenous administration of the usual subcutaneous dose could result in severe hypoglycemia. Absorption after intramuscular administration is both faster and more extensive than absorption after subcutaneous administration. **LEVEMIR® should not be diluted or mixed with any other insulin preparations** (see PRECAUTIONS, Mixing of Insulins). Insulin may cause sodium retention and edema, particularly if previously poor metabolic control is improved by intensified insulin therapy. Lipodystrophy and hypersensitivity are among potential clinical adverse effects associated with the use of all insulins. As with all insulin preparations, the time course of LEVEMIR® action may vary in different individuals or at different times in the same individual and is dependent on site of injection, blood supply, temperature, and physical activity. Adjustment of dosage of any insulin may be necessary if patients change their physical activity or their usual meal plan.

Hypoglycemia: As with all insulin preparations, hypoglycemic reactions may be associated with the administration of LEVEMIR®. Hypoglycemia is the most common adverse effect of insulins. Early warning symptoms of hypoglycemia may be different or less pronounced under certain conditions, such as long duration of diabetes, diabetic nerve disease, use of medications such as beta-blockers, or intensified diabetes control (see PRECAUTIONS, Drug Interactions). Such situations may result in severe hypoglycemia (and, possibly, loss of consciousness) prior to patients' awareness of hypoglycemia. The time of occurrence of hypoglycemia depends on the action profile of the insulins used and may, therefore, change when the treatment regimen or timing of dosing is changed. In patients being switched from other intermediate or long-acting insulin preparations to once- or twice-daily LEVEMIR®, dosages can be prescribed on a unit-to-unit basis; however, as with all insulin preparations, dose and timing of administration may need to be adjusted to reduce the risk of hypoglycemia. **Renal Impairment:** As with other insulins, the requirements for LEVEMIR® may need to be adjusted in patients with renal impairment. **Hepatic Impairment:** As with other insulins, the requirements for LEVEMIR® may need to be adjusted in patients with hepatic impairment. **Injection Site and Allergic Reactions:** As with any insulin therapy, lipodystrophy may occur at the injection site and delay insulin absorption. Other injection site reactions with insulin therapy may include redness, pain, itching, hives, swelling, and inflammation. Continuous rotation of the injection site within a given area may help to reduce or prevent these reactions. Reactions usually resolve in a few days to a few weeks. On rare occasions, injection site reactions may require discontinuation of LEVEMIR®. In some instances, these reactions may be related to factors other than insulin, such as irritants in a skin cleansing agent or poor injection technique. **Systemic allergy:** Generalized allergy to insulin, which is less common but potentially more serious, may cause rash (including pruritus) over the whole body, shortness of breath, wheezing, reduction in blood pressure, rapid pulse, or sweating. Severe cases of generalized allergy, including anaphylactic reaction, may be life-threatening.

Intercurrent Conditions: Insulin requirements may be altered during intercurrent conditions such as illness, emotional disturbances, or other stresses. **Information for Patients:** LEVEMIR® must only be used if the solution appears clear and colorless with no visible particles. Patients should be informed about potential risks and advantages of LEVEMIR® therapy, including the possible side effects. Patients should be offered continued education and advice on insulin therapies, injection technique, life-style management, regular glucose monitoring, periodic glycosylated hemoglobin testing, recognition and management of hypo- and hyperglycemia, adherence to meal planning, complications of insulin therapy, timing of dosage, instruction for use of injection devices and proper storage of insulin. Patients should be informed that frequent, patient-performed blood glucose measurements are needed to achieve effective glycemic control to avoid both hyperglycemia and hypoglycemia. Patients must be instructed on handling of special situations such as intercurrent conditions (illness, stress, or emotional disturbances), an inadequate or skipped insulin dose, inadvertent administration of an increased insulin dose, inadequate food intake, or skipped meals. Refer patients to the LEVEMIR® "Patient Information" circular for additional information. As with all patients who have diabetes, the ability to concentrate and/or react may be impaired as a result of hypoglycemia or hyperglycemia. Patients with diabetes should be advised to inform their health care professional if they are pregnant or are contemplating pregnancy (see PRECAUTIONS, Pregnancy). **Laboratory Tests:** As with all insulin therapy, the therapeutic response to LEVEMIR® should be monitored by periodic blood glucose tests. Periodic measurement of HbA_{1c} is recommended for the monitoring of long-term glycemic control. **Drug Interactions:** A number of substances affect glucose metabolism and may require insulin dose adjustment and particularly close monitoring. The following are examples of substances that may reduce the blood-glucose-lowering effect of insulin: corticosteroids, danazol, diuretics, sympathomimetic agents (e.g., epinephrine, albuterol, terbutaline), isoniazid, phenothiazine derivatives, somatropin, thyroid hormones, estrogens, progestogens (e.g., in oral contraceptives). The following are examples of substances that may increase the blood-glucose-lowering effect of insulin and susceptibility to hypoglycemia: oral antidiabetic drugs, ACE inhibitors, disopyramide, fibrates, fluoxetine, MAO inhibitors, propoxyphene, salicylates, somatostatin analog (e.g., octreotide), and sulfonamide antibiotics. Beta-blockers, clonidine, lithium salts, and alcohol may either potentiate or weaken the blood-glucose-lowering effect of insulin. Pentamidine may cause hypoglycemia, which may sometimes be followed by hyperglycemia. In addition, under the influence of sympatholytic medicinal products such as beta-blockers, clonidine, guanethidine, and reserpine, the signs of hypoglycemia may be reduced or absent. The results of *in-vitro* and *in-vivo* protein binding studies demonstrate that there is no clinically relevant interaction between insulin detemir and fatty acids or other protein bound drugs. **Mixing of Insulins:** If LEVEMIR® is mixed with other insulin preparations, the profile of action of one or both individual components may change. Mixing LEVEMIR® with insulin aspart, a rapid acting insulin analog, resulted in about 40% reduction in AUC_(0-2h) and C_{max} for insulin aspart compared to separate injections when the ratio of insulin aspart to LEVEMIR® was less than 50%. **LEVEMIR® should NOT be mixed or diluted with any other insulin preparations. Carcinogenicity, Mutagenicity,**

Impairment of Fertility: Standard 2-year carcinogenicity studies in animals have not been performed. Insulin detemir tested negative for genotoxic potential in the *in-vitro* reverse mutation study in bacteria, human peripheral blood lymphocyte chromosome aberration test, and the *in-vivo* mouse micronucleus test. **Pregnancy: Teratogenic Effects: Pregnancy Category C:** In a fertility and embryonic development study, insulin detemir was administered to female rats before mating, during mating, and throughout pregnancy at doses up to 300 nmol/kg/day (3 times the recommended human dose, based on plasma Area Under the Curve (AUC) ratio). Doses of 150 and 300 nmol/kg/day produced numbers of litters with visceral anomalies. Doses up to 900 nmol/kg/day (approximately 135 times the recommended human dose based on AUC ratio) were given to rabbits during organogenesis. Drug-dose related increases in the incidence of fetuses with gall bladder abnormalities such as small, bilobed, bifurcated and missing gall bladders were observed at a dose of 900 nmol/kg/day. The rat and rabbit embryofetal development studies that included concurrent human insulin control groups indicated that insulin detemir and human insulin had similar effects regarding embryotoxicity and teratogenicity. **Nursing mothers:** It is unknown whether LEVEMIR® is excreted in significant amounts in human milk. For this reason, caution should be exercised when LEVEMIR® is administered to a nursing mother. Patients with diabetes who are lactating may require adjustments in insulin dose, meal plan, or both. **Pediatric use:** In a controlled clinical study, HbA_{1c} concentrations and rates of hypoglycemia were similar among patients treated with LEVEMIR® and patients treated with NPH human insulin. **Geriatric use:** Of the total number of subjects in intermediate and long-term clinical studies of LEVEMIR®, 85 (type 1 studies) and 363 (type 2 studies) were 65 years and older. No overall differences in safety or effectiveness were observed between these subjects and younger subjects, and other reported clinical experience has not identified differences in responses between the elderly and younger patients, but greater sensitivity of some older individuals cannot be ruled out. In elderly patients with diabetes, the initial dosing, dose increments, and maintenance dosage should be conservative to avoid hypoglycemic reactions. Hypoglycemia may be difficult to recognize in the elderly.

ADVERSE REACTIONS: Adverse events commonly associated with human insulin therapy include the following: **Body as Whole:** allergic reactions (see PRECAUTIONS, Allergy). **Skin and Appendages:** lipodystrophy, pruritus, rash. Mild injection site reactions occurred more frequently with LEVEMIR® than with NPH human insulin and usually resolved in a few days to a few weeks (see PRECAUTIONS, Allergy). **Other: Hypoglycemia:** (see WARNINGS and PRECAUTIONS). In trials of up to 6 months duration in patients with type 1 and type 2 diabetes, the incidence of severe hypoglycemia with LEVEMIR® was comparable to the incidence with NPH, and, as expected, greater overall in patients with type 1 diabetes (Table 4). **Weight gain:** In trials of up to 6 months duration in patients with type 1 and type 2 diabetes, LEVEMIR® was associated with somewhat less weight gain than NPH (Table 4). Whether these observed differences represent true differences in the effects of LEVEMIR® and NPH insulin is not known, since these trials were not blinded and the protocols (e.g., diet and exercise instructions and monitoring) were not specifically directed at exploring hypotheses related to weight effects of the treatments compared. The clinical significance of the observed differences has not been established.

Table 4: Safety Information on Clinical Studies*

Treatment	# of subjects	Weight (kg)		Hypoglycemia (events/subject/month)		
		Baseline	End of treatment	Major**	Minor***	
Type 1						
Study A	LEVEMIR®	N=276	75.0	75.1	0.045	2.184
	NPH	N=133	75.7	76.4	0.035	3.063
Study C	LEVEMIR®	N=492	76.5	76.3	0.029	2.397
	NPH	N=257	76.1	76.5	0.027	2.564
Study D Pediatric	LEVEMIR®	N=232	N/A	N/A	0.076	2.677
	NPH	N=115	N/A	N/A	0.083	3.203
Type 2						
Study E	LEVEMIR®	N=237	82.7	83.7	0.001	0.306
	NPH	N=239	82.4	85.2	0.006	0.595
Study F	LEVEMIR®	N=195	81.8	82.3	0.003	0.193
	NPH	N=200	79.6	80.9	0.006	0.235

*See CLINICAL STUDIES section for description of individual studies
** Major = requires assistance of another individual because of neurologic impairment
*** Minor = plasma glucose <56 mg/dl, subject able to deal with the episode him/herself

OVERDOSAGE: Hypoglycemia may occur as a result of an excess of insulin relative to food intake, energy expenditure, or both. Mild episodes of hypoglycemia usually can be treated with oral glucose. Adjustments in drug dosage, meal patterns, or exercise may be needed. More severe episodes with coma, seizure, or neurologic impairment may be treated with intramuscular/subcutaneous glucagon or concentrated intravenous glucose. After apparent clinical recovery from hypoglycemia, continued observation and additional carbohydrate intake may be necessary to avoid reoccurrence of hypoglycemia.

More detailed information is available upon request.

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Manufactured by: Novo Nordisk A/S, DK-2880 Bagsvaerd, Denmark

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adherence to treatment plans and improved outcomes.

That theory paid off: The group has seen outcomes for its diabetes patients improve to twice the national average, according to its chief medical officer Robert W. Brenner, MD, who oversees the advancement of QI. Now about 19% of the group's diabetes patients have their disease under control (as defined by an HbA1c value of less than seven, and blood pressure and lipids in the target range) compared with the national average of 9%.

The group's approach to improving care followed the PDSA model, a method of testing changes by trying them out on a small scale before rolling them out to patient populations or an entire practice. Ideas are refined as you go along, based on what you learn from each test. (For more information see "Steps in the PDSA Cycle.") Summit refined its process by, for example, issuing regular reports to physicians about their diabetes patients and placing red flags in the files of patients who were not in adherence. They also tracked patients' blood pressure and lipids.

"The PDSA cycle lets you build confidence," IHI's Dr. Boudreau says. "You begin to develop skills around understanding the challenge, thinking of ideas to improve, and testing [and] refining them."

Putting PDSA Into Practice

PDSA cycles can be used to test any type of process, from strategies aimed at reaching specific clinical targets to adjusting the way you make decisions or run your practice. The National Diabetes Education Program, sponsored by the U.S. Department of Health and Human Services, offers several examples of how PDSA can be used to address elements of the CCM, such as information systems and delivery design (<http://www.ndep.nih.gov/>).

For example, a PDSA cycle for improving patient diabetes self-management, according to the diabetes program, might look like the following:

- Tested or adapted self-management assessments and surveys;
- Created self-management tool kit, including tracking forms, posters, calendars, action plans, Websites, and reading lists;
- Implemented patient goal-setting forms and collaborative goal setting;

Steps in the PDSA cycle

The four steps in the PDSA cycle require careful planning, according to IHI. To help practices document each test, the IHI has also developed a PDSA worksheet available as a free download at <http://www.ihi.org/IHI/Topics/Improvement/ImprovementMethods/Tools/Plan-Do-Study-Act+percent28PDS+percent29+Worksheet.htm>.

Step 1: Plan

Plan the test or observation, including a plan for collecting data.

- State the objective of the test.
- Make predictions about what will happen and why.
- Develop a plan to test the change. (Who? What? When? Where? What data need to be collected?)

Step 2: Do

Try out the test on a small scale.

- Carry out the test.
- Begin analysis of the data.

Step 3: Study

Set aside time to analyze the data and study the results.

- Complete the analysis of the data.
- Compare the data with your predictions.
- Summarize and reflect on what was learned.

Step 4: Act

Refine the change, based on what was learned from the test.

- Determine what modifications should be made.

Prepare a plan for the next test.

Source: IHI, <http://www.ihi.org/IHI/Topics/Improvement/ImprovementMethods/HowToImprove/testingchanges.htm>.

Meeting Financial Goals with Target Date Funds

Whether you're 35 or 60 years old, find out why target date funds, which set a certain date at which time an investor may expect to retire, may be the right investment strategy for you. Go to **Doctor's Digest-Money Matters** at doctorsdigest.net for details.



- Phoned or sent patients support letters;
- Trained and educated staff in self-management support;
- Held peer support group meetings; and
- Provided loaner blood glucose self-monitoring materials free of charge.

Regardless of the area you're addressing, you can start with one simple measure, such as tracking the percentage of eligible patients getting flu vaccines or mammograms, Dr. Jain says. In



“The typical physician doesn’t think about population management because he is concentrating on the patient in front of him. But if you can bring population management down to panel size, it becomes meaningful to physicians; and they start to develop ownership of the health of that panel.”

Douglas F. Carr, MD

Internist

Medical Director of Education and System Initiatives

Billings Clinic

Billings, Mont.

the beginning, the primary goal is to integrate the PDSA method into your workflow. “If you can begin to do that, it goes a long way because [PDSA] can be duplicated for any other process,” he says.

Measurement Tools

Effective process and outcomes measurement are essential to achieving your improvement goals. To clarify the difference between the two, here’s an example: The percentage of patients who received the recommended number of HbA1c measurements in the past year is a process measure, whereas reporting the average HbA1c value for all your diabetes patients is an outcome measure.

The patient registry, whether paper-based or electronic, is an essential tool for effective measurement. Registries house data on populations of patients that can be used to track patient care

and generate summaries and reminders. They are often organized by disease, such as diabetes, but can be used to track any procedure or condition. After physicians get accustomed to using registries, they usually appreciate a system that helps them provide more consistent care across groups of patients, says Summit Medical's Dr. Brenner. "We're looking at patient management from a population health and disease-oriented perspective as opposed to relying on individual physicians to ensure all these things are done for all patients," he says.

Family Practice Associates in Wilmington, Del., created a registry of all patients in its panel eligible for mammography, colorectal cancer screening, and flu or pneumonia vaccines as part of a Medicare prevention project. The goal was to reach all eligible patients and to increase the percentage of those patients getting needed screenings or vaccines to as close to 100% as possible, depending on the patients' response. The office's computer system was programmed to automatically issue monthly reports on how many patients out of those eligible actually received a recommended screening.

That data was then reported to the Medicare QIO in charge of the project so the practice could see month-to-month changes and how its data compared with the 18 other project participants. The practice then went a step further by generating a report on all patients who did not get recommended vaccines and putting a reminder in those patients' EHRs to discuss at their next visits. "Our nurses can administer the vaccine before I even come in the room if the patient agrees," says Dr. Sobel, one of five family physicians in the practice. "The curve has definitely gone up. Not everyone will accept it, but at least we've offered it."

Billings Clinic, a multispecialty group with over 200 physicians in Billings, Mont., used a diabetes registry to track patient care during the Medicare Physician Group Practice Demonstration.

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tion, a five-year demonstration that rewarded physicians for coordinating care and improving health outcomes. In the first year of the program, Billings met quality targets on 20 out of 22 measures, earning a 91% performance rating. In year three, its score rose to 98% for meeting 31 out of the 32 required measures. The demonstration ended in March 2010, but final results have not yet been reported.



“We start the quality discussion at the very beginning. We want to make sure the practice’s EHR matches up with their needs for quality improvement.”

Robert Ligon

Director, Health Information Technology Services
TMF Health Quality Institute
Austin, Tex.

“The Medicare demonstration got us thinking about accountability for taking care of a population of patients,” Dr. Carr says. “The typical physician doesn’t think about population management because he is concentrating on the patient in front of him. But if you can bring population management down to panel size, it becomes meaningful to physicians; and they start to develop ownership of the health of that panel.” Billings also had success using registries to monitor patients with heart failure and saw a 40% reduction in hospitalizations of those patients during the demonstration. The clinic estimated that lowering hospital admissions saved Medicare almost \$4 million over 36 months.

Registries can be integrated into an EHR or purchased as stand-alone products through commercial and nonprofit software developers, and some are free to providers. For example, the Chronic Disease Electronic Management System (CDEMS), developed by the Washington State Diabetes Prevention and Control Program, is pre-coded to track diabetes, asthma, and adult preventive health and can be customized to monitor other chronic conditions. It includes printed progress notes, patient lists, and summary reports generated from the registry database. For more information, see www.cdems.com.

Start With These Measures

Disease-specific computerized registries are often "pre-loaded" with data endorsed by the National Quality Forum (NQF) or included in national incentive programs such as the PQRI. Using a registry, practices can create population reports on process or outcome measures and track the quality of care of individual patients according to clinical guidelines. If a practice decides to start with one or more measures related to improving diabetes care, for example, information on that population of patients would be entered into a diabetes disease registry that is embedded with disease-specific, evidence-based guidelines. The registry allows the practice to generate reports on the percentage of diabetes patients who received HbA1c tests in the last year, for example, or to view patients according to HbA1c status, or overdue visits or tests. The system also generates recommendations at the point-of-care by using a combination of the embedded guidelines and patient-specific information.

The AAFP recommends getting started with high-priority measures, defined as those that close a gap in care, are related to common conditions in your practice, are patient-oriented outcome measures, and are likely to be used in bonus programs. Following are some of the high-priority measures recommended by AAFP, along with their associated descriptions from PQRI and NQF:

Unhealthy alcohol use screening: Percentage of patients age 18 and older who were screened for unhealthy alcohol use using a systematic screening method within 24 months (PQRI); percentage of patients with depression or bipolar disorder with evidence of an initial assessment that includes an appraisal for alcohol or chemical substance use (NQF)

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Colon cancer screening: Percentage of patients age 50 through 75 who received appropriate colorectal cancer screening (PQRI)

Adult influenza and pneumococcal immunizations: Percentage of patients age 65 and older who have ever received a pneumococcal vaccine (PQRI)

Pharmacologic therapy for asthma: Percentage of patients age 5 through 40 with a diagnosis of mild, moderate, or severe persistent asthma who were prescribed either the preferred long-term control medication (inhaled corticosteroid) or an acceptable alternative treatment (PQRI)

Smoking cessation: Percentage of patients age 18 or older who were queried about tobacco use one or more times within 24 months (PQRI)

Depression screening: Percentage of patients age 18 and older screened for clinical depression using a standardized tool and follow-up documented (PQRI)

Diabetes HbA1c test: Percentage of adult patients with diabetes age 18 to 75 receiving one or more A1c tests per year (NQF)

HF LVEF assessment: Percentage of patients with heart failure with quantitative or qualitative results of left ventricular function assessment recorded (NQF)

BP Measurement: Percentage of patients with last blood pressure >140/80 mm Hg (NQF)

Low back pain appropriate imaging: Percentage of patients with a diagnosis of back pain for whom the physician ordered imaging studies during the six weeks after pain onset, in the absence of red flags (NQF)

Qualified EHRs: Documents whether provider has adopted and is using health information technology. To qualify, the provider must have adopted and be using a certified/qualified EHR (PQRI)

PCMH: Percentage of practices functioning as a PCMH by providing ongoing, coordinated patient care (NQF)

Patient experience/satisfaction surveys: Adult primary care survey and pediatric care survey (NQF)

Use of registry and performance measures: Participation in a practice-based or individual quality database registry with a standard measure set (NQF)

For more information on how to use registries as well as sources of data, see “Registry Resources.”

Using EHRs for Quality Measurement

When considering EHR implementation for your practice, it’s critical to customize your system early on to facilitate quality

Registry Resources

ACP’s Diabetes Portal offers an online patient registry tutorial:

http://diabetes.acponline.org/custom_resources/tools/patient_registries_tutorial/prtutorial.html

COMorbid disease MANagement Database (COMMAND) Patient Registry is a free chronic disease patient registry available from Information and Quality Healthcare (IQH), the Medicare QIO for the state of Mississippi. The program has pre-loaded items from national indicators and guidelines, and users can add their own.

www.iqh.org/index.php?option=com_content&view=article&id=97:command-patient-registry&catid=92:do-not-use&Itemid=155

IQH also offers a free **prevention measures database** with statistical information on prevention measures data rates by state and county.

<http://www.iqh.org/reporting/>

The Healthcare Effectiveness Data and Information Set (HEDIS)

contains 71 measures across eight domains of care and is used by more than 90% of U.S. health plans to measure performance. The 2011 HEDIS measures are online at

<http://www.ncqa.org/Portals/0/HEDISQM/HEDISpercent202011/HEDISpercent202011percent20Measures.pdf>

measurement, says Mr. Ligon, TMF's director of health information services. The group is currently working with 150 primary care practices—its services are free to practices enrolled under the Medicare contract—on how to use their EHRs to begin quality reporting on colorectal cancer and mammography screening, and influenza and pneumonia immunizations. “We start the quality discussion at the very beginning,” Mr. Ligon says. “We want to make sure the practice’s EHR matches up with their needs for quality improvement.” For more information, see “Optimize Your EHR for Quality Reporting: A Checklist.”

TMF tries to get physicians engaged with everything their EHRs can do by providing CME credit in performance improvement, according to Mr. Ligon. In order to get the CME credit, physicians must run a one-measure quality report through their EHR. “Once physicians get EHRs, the next critical milestone is generating a quality report,” Mr. Ligon says. “Once they understand what their EHRs can do, most practices are very excited about it; and they start thinking about ways they can use it to improve quality.”

Optimize Your EHR for Quality Reporting: A Checklist

TMF offers the following tips:

Review point-of-care documentation to capture data in discrete, reportable fields.

- Design workflows that accommodate discrete entry of quality measures; i.e., data from outside consults' notes, outside procedures, and vaccinations.
- Use templates for documenting clinical visits for patients.
- Develop templates for the most common visit types seen within the practice.
- Minimize text and scanned entry.
- Use alerts and reminders.
- Create a plan to implement physician alerts and reminders. For example: Drug allergy and drug interaction alerts when using e-prescribing and prompts within the EHR that a treatment protocol has not been met—e.g., prescribing aspirin for a patient with a history of AMI.
- Use data flow sheets for quick reference to manage chronic conditions.

Identify how to use population management to improve patient care.

- Identify data the practice wants to monitor and improve. Determine where data needs to be captured for reporting.
- Create a practice workflow for reporting.
- Identify report sets. Once your reporting workflow has been organized and established, your practice should take full advantage of features within the EHR to run the reports automatically.
- Generate reports to manage specific patient populations such as those overdue for a follow-up visit. The report can be used to call patients, send letters, or notify patients of services due (via the patient portal).

Develop a practice strategy for patient-specific care plans.

- Identify data elements that populate the patient summary, and collaborate with the EHR vendor to ensure that these elements are captured and displayed in the patient summary.
- Decide when a care plan should be developed for the patient and at what interval this activity should take place.