

Lifelong Learning

Almost every state in the nation requires physicians to complete a certain number of hours of continuing medical education (CME) in order to maintain a medical license. But most importantly, CME offers an opportunity to stay clinically current, challenged, and invigorated.

Fast Facts

- ▲ *The American Board of Medical Specialties is spearheading a new process for maintaining board certification. The process will emphasize standards of patient care and will encourage physicians to track their own outcomes to compare them with national benchmarks. Page 94*
- ▲ *The Accreditation Council for Continuing Medical Education (ACCME, www.accme.org) is the national organization that grants accreditation for entities producing CME. They also set standards at the state level so that organizations within each state can approve CME activities. Page 97*
- ▲ *According to online CME expert Bernard Sklar, MD, of Berkeley, Calif., there are currently 300+ Websites offering more than 26,000 CME Category 1 hours for physicians. Page 99*

Years ago, once a physician was board certified, he or she held that status for life. Recertification—taking an exam every six to ten years—later became the standard in most specialties. In the last few years, the trend has moved from a periodic exam to a model of more continuous learning and performance improvement.

For example, the term “recertification” has been replaced with

I have type 2 diabetes. This is...*

my 24/7 glucose control



*Model is for illustrative purposes only.

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.

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.

Inadequate dosing or discontinuation of treatment may lead to hyperglycemia and, in patients with type 1 diabetes, diabetic ketoacidosis. Levemir should

not be diluted or mixed with any other insulin preparations. 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.

"Whether these observed differences represent true differences in the effects of Levemir, NPH insulin, and insulin glargine is not known, since these trials were not blinded and the protocols (eg, 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 in weight has not been established.

For your patients with type 2 diabetes, start once-daily Levemir®

Levemir helps patients with diabetes achieve their A1C goal.^{1,2}

- 24-hour action at a once-daily dose^{3,4}
- Provides consistent insulin absorption and action, day after day^{3,5,6}
- Less weight gain^{7†}

References: 1. Meneghini LF, Rosenberg KH, Koenen C, Meriläinen MJ, Lüddecke H-J. Insulin detemir improves glycaemic control with less hypoglycaemia and no weight gain in patients with type 2 diabetes who were insulin naive or treated with NPH or insulin glargine: clinical practice experience from a German subgroup of the PREDICTIVE study. *Diabetes Obes Metab*. 2007;9(3):418-427. 2. Hermansen K, Davies M, Dereziński T, Ravn GM, Clauson P, Home P, for the Levemir Treat-to-Target Study Group. A 26-week, randomized, parallel, treat-to-target trial comparing insulin detemir with NPH insulin as add-on therapy to oral glucose-lowering drugs in insulin-naïve people with type 2 diabetes. *Diabetes Care*. 2006;29(6):1269-1274. 3. Klein O, Lyngé J, Endahl L, Damholt B, Nosek L, Heise T. Albumin-bound basal insulin analogues (insulin detemir and NN344): comparable time-action profiles but less variability than insulin glargine in type 2 diabetes. *Diabetes Obes Metab*. 2007;9(3):290-299. 4. Phillis-Tsimikas A, Charpentier G, Clauson P, Ravn GM, Roberts VL, Thorsteinsson B. Comparison of once-daily insulin detemir with NPH insulin added to a regimen of oral antidiabetic drugs in poorly controlled type 2 diabetes. *Clin Ther*. 2006;28(10):1569-1581. 5. Data on file, Novo Nordisk Inc, Princeton, NJ. 6. Heise T, Nosek L, Rønn BB, et al. Lower within-subject variability of insulin detemir in comparison to NPH insulin and insulin glargine in people with type 1 diabetes. *Diabetes*. 2004;53(6):1614-1620. 7. Data on file, NDA21-536. Novo Nordisk Inc, Princeton, NJ.



Levemir®
insulin detemir (rDNA origin) injection



Please see brief summary of Prescribing Information on adjacent page.

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133365

September 2007

Levemir®

insulin detemir (rDNA origin) injection

Rx ONLY

BRIEF SUMMARY. Please see package insert for 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

Hyperglycemia 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.

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.

Hyperglycemia

As with all insulin preparations, hypoglycemic reactions may be associated with the administration of LEVEMIR. Hyperglycemia is the most common adverse effect of insulins. Early warning symptoms of hyperglycemia 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

* 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 recurrence of hypoglycemia.

More detailed information is available on request.

Rx only

Date of issue: October 19, 2005

Manufactured for Novo Nordisk A/S, Princeton, NJ 08540

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130128R

May 2006



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“maintenance of certification.” This process—MOC, for short—is intended to help physicians learn, stay current in their field, and improve patient care and outcomes on a continual basis. The effort is being spearheaded by the American Board of Medical Specialties (ABMS) and involves all of their 24 specialty member boards, which represent more than 130 specialty/subspecialty certificates. Physicians will continue to be tested periodically to ensure that their medical knowledge and clinical competency are sound, but emphasis will also be placed on ongoing learning and improvement activities.

Sheldon D. Horowitz, MD, Special Advisor to the President at the ABMS, says that the Accreditation Council for Graduate Medical Education (www.acgme.org) and the ABMS have identified the same six criteria for continual learning. “What residents are learning and developing are the same six competencies that we emphasize for certification and maintenance of certification,” says Dr. Horowitz. These six are patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice.

These six key competencies were factored into the four-part model used for the MOC process. The model is detailed on the ABMS Website as follows (edited for length):

Part I: Professional Standing. Physicians must hold a valid, unrestricted medical license.

Part II: Lifelong Learning and Self-Assessment. Physicians must participate in educational and self-assessment programs that meet specialty-specific standards.

Part III: Cognitive Expertise. Physicians must prove, through formalized examination, that they have the fundamental knowledge to provide quality care in a particular specialty.

Part IV: Practice Performance Assessment. Physicians are evaluated in their clinical practice according to specialty-specific standards for patient care. They are asked to demonstrate that they can assess the quality of care they provide compared with peers and national benchmarks and then apply the best evidence or consensus recommendations to improve that care, using follow-up assessments.

Part IV, says Dr. Horowitz, is the “heart and soul” of MOC.

“Many of the boards have had recertification for a long time, just a written exam that tested new and general knowledge. We really should look at the kind of care physicians deliver,” says Dr. Horowitz. The goal of the MOC process is to insure that physicians are competent and delivering the best care possible.

Implementation and the precise methods used will vary by specialty, but they will likely play out something like this:

- 1) Physicians determine one or more areas of improvement to focus on in their particular practices. For example, they may choose to assess by retrospective chart review how many patients over a certain age received recommended cancer-screening tests.
- 2) Once the data is gathered, it is compared with the physician’s peers, national averages, and best practices.
- 3) Potential problem areas are identified.
- 4) Once areas of improvement are identified, physicians would have access to tools to help increase the percentage of patients being screened. The root of the problem may be a simple systems defect rather than a deficiency in the physician’s clinical knowledge.

The MOC process is designed to continually improve patient care. As Dr. Horowitz points out: “Almost every physician could improve in some area.”

Transition Time

Daniel Duffy, MD, Executive Vice President of the American Board of Internal Medicine (ABIM), points out that this approach to certification represents a major change: “It is not a subtle difference,” he says. Yet he is enthusiastic about the transition from recertification to maintenance of certification.

“Collecting real data and taking action to improve patient care at the practice level is not what traditional CME has been about in the past,” says Dr. Duffy. “It focused only on the data.” The

“Collecting real data and taking action to improve patient care at the practice level is not what traditional CME has been about in the past,” says Dr. Duffy. However, the MOC system focuses on what is actually happening in a medical practice, physician by physician, and how outcomes can be improved.

MOC system focuses on what is actually happening in a medical practice, physician by physician, and how outcomes can be improved. In other words, it uses facts to make positive changes in treatment and systems. And these changes can result in better outcomes for patients.

As of January 2006, physicians who recertify with the ABIM are required to evaluate their performance in their own practices. “Then we want to them to develop a plan to improve performance,” says Dr. Duffy. The improvement may involve learning something new or addressing a systems issue. “The shift is that you use the [MOC process] to show that what you’re learning is improving patient care,” says Dr. Duffy. “How do we know? Because we’re measuring outcomes.”

Using the example of diabetes care, Dr. Duffy points out that only about half of diabetic patients have their HbA1c tested annually as recommended. For a physician taking care of a sizable population of diabetics, gathering data and improving performance in this single area could dramatically improve patient care and clinical outcomes.

“This [process] is much more ongoing,” says Dr. Horowitz, “not just an exam and some CME. You’re doing something—not all the time—but moving much more toward a continuous format for improvement.”

MOC is an evolving process, he adds. Each board is working on assessment tools appropriate for its specialty. However, “some tools we’re developing are generic,” says Dr. Horowitz. For example, “All doctors should be able to communicate with patients,” he says, so tools to improve communications—such as surveys to obtain patient feedback—may be used across specialties. Another tool, a Web-based program developed by ABMS, focuses on patient safety. “Physicians can focus on up to seven areas and get data from their practice about how they’re doing with hand washing, writing prescriptions, medicine reconciliation, allergy lists, and communication about critical lab and radiology tests.”

Dr. Horowitz stresses that the MOC process is intended to be efficient and to align with efforts that are already going on, not to duplicate requirements of other organizations. “This isn’t happening in isolation,” he says. “Medicare, Medicaid, and [the

What Makes Good CME?

The Accreditation Council for Continuing Medical Education (ACCME, www.accme.org) is the national organization that grants accreditation for entities producing CME. They accredit medical schools, national specialty societies, and a range of government agencies including the Food and Drug Administration and the National Institutes of Health. They also set standards at the state level so that organizations within each state can approve CME activities offered by their local medical societies, professional organizations, and hospitals. The organization granting or approving credit hours determines whether a CME activity qualifies for Category 1, Category 2, prescribed, elective, and so forth.

The definition of what constitutes high-quality, effective CME may be different for each physician who participates in an activity. From the ACCME's standpoint, however, it's pretty clear. Quality CME should do the following:

- **Contribute to patient safety and practice improvement.** A “good” CME activity should have a direct impact on improving the quality of direct patient care.
- **Be based on valid content.** The ACCME states that “CME must not promote recommendations, treatment, or manners of practicing medicine that are known to have risks or dangers that outweigh the benefits, or are known to be ineffective in the treatment of patients.”
- **Be independent of commercial interest.** The ACCME has strict guidelines (and they're getting stricter all the time) about industry support and CME. The bottom line is that CME activities must not in any way be influenced by a pharmaceutical company, medical device manufacturer, or other commercial interests.

The ACCME works closely with other professional organizations involved in the continuum of medical education to ensure that accreditation requirements align with other expectations being set for physicians. For example, CME that is developed within the framework of the current ACCME accreditation criteria would assist the physician learner in meeting expectations of maintenance of certification, maintenance of licensure, and credentialing/privileging requirements. The ACCME strives to align its goals, criteria, and standards with those of state licensing boards, specialty societies, and the Joint Commission (formerly JCAHO) so that doctors are not put in the position of trying to meet different requirements for different entities.

Center for Medicaid and Medicare Services] are interested in linking with what we're doing. Insurers are interested in performance measures and improvement."

The ABMS is also sensitive to the burden that the MOC process could potentially place on already time-stressed physicians. "We need to find the best, most effective ways to do it so that it's not more work for physicians," says Dr. Horowitz. It's

"Most doctors respond to data," says Dr. Duffy. "They respond to their own data, particularly data that they've assembled," he says. When doctors review 25 of their own charts and see their own data, "they believe that data, no matter how good or bad. They have an 'a-ha,'" says Dr. Duffy. Once physicians recognize where they need to improve, they can take appropriate action.

hoped, he adds, that when physicians see that this process is more than just a test and that it relates to their practices in a meaningful way, they'll embrace the concept.

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how good or bad. They have an 'a-ha,'" says Dr. Duffy. Once physicians recognize where they need to improve, they can take appropriate action. This might include acquiring new knowledge or training, improving office systems, joining a learning group or collaborative, or exchanging ideas with peers more.

Self-assessment without hard data is almost impossible, says Dr. Duffy. The MOC process offers "guided self-assessment," which Dr. Duffy contends should begin during a physician's training and continue throughout his or her career.

Lifelong learning within the medical practice coupled with periodic examinations is either in place or on the horizon in all 24 ABMS specialty boards. Dr. Horowitz notes that some boards have been performing Part IV activities for a couple of years.

Dr. Duffy says that in family practice, internal medicine, and pediatrics, most pieces will be in place by 2010. "I hope this will drive the development of CME in the marketplace to deliver what doctors need to practice and fill in knowledge and skills gaps," he says.

CME at One's Fingertips

For the technically inclined, online CME offers a convenient and cost-effective option for acquiring both updated clinical knowledge and required hours each year from the comfort of your home or office. There are no travel hassles and minimal expenses, and no time away from patients. The idea is catching on. In 2005, 18 percent of CME credits were earned online; the proportion has likely grown since then.

According to online CME expert Bernard Sklar, MD, of Berkeley, Calif., there are currently 300+ Websites offering more than 26,000 CME Category 1 hours for physicians. Dr. Sklar is in a position to know about these things; in 2000, he wrote a master's thesis entitled *The Current Status of Online Continuing Medical Education*, which he regularly updates. He also maintains a comprehensive list of available online CME at www.cmelist.com. When Dr. Sklar started keeping his list in 1997, there were only 13 Websites offering online CME. Dr. Sklar adds several new sites to the list each month, deletes ones that he finds no longer exist, and now relies heavily on online CME providers to contact him with requests to be added to the list. Although he still calls the list a "hobby" and continues his practice in psychiatry, his task has grown in the last decade.

Online CME offerings are fairly heavily weighted toward primary care; however, specialty and sub-specialty courses are also available. About one-third of sites now send physicians e-mail reminders about upcoming courses. In addition to strictly clinical learning, some sites offer courses in medical ethics, practice management, legal issues, and risk management.

The majority of online providers offer free CME hours; others charge a modest registration fee in the \$5-to-\$25-per-hour range. Of course, funding to create and maintain quality content on these sites has to come from somewhere; and, as one might expect, much of this comes from commercial support (as is the case with a great deal of "live" CME). In addition to the commercially supported CME Websites, some sites are funded by university medical schools, specialty societies, foundations, and the government.

The ACCME maintains strict standards about the separation of medical education and commercial sponsorship, standards

that apply equally to online and other forms of learning activities. Pharmaceutical and medical device companies cannot place accredited educational activities directly on their corporate Websites. CME sites cannot reference commercial sponsorship on the pages physicians visit to acquire their hours.

Content and teaching methods vary from site to site and include text with or without graphics, slide shows, audio, video, interactive case-based lessons, Q&A, and even learning games. Podcasts are becoming increasingly available, and Dr. Sklar says they are “very useful for doctors who like to learn through their ears.” He says that optimally, physicians will learn by seeing something on the screen, hearing information, answering questions, and getting feedback. “The more different sensory input you have, the more likely you are to learn,” he says, pointing out that use of different senses “stimulates your brain better.”

Another possibility on the horizon is “point-of-service education,” Dr. Sklar says, which combines CME with patient care, especially in difficult-to-solve cases. Essentially, says Dr. Sklar, it works like this: “You have a patient in front of you. You go online and ask a question, get the answer, use the information to treat the patient right now. The 15 minutes you spent getting the answer gets you 15 minutes of CME credit.”

He admits a system such as this may be best suited for the hospital setting, where it’s easier to leave a patient’s bedside to go out into the hall and look something up. At this point the system may still be too cumbersome to use effectively in a busy medical office.

Beyond CME

There is, of course, more to learning than CME alone. One component of being a well-rounded individual is having a broad range of interests. Lifelong learning can take the form of an intellectually stimulating hobby, in-depth reading on a subject of interest, curiosity about other cultures, mastering a new language, playing a musical instrument, continuing your education outside of medicine, or closely following politics, world events, or current affairs. Such learning can enhance your practice as well as your life.

When Allan Markus, MD, an internist based in Phoenix, Ariz.,

Extra Credit: Other Benefits of CME

CME requirements are incentives, to be sure, to attend an annual specialty meeting or search out the best clinical conferences. If the meetings happen to be in a nice resort location, all the better.

But aside from the required aspect of CME and the potential for a little R&R, there are many excellent reasons to keep up on the latest theories, clinical updates, techniques, and technology in the rapidly evolving profession of medicine. While most physicians have their own list of reasons, here are a few:

■ **Intellectual stimulation:** There is something about being in or creating a learning environment (whether it's a lecture hall, the airport Marriott, or your own den) that helps recharge your batteries. Today, thanks to advances in technology, that learning environment may be sitting in front of your computer screen or having a box lunch in an auditorium while listening to a lecture that's being transmitted from the other side of the country. Wherever or however you tap into it, staying stimulated at an intellectual level can help physicians stay sharp clinically and help them stay engaged with learning in general.

■ **Collegiality and networking:** Particularly for physicians in a small practice or in rural areas, the opportunity to exchange ideas with colleagues from other parts of the country is something to look forward to. It's easy to get isolated or stuck in certain practice patterns, even when there may be new and better ways to treat patients or manage a practice. Reading about updates in books and journals is one thing. Having lively discussions over coffee or drinks about those same topics can add an entirely new level of interest. Networking with peers is also an excellent way to maintain perspective, realizing that you are not the only one facing certain challenges in medicine, and even to make connections for future practice opportunities.

■ **Change of pace and scenery:** At a medical conference with meetings, lectures, and hands-on learning, physicians are engaged all day long; but it's a different pace from the office. Maybe not slower, but different—and that can be a welcome relief from the usual routine. There is also value in breathing in a different geography, seeing and experiencing new things, and escaping, say, four feet of snow in the winter if you live in New Hampshire or 110 degree heat in the summer if you live in Phoenix.

made the decision to pursue a master's degree in management at the University of Maryland, it was at least partly because he wanted to be able to communicate his ideas. He enjoyed the clinical practice of medicine but was

Lifelong learning can take the form of an intellectually stimulating hobby, in-depth reading on a subject of interest, curiosity about other cultures, mastering a new language, playing a musical instrument, continuing your education outside of medicine, or closely following politics, world events, or current affairs. Such learning can enhance your practice as well as your life.

also intrigued with how organizational systems worked—and how they might possibly work better. “When I had an idea I wanted to run by management,” says Dr. Markus, “I realized I spoke a different language. If I was going to make a difference in health care, I was going to have to learn about budgets and finance to be effective.” Dr. Markus enrolled in the University of Maryland's University College, one of the few fully

accredited online master's-level management programs available at the time.

As he neared the end of his master's program, Dr. Markus decided to tack on another year and get his MBA as well. “I did all of this between 9 and 11:30 every night for about six years,” recalls Dr. Markus. “I'd work until 6:00, then 6 to 9:00 [p.m.] was kid time, then it was time for school.”

Dr. Markus says that by juggling work, family, and school, he worked harder for his business degrees than he did for his medical degree. The curriculum also drew from an entirely different skill set. “Whereas I can look up a scientific article to prove a point, in management there are many ways to look at things,” says Dr. Markus.

Dr. Markus had spent much of his career in the academic arena, teaching residents and setting up systems. “After I got my MBA,” he says, “what I recognized was that I loved teaching, but I needed to grow more.”

Today the knowledge and skill Dr. Markus acquired during his second round of education serves him well. He recently took the position as Director of Campus Health Service at Arizona State University in Phoenix, where he oversees a team of physicians

and other professionals who provide health services to 65,000 students. This position offers an excellent blend of responsibilities and projects for Dr. Markus. “It combines managing resources and physicians, doing a little bit of clinical care, and also teaching residents from all the training programs in the city. Instead of teaching full-time or doing patient care full-time, I have a little of both,” says Dr. Markus.

He also reports that he’s much happier in his new position, and pursuing a degree in management made this new career direction possible. “When I left my last job, I knew I wasn’t happy,” he says. “I had to do something else.” He advises other physicians who find themselves in a rut to have confidence in themselves to be able to make the transition successfully. “We’re pretty smart people, physicians. The reality is that you’ll find another job,” says Dr. Markus.

Whether the goal of professional development is to improve performance at a current job, work towards a promotion, or even switch fields, physicians who cease opportunities for learning—through CME, additional degrees, or even more informal education through local cultural and social organizations—find the benefits are enormous.

Lifelong Learning and the Future of Medicine

At Jefferson Medical College, researchers have been exploring how physicians’ orientation toward lifelong learning varies by specialty and how it may affect professional activities such as research and publications. In an article published in the September 2006 *Journal of General Internal Medicine*, Mohammadreza Hojat, PhD, and colleagues point out that lifelong learning should be a habit fostered in medical school and encouraged throughout a physician’s career.

“The importance of preparing students to become lifelong learners has received widespread attention by professional organizations such as the Association of American Medical Colleges and the Liaison Committee on Medical Education, and developing lifelong learning habit has been a consistent recommendation in virtually all proposals for medical education reform,” the authors wrote.

To measure physicians’ orientation toward lifelong learning,

Dr. Hojat and his colleagues developed the Jefferson Scale of Physician Lifelong Learning (JSPLL), a self-assessment containing 19 items answered on a 4-point Likert scale (strongly disagree=1, disagree=2, agree=3, strongly agree=4).

The scale measures four factors that affect lifelong learning:

- learning beliefs and motivation
- attention to learning opportunities
- technical skills in information seeking
- scholarly activities.

Revised Jefferson Scale of Physician Lifelong Learning (Full Scale)

Instructions: Please indicate the extent of your agreement with each of the following statements by circling the appropriate number. **(1 = Strongly Disagree; 2 = Disagree; 3 = Agree; and 4 = Strongly Agree)**

1. Searching for the answer to a question is, in and by itself rewarding.
1 2 3 4
2. Lifelong learning is a professional responsibility of all physicians.
1 2 3 4
3. I enjoy reading articles in which issues of my professional interest are discussed.
1 2 3 4
4. I routinely attend annual meetings of professional medical organizations.
1 2 3 4
5. I routinely exchange e-mail with colleagues.
1 2 3 4
6. I read professional journals at least once every week.
1 2 3 4
7. I routinely search computer databases to find out about new developments in my specialty.
1 2 3 4
8. I believe that I would fall behind if I stopped learning about new developments in my profession.
1 2 3 4
9. I give on average at least one presentation per year at a professional meeting.
1 2 3 4

All four factors are measured for academic physicians; the researchers have also developed a subscale that excludes “scholarly activities” to assess clinicians who are not involved in teaching and research. The higher the score on the JSPLL, the greater the orientation toward lifelong learning. Dr. Hojat believes that this scale is the first of its kind.

In preliminary research supported by the National Board of Medical Examiners, responses from nearly 3,200 graduates of Jefferson Medical College were analyzed. In addition to filling

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|---|---|---|---|---|
| 10. I conduct research as a principal investigator or a co-investigator. | 1 | 2 | 3 | 4 |
| 11. I attend educational programs whether or not CME credit is offered. | 1 | 2 | 3 | 4 |
| 12. One of the important goals of medical school is to develop students' life-long learning skills. | 1 | 2 | 3 | 4 |
| 13. Rapid changes in medical science require constant updating of knowledge and development of new professional skills. | 1 | 2 | 3 | 4 |
| 14. I always make time for self-directed learning, even when I have a busy practice schedule and other professional and family obligations. | 1 | 2 | 3 | 4 |
| 15. I publish articles in peer-reviewed journals. | 1 | 2 | 3 | 4 |
| 16. I recognize my need to constantly acquire new professional knowledge. | 1 | 2 | 3 | 4 |
| 17. I routinely attend continuing medical education programs to improve patient care. | 1 | 2 | 3 | 4 |
| 18. I take every opportunity to gain new knowledge/skills that are important to my profession. | 1 | 2 | 3 | 4 |
| 19. My preferred approach in finding an answer to a question is to search the appropriate computer databases. | 1 | 2 | 3 | 4 |

Scoring: Total score is based on the sum of all item scores. The minimum score is 19 and the maximum is 76. A higher score indicates a greater orientation toward lifelong learning.

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out the self-assessment, the physicians also reported on “work status, practice setting, and activities related to the practice of medicine, research, and continuous learning,” Dr. Hojat explains. A high score on the full scale assessment was predictive of physicians’ involvement with research and publication of that research, especially for academic physicians and surgeons. For clinicians, analysis of data and other survey information indicated a connection between a high score on the assessment and a physicians’ involvement in patient education and presentations for community groups and the media.

But, Dr. Hojat admits, the real test of the value of lifelong learning is to determine if it has a positive affect on patient care and clinical outcomes. It would also be interesting to look at how lifelong learning habits affect physicians’ professional development and overall career satisfaction. Those are questions for future research.

In the meantime, there is plenty of evidence that staying active intellectually has many benefits for body, mind, and soul.