CHAPTER 5

Producing comparative-effectiveness information

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Chapter summary

Comparative-effectiveness analysis evaluates the relative value of drugs, devices, diagnostic and surgical procedures, diagnostic tests, and medical services. By value, we mean the clinical effectiveness of a service compared with its alternatives. Comparative-effectiveness information has the potential to promote care of higher value and quality in the public and private sectors.

In our June 2007 report, the Commission concluded that there is not enough credible, empirically based information for health care providers and patients to make informed decisions about alternative services for diagnosing and treating most common clinical conditions. Many new services disseminate quickly into routine medical care with little or no basis for knowing whether they outperform existing treatments, and to what extent.

The Commission recommended that the Congress establish the capacity to produce and provide information about the comparative effectiveness of health care services (MedPAC 2007). Because the information can

In this chapter

benefit all users and is a public good, the Commission concluded that a federal role is necessary to produce the information and make it publicly available.

The Commission believes that the entity would:

- Be independent and have a secure and sufficient source of public and private funding;
- Produce objective information and operate under a transparent process;
- Seek input on agenda items from its constituents—patients, providers, payers, scientists, and researchers;
- Reexamine the comparative effectiveness of interventions over time;
- Disseminate information to its constituents; and
- Have no role in making or recommending coverage or payment decisions for payers.

The entity's primary mission would be to sponsor studies that compare the clinical effectiveness of a service with its alternatives. Although cost effectiveness is not a primary mission, the Commission does not rule it out. We emphasize that the entity would not have a role in how public and private payers use this information—that is, in coverage or payment decisions. Instead, it would disseminate the information to patients, providers, and payers who would then decide how to use it.

There are different ways to carry out a federal role. The Commission prefers a public–private option to reflect that all payers and patients would gain from comparative-effectiveness information; we also support an independent board of experts to oversee the development of an unbiased research agenda and ensure that the research is objective and methodologically rigorous. A federal role need not result in a large expansion of the government. We envision that the entity would contract most of the research to outside groups, including existing governmental agencies with experience conducting comparative-effectiveness research.

The goal of this chapter is to discuss three key issues that policymakers would need to consider when establishing a comparative-effectiveness entity: the design of the board, the placement of the comparative-effectiveness entity, and the entity's funding. This chapter considers the pros and cons of governance and funding options but does not recommend a specific approach.

In designing a board, a number of issues arise, including the ethics rules that should apply, the process of appointing members, the duration of their terms, and the board's composition and size. These issues affect the board's independence, objectivity, and stability. For example, establishing ethics rules would help ensure that board members are independent and objective, and appointing members to long and overlapping terms would help ensure the board's stability and independence.

The alternatives that we discussed to house a comparative-effectiveness entity vary in their closeness to the federal government and the private sector:

- A federally funded research and development center, which is a nonprofit private sector organization that is sponsored by an agency within the executive branch;
- An independent federal agency within the executive branch;
- An independent federal agency within the legislative branch; or
- A congressionally chartered nonprofit organization, which is a private sector organization established by the Congress.

Determining the entity's level of funding will be a key issue for policymakers to consider. Some researchers have proposed funding based on the nation's annual outlays for health care services, which would result in funds ranging from $1 billion to about $3 billion per year (Altman et al. 2003, Reinhardt 2004). The level of funding the entity requires will depend on the type of research it sponsors. Primary research (e.g., head-to-head clinical trials) is more costly to sponsor than secondary research (e.g., systematic reviews of existing literature).

The Commission supports funding from federal and private sources as the research findings will benefit all users—patients, providers, private health plans, and federal health programs. The Commission also supports a dedicated funding mechanism to help ensure the entity's independence and stability. Dedicated broadly based financing would reduce the likelihood of outside influence and would best ensure the entity's stability compared with financing from annual appropriations or funding on a per project basis. Even so, an entity that relies on such a mandatory funding source would be accountable to policymakers because the Congress always has the option to alter or end its funding.

The chapter concludes with a discussion of various ways CMS could use comparative-effectiveness information when the agency develops payment policies. A recent report by the Congressional Budget Office (CBO) noted that to reduce spending substantially under Medicare, CMS would probably need additional authority to consider the relative benefits and costs of services in a more extensive way when making payment and coverage decisions (CBO 2007). Under current policy and law, CMS generally covers any treatment that is "reasonable and necessary," regardless of its effectiveness or its cost relative to alternative approaches. ■

Background

For the past several decades, the United States has spent an expanding share of its resources on health care. In 1960, national health expenditures made up about 5 percent of gross domestic product. By 2005, that share had grown to 16 percent and CMS projects that by 2017 it will make up 20 percent (Keehan et al. 2008). Although many factors contributed to the growth in health care spending, the Congressional Budget Office (CBO) concluded that the largest single factor is the expanded capability of medicine brought about by technological advances over the past several decades (CBO 2008). Technological advances include the use of new treatments and existing treatments in a broader patient population. In the next decade, the pace of innovation in medical care is likely to accelerate (IOM 2008).

Even though substantial resources are devoted to health care in the United States, the value of services furnished to patients is often unknown. In some instances, medical innovations diffuse quickly into routine medical care with little or no basis for knowing whether or to what extent they outperform conventional care, which includes existing interventions and no intervention. The use of innovations with limited clinical evidence can sometimes lead to patients experiencing poorer outcomes than would have occurred under conventional care or to unanticipated adverse side effects. To draw lessons about the importance of evaluating the effectiveness of medical services, the text box (pp. 113–115) presents five brief case studies of services that widely diffused and were later shown to have limited clinical effectiveness compared with conventional care, harmful side effects, or both.

Increasing the value of health care spending requires knowledge about patient outcomes. Comparative effectiveness—a comparison of the outcomes of different treatments for the same condition—could help public and private payers alike get greater value from the health care resources they fund.

Last year, the Commission concluded that not enough credible, empirically based comparative-effectiveness information was available to patients, providers, and payers to make informed treatment decisions (MedPAC 2007). Comparative-effectiveness information is a public good because its benefits accrue to all users, not just to those who fund it. Because the information is a public good, private investment alone is suboptimal; a federal role is needed to ensure levels of investment that are more appropriate to society's returns on the knowledge. Consequently, in 2007, the Commission recommended that the Congress charge an independent entity to sponsor credible research on the comparative effectiveness of health care services and disseminate this information to patients, providers, and public and private payers (MedPAC 2007). Other organizations and policy analysts from disparate points of view, including American Health Insurance Plans, Gail Wilensky, and Uwe Reinhardt, have reached a similar conclusion (Table 5-1, p. 112).

To carry out a federal role, the Commission prefers a public–private option, reflecting the benefit of comparative-effectiveness information to the government, private payers, and patients. Specifically, to ensure the entity's independence and stability, the Commission supports:

- an independent board of experts to develop the research agenda and ensure that the research is objective and methodologically rigorous,
- an unbiased appointment process for board members and establishment of provisions to moderate conflicts of interest, and
- a dedicated public–private funding mechanism.

The entity's primary mission would be to sponsor studies that compare the clinical effectiveness of a service with its alternatives. This research would involve synthesizing existing effectiveness literature or sponsoring new analyses, such as head-to-head clinical trials. Although cost effectiveness is not a primary mission, the Commission does not rule it out. The entity would not have a role in how payers apply this information to coverage or payment decisions. Instead, it would make the information available for others—payers, providers, and patients—to decide how to use it. In the Commission's June 2007 report to the Congress, the chapter on producing comparative-effectiveness information discusses in greater depth the activities of a comparative-effectiveness entity (MedPAC 2007).

The entity would need to establish guidelines for studies that it conducts and that it contracts to public and private research groups. Work conducted by other U.S. and international groups could inform this process. It will not be necessary to reinvent mechanisms that are now working well. Consensus from the research community will be essential to establish the entity's credibility.

TABLE 5–1 **Review of governance and funding options other researchers have discussed**

Researcher	Summary of approach
IOM (2008)	Recommended that the Congress direct the Secretary of HHS to establish a single national clinical effectiveness assessment program with the authority and resources to set priorities for and sponsor systematic reviews of clinical effectiveness, and to develop methodological and reporting standards for conducting systematic reviews and developing clinical guidelines. Also recommended that the Secretary appoint a broadly representative Clinical Effectiveness Advisory Board to oversee the program.
AHIP (2007)	Recommended a new public–private organization to compare the clinical and cost effectiveness of new and existing drugs, devices, procedures, therapies, and other health care services and distribute this information in a useful format to patients and clinicians. The new entity should be funded through public sources supplemented with support from private sources through mechanisms that will provide stability and independence from political pressures.
CBO (2007)	Discussed following governance options: • expanding the role of an existing agency such as AHRQ or NIH; • creating or "spinning off " a new agency, either within HHS or as an independent body that is part of either the executive or the legislative branch; • augmenting an existing quasi-governmental organization such as IOM or the National Research Council; and • establishing a new public–private partnership, such as an FFRDC. Discussed the following funding options: regular appropriations, dedicated financing amounts from Medicare trust funds or set percentages of federal health outlays, direct contributions from or dedicated taxes on the health sector.
Commonwealth Fund (2007)	Recommended a quasi-governmental entity possessing legal characteristics of both the public and private sector, so that it could receive funding (and participation and support) from both.
Wilensky (2006)	Considered four options: (1) placing the entity in AHRQ, (2) placing the entity within HHS as a new or existing entity, (3) placing the entity in a quasi-governmental entity, and (4) placing the entity in the private sector. Concluded that placing the center within a quasi-governmental entity was the most attractive alternative and that an FFRDC associated with either AHRQ or a newly established board within HHS were options worth exploring.
AcademyHealth (2005)	Recommended establishing an entity either within or outside of AHRQ and reviewed four options: • AHRQ sponsors research, with guidance from an external board and panel of experts; • AHRQ establishes an FFRDC and receives guidance from an external board and panel; • The Congress creates a new quasi-governmental entity, with AHRQ remaining as currently structured; or • The Congress reconstructs AHRQ as a quasi-governmental agency, which would keep most of its existing functions and add comparative effectiveness to its research portfolio.
Kupersmith et al. (2005)	Recommended a public–private consortium to include federal agencies, payers, insurers, drug companies, device companies, patient advocacy and interest groups, professional societies, hospitals, academics, and health foundations. Under this proposal, new federal appropriations would fund the consortium, with the expectation that the private sector would also contribute.
Reinhardt (2004)	Endorsed the creation of nonprofit independent institutions to analyze the cost effectiveness of drugs. Concluded that housing the infrastructure in a federal agency with funds appropriated by the Congress would be too vulnerable to political influence. Proposed that the proceeds from a small surcharge (one-half percentage point or less) on the annual outlays on prescription drugs could establish permanent endowments for independent nonprofit organizations.

Note: IOM (Institute of Medicine), HHS (Department of Health and Human Services), AHIP (America's Health Insurance Plans), CBO (Congressional Budget Office), AHRQ (Agency for Healthcare Research and Quality), NIH (National Institutes of Health), FFRDC (federally funded research and development center).

Limited information on comparative effectiveness can lead to poor clinical decision making

Decisions about what treatments to use often depend on anecdotal evidence, conjecture, and the experience and judgment of individual medical providers. Sometimes poor decisions are made for lack of clinical evidence, leading patients to experience poor outcomes from unanticipated adverse side effects. The following five case studies underscore the importance of evaluating the effectiveness of a service compared with conventional care (which can include existing interventions or no intervention) before such service widely diffuses and leads to less effective care or harm.

Case 1: Bone marrow transplantation for breast cancer

High-dose chemotherapy with an autologous bone marrow transplant (HDC/ABMT) is a cancer procedure in which a patient receives high-dose chemotherapy followed by transplantation of the patient's own bone marrow or stem cells. Between 1990 and 1999, the use of HDC/ABMT grew rapidly among women with breast cancer despite little clinical evidence that showed its effectiveness compared with the standard of care—conventional chemotherapy (Mello and Brennan 2001). Rettig and colleagues (2007) summarized the factors associated with the growth of this procedure in the 1990s:

- The oncology establishment legitimated the procedure very early in the 1990s.
- Breast cancer patients often saw the treatment as their last best hope.
- Health insurers, reluctant to pay for investigational or experimental procedures, aided its rapid diffusion by provoking strong negative reactions to coverage denials, at least until litigation made that option unattractive.
- Federal and state government mandates required that HDC/ABMT be covered as a benefit without evidence of its effectiveness.
- The media promoted HDC/ABMT to patients and helped persuade legislators to mandate that insurers pay for the procedure.
- Financial incentives drove both for-profit and nonprofit providers to promote the use of the procedure.

Expanding clinical use of HDC/ABMT began in 1989. Demands on insurers for coverage increased during the 1990s, and breast cancer became the most common indication for such procedures. Insurers began to turn down coverage requests in the late 1980s, asserting that the procedure was still investigational (Rettig et al. 2007). Many women responded by seeking coverage of the procedure through the judicial system. Most cases were settled out of court to avoid the expense and publicity of a jury trial. Most health plans agreed

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The research the entity sponsors would need to examine comparative effectiveness in relevant patient populations and in different care settings. Because the health care delivery system might affect the usefulness of some services, the effectiveness of services provided under different delivery systems should be considered. (Issues related to improving the health care delivery system are discussed elsewhere in this report.)

With its focus on comparative effectiveness, the entity would have other responsibilities apart from conducting or sponsoring research. It could act as a clearinghouse of published comparative-effectiveness literature. For example, clinicians' day-to-day work would be simplified if there were a single source for published studies on comparative effectiveness and if the information were summarized in a helpful way to inform treatment decisions. In addition, the entity could sponsor conferences or scientific symposia on a host of issues surrounding the use of comparative-effectiveness analysis, including methodological questions.

Finally, the new entity would need to coordinate with existing public and private institutions conducting

Limited information on comparative effectiveness can lead to poor clinical decision making (cont.)

to cover HDC/ABMT by the mid-1990s because of litigation, political lobbying by patient advocacy groups, and government mandates.

In 1999, results from five randomized controlled clinical trials showed that HDC/ABMT did not result in better outcomes compared with conventional treatment. Women receiving HDC/ABMT did not survive longer or have a longer time to progression of disease than women who received conventional therapy (Stadtmauer et al. 2000). In addition, the incidence of nonfatal but serious side effects (myelosuppression, infection, diarrhea, and vomiting) was greater among women receiving HDC/ABMT than in women who received conventional therapy. Treatment-related mortality was virtually the same for women in both groups.

About 23,000 to 40,000 women received HDC/ABMT between 1989 and 2002 (Rettig et al. 2007). A precise assessment of the additional health care spending incurred for HDC/ABMT compared with conventional treatment is not available. Assuming a cost of $80,000 per transplant (Mello and Brennan 2001), between $1.8 billion and $3.2 billion was spent on a treatment that was ultimately found to offer no appreciable medical advantage compared with conventional care, which could have been provided for less than half the cost.

Case study 2: Hormone replacement therapy

Until 2002, hormone replacement therapy was the standard therapy for treating menopausal symptoms. Hormone replacement therapy diffused based on decades of observational evidence that suggested it was associated with cardiovascular benefits. By the end of the 1990s, almost half of all postmenopausal women were being treated with long-term hormone therapy (Hersh et al. 2004). Annual hormone therapy prescriptions increased from 58 million in 1995 to 91 million in 2001 (Hersh et al. 2004). Spending for hormone replacement therapy was substantial; for example, total sales were $1.2 billion in 2000 (Lundy and Levitt 2001).

The Women's Health Initiative—a large, multicenter study sponsored by the National Institutes of Health (NIH)—was the first randomized primary prevention trial of postmenopausal hormones (Fletcher and Colditz 2002).[1] Findings from the Women's Health Initiative showed that hormone therapy posed more health risks than benefits. Researchers found that women taking hormone therapy (estrogen and progestin) were at increased risk of heart disease, breast cancer, stroke, blood clots, and dementia.

The findings of the Women's Health Initiative were widely and rapidly disseminated through both scientific and medical communication channels. A year and a half after these results were first published, use of prescription hormone therapy declined by 43 percent (Majumdar et al. 2004).

Since 2002, additional studies have shed light on the effective use of hormone replacement therapy. For example, one recently published study reported that the increased risk of breast cancer remains after women stop taking the therapy (Heiss et al. 2008). Another recent study reported that postmenopausal women who take hormones have a lower risk of developing advanced age-related eye disease, especially if they took oral contraceptives in the past (NIH 2008b). Over time, more studies may be completed that refine the guidelines about the appropriate use of hormone replacement therapy.

Case study 3: Extracranial–intracranial arterial bypass surgery

Extracranial–intracranial (EC/IC) arterial bypass surgery, a procedure first performed in 1967, was rapidly adopted in the 1970s as a treatment for ischemic cerebrovascular disease of the carotid or middle cerebral arteries. According to Wilson (2006), EC/IC diffused rapidly because it was easily explained to patients, it was not difficult for surgeons to learn how to do the procedure, and the potential population eligible for treatment was large.

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Limited information on comparative effectiveness can lead to poor clinical decision making (cont.)

In 1977, NIH initiated a randomized controlled clinical trial to test whether the procedure (connecting the superficial temporal artery to the middle cerebral artery) reduced stroke and stroke-related death compared with conventional medical care (EC/IC Bypass Study Group 1985).[2] This head-to-head clinical trial found no clinical benefit from the surgery; nonfatal and fatal stroke occurred more frequently and earlier in patients who had surgery.

After the release of the clinical trial results in 1985, Wilson (2006) reported that payers and patients rapidly abandoned the procedure. In 1991, Medicare withdrew coverage of the procedure as a treatment for ischemic cerebrovascular disease of the carotid or middle cerebral arteries. The total number of Medicare beneficiaries undergoing EC/IC surgery before the program withdrew coverage is not known because the code used to identify the procedure also identifies other procedures. By 2005, fewer than 800 procedures were performed across all payers.

Case study 4: Rofecoxib

The Food and Drug Administration (FDA) approved rofecoxib, a cyclooxygenase–2 (COX–2) inhibitor, in May 1999 to relieve the symptoms of arthritis, acute pain, and painful menstrual cycles. It was later approved for the relief of the signs and symptoms of rheumatoid arthritis in adults and children. The manufacturer voluntarily withdrew the drug from the market in September 2004 because data from clinical trials showed an increased risk of serious cardiovascular events, such as heart attacks and strokes, with long-term use of the drug (FDA 2004). Researchers concluded that methodological limitations minimized the chance of finding cardiovascular side effects during the initial clinical trials (Psaty and Furberg 2005).[3]

Rofecoxib was one of the most widely used drugs ever to be withdrawn from the market. This medication's lower rate of gastrointestinal side effects compared with alterative therapies—nonsteroidal anti-inflammatory drugs or aspirin—led to its wide diffusion even though it offered similar degrees of pain relief (Solomon et al. 2005). In the year before withdrawal, spending for rofecoxib was estimated to be about $2.5 billion.

The liability associated with rofecoxib is substantial. In November 2007, the manufacturer set up a settlement fund of $4.85 billion to settle some 27,000 lawsuits of people claiming that they or family members had been injured or died after taking rofecoxib (Merck 2007).

Case study 5: "Fen-phen"

The FDA individually approved phentermine (in 1959) and fenfluramine (in 1973) as appetite suppressants for the treatment of obesity. Although the FDA never approved the use of the combination—referred to as "fen-phen"—many practitioners used the combination of the two products off label for the management of obesity. The combination's off-label use was related to the results from a small clinical trial, which suggested that patients who were prescribed both drugs together required lower doses of each agent and had fewer side effects than patients prescribed one of the drugs (Weintraub et al. 1984). The FDA approved dexfenfluramine, an antiobesity drug related to fenfluramine, in 1996.[4]

Use of these antiobesity agents diffused widely. Spending for fenfluramine and dexfenfluramine totaled $300 million in 1996. The Centers for Disease Control and Prevention estimated that between 1.2 million and 4.7 million persons were prescribed the drugs (CDC 1997).

In July 1997, Connolly and colleagues reported 24 cases of heart valve problems that could lead to severe heart and lung disease in women who were treated with the combination of fenfluramine and phentermine.[5] On the basis of these reports, the FDA asked the manufacturers to voluntarily withdraw their drugs; in September 1997, both drugs were no longer marketed in the United States.[6]

The liability associated with fenfluramine and dexfenfluramine is substantial. The company that marketed both fenfluramine and dexfenfluramine has set aside more than $21 billion to pay the claims from some 100,000 lawsuits (Hawthorne 2005). ■

comparative-effectiveness research. For example, the Agency for Healthcare Research and Quality (AHRQ), the National Institutes of Health (NIH), and private sector groups would likely continue to undertake comparative-effectiveness research, and some of their studies could overlap with the entity's agenda. Coordinating research efforts could help reduce duplication and variability in the quality of the work undertaken. The goal would be to prevent the lack of coordinated findings that exists today (IOM 2008). However, the entity would play the role of convener rather than that of "overseer." To that end, establishing a "users' group" or an advisory committee would enable public and private sector groups that sponsor comparative-effectiveness research to meet, discuss issues, and offer new ideas.

Ensuring that the entity operates under a transparent and objective process is important. Otherwise, the users (patients, providers, and payers) of comparative-effectiveness information may neither believe nor use the research to make decisions. A transparent and objective process will, over the long run, improve the quality of the published literature on effectiveness. As we discuss later, researchers have shown that the results of some studies sponsored by some manufacturers show the biases of the investigators and funding sources.

Conducting comparative-effectiveness studies is not the primary focus of any federal agency

No federal entity exists whose sole mission is to sponsor and disseminate information about services' comparative effectiveness. Although AHRQ supports research that compares the clinical effectiveness of alternative treatments, its primary mission is broader—to conduct and sponsor health services research, which encompasses studies ranging from patient safety to health system effects on economic and clinical outcomes.

Other federal agencies with broader missions also conduct comparative-effectiveness research. NIH is the largest sponsor of head-to-head clinical trials that compare alternative treatments. However, such research is spread over many of its 27 centers and institutes and is a small fraction of the total NIH research portfolio of medical and behavioral research (AcademyHealth 2005). In addition, the Veterans Health Administration devotes a portion of its clinical research to evaluating the comparative effectiveness of health care services.

Other developed countries, with varied health care delivery and financing systems, have already established central agencies to conduct comparative-effectiveness research. For example, the United Kingdom, a single-payer system, established the National Institute for Health and Clinical Excellence (NICE) in 1999 as a part of the National Health Service to analyze the comparative effectiveness of new and existing health care services. (We discuss the funding of NICE's comparative-effectiveness research effort on pp. 127–128.) Germany, a multipayer system, established the Institute for Quality and Economic Efficiency in Health Care (IQWiG) in 2004, which conducts scientific evaluations of the use, quality, and efficiency of health care services. The organizations established in the United Kingdom and Germany use different governance and funding approaches. For example, NICE is a part of the United Kingdom's National Health Service whereas IQWiG is a private foundation (IQWiG 2008).

The private sector does not systematically produce and disseminate objective comparative-effectiveness information

In some instances, manufacturers of drugs, biologics, and devices conduct comparative-effectiveness studies but some researchers have critiqued these studies and raised concerns that the efforts may not always be objective and available to the public. Researchers have shown that bias in industry-sponsored trials is common and often favors the sponsor's product (Peppercorn et al. 2007). Possible sources of bias in industry-sponsored trials include: the dose of the drug studied; the exclusion of patients who are elderly, disabled, or have multiple comorbidities from the study population; the statistics and methods used; and the interpretation, reporting, and wording of results. Researchers have reported a bias toward the publication of positive results (Turner et al. 2008). There are also instances in which manufacturers do not provide the Food and Drug Administration (FDA) with required postapproval data (FDA 2008a). A recent case study reported instances in which a manufacturer facilitated the publication of guest-authored and ghostwritten medical literature (Ross et al. 2008).

Pharmacy benefit managers, health plans, and other large providers (e.g., hospitals) consider a service's clinical effectiveness, cost, and cost effectiveness—particularly for their drug formularies—but do not necessarily make their evaluations public. These groups often focus on proprietary studies related to the health care practices of providers in their respective networks. Few private sector

groups systematically produce comparative-effectiveness information and make it available to the public. One exception is the Technology Evaluation Center established by Blue Cross Blue Shield Association, which relies on reviewing existing literature to compare the clinical effectiveness of alternative services and posts these studies on the Internet.

More comparative-effectiveness information could help support better decision making by patients and providers

There is little evidence whether or to what extent new health care services are equally effective or outperform existing treatments. The research that manufacturers conduct to obtain marketing approval from the FDA generally compares their product (a drug, biological, or medical device) with a placebo (inactive agent).[7] These studies rarely make direct comparisons of alternative treatments or products. For surgical procedures and for laboratory-developed diagnostic tests, less clinical information is available than for drugs, biologicals, and devices because the FDA does not review their safety and effectiveness. More comparative-effectiveness information would be available if, when seeking FDA approval, manufacturers sponsored head-to-head clinical trials comparing their product with its alternatives.

More information on comparative effectiveness could help ensure that future technologies and existing costly services are used only when they confer clinical benefits that are superior to those of other, less costly services. In addition, disseminating objective comparative-effectiveness research to patients, payers, and providers would help improve how society allocates its health care resources. A significant proportion of health care spending is for care that has not been shown to be effective and that may be harmful (Wennberg et al. 2002). Effectiveness research might also encourage the greater use of effective treatments that are currently underutilized.

More information on comparative effectiveness might also reduce the variation in the use of certain treatments. Currently, researchers have shown that the use of certain treatments varies widely throughout the country (Fisher et al. 2003). The geographic variation in use is greater when the medical community has not reached consensus about the course of treatment or when clinicians have some discretion in recommending, such as imaging procedures and back surgery.

TABLE 5–2 **Ten leading clinical issues that need more research as identified by CMS's Medicare Evidence Development & Coverage Advisory Committee**

Research topic
Appropriate use of erythropoiesis agents in cancer patients
Comparative effectiveness of treatment of carotid artery disease
Comparative effectiveness of treatment for ulcers: off-loading, debridement, biologics, revascularization
Treatment of atrial fibrillation
Appropriate use of hospice care
Benefits of cancer prognostic markets
Benefits of high-cost cancer drugs
New radiation treatments for cancer: IMRT, proton beam
Benefit of early aggressive treatment for diabetes
Comparative effectiveness of treatment of acute stroke: clot retrieval versus reperfusion drugs

Note: IMRT (intensity-modulated radiation therapy). In 2007, CMS's Medicare Evidence Development & Coverage Advisory Committee (MedCAC) created a list of more than 100 research issues and rated the importance of each topic on a scale of 1 (lowest priority) to 5 (highest priority). The highest ranked topics judged by MedCAC are listed above. Since this effort, federal agency officials have also developed a list of services that need more research.

Source: CMS 2008.

More comparative-effectiveness information may help close significant evidence gaps and improve clinical decision making. Uncertainty about clinical effectiveness applies to new and old services. In October 2007, CMS's advisory committee, the Medicare Evidence Development & Coverage Advisory Committee (MedCAC), rank-ordered a list of research topics that could best fill evidentiary gaps for issues of critical importance to the Medicare program (Table 5-2). Since this effort, 50 scientists from federal agencies (Centers for Disease Control and Prevention, AHRQ, CMS, FDA, and NIH) participated in a workshop to revise and refine MedCAC's research questions. MedCAC reconvened in April 2008 to review and rank the research questions.

Filling in the knowledge gaps might lead to modest savings in national health care expenditures. CBO

estimated that expanding the federal role in sponsoring comparative-effectiveness research would reduce federal health care spending by $1.3 billion and total health care spending in the United States by $6 billion over a 10-year period (2008 through 2017) (CBO 2007, Orszag 2007).[8] CBO also estimated that, after considering the federal expenditures to establish a comparative-effectiveness entity, the net effect over 10 years would be to increase federal spending by $1.1 billion but decrease public and private spending by $3.6 billion (Orszag 2007).

Governance of a comparative-effectiveness entity

In our June 2007 report to the Congress, the Commission recommended that the Congress charge an independent entity to sponsor and disseminate comparative-effectiveness information. In this section, we consider the structure of a comparative-effectiveness entity. We explore the pros and cons of how to configure a board that would oversee the entity's research activities and where to place a comparative-effectiveness research function.

In evaluating governance and funding options, policymakers might consider whether (1) users will judge the research as being objective, credible, and produced with minimal or no conflict of interest and bias; (2) the entity is independent of various stakeholders and political pressures; and (3) the entity is stable. In our June 2007 report, the Commission emphasized the importance of independence and objectivity in structuring a comparative-effectiveness entity. The text box describes the experiences of three former Surgeons General, who testified before the Congress in 2007 about the lack of independence in speaking about certain public health topics. The text box (pp. 130–131) summarizes the experience of two defunct federal agencies—the congressional Office of Technology Assessment and the National Center for Health Care Technology—that conducted health technology assessments between 1978 and 1995.

Structuring a board of experts

The Commission believes that an independent board of experts should help develop the research agenda of a comparative-effectiveness entity and ensure that the research is objective and methodologically rigorous. The board of experts would have expertise in designing, conducting, and disseminating comparative-effectiveness research. In designing such an oversight group, a number of issues arise, including the participation of experts from the public and private sectors, the establishment of ethics rules, the appointment of experts to the board, and the role of advisory committees.

Tradeoffs between a board that is full time versus part time

One design issue is the level of involvement of experts from the public and private sectors. Board members could provide day-to-day oversight of the entity's activities—a full-time board. Alternatively, board members could provide periodic guidance to the entity's staff and director—a part-time board.

Certain tradeoffs exist with regard to requiring full-time or part-time service of board members. Compared with those providing part-time service, full-time board members could be more visible and better represent the interests of the comparative-effectiveness entity. Because full-time board members likely would not be permitted to engage in other business or employment, strong financial conflict-of-interest rules could be implemented. Compared with a part-time board, a full-time board would more likely incur higher costs due to expenses related to salaries and benefits. Examples of federal commissions with full-time advisory boards include the Securities and Exchange Commission, the Federal Reserve, and the Federal Trade Commission.[9]

Unlike a full-time board, individuals from both the public and private sectors could serve on a part-time board. For example, representatives from organizations conducting comparative-effectiveness research (e.g., AHRQ), public payers (e.g., the Veterans Health Administration), and private payers could be appointed to a part-time board. Part-time boards are typically larger than full-time boards. Between five and seven individuals typically serve on full-time boards, whereas some part-time boards are composed of more than 15 members. In addition, it might be more efficient to have a single officer (director) carry out the day-to-day activities of an entity rather than a board. For example, a board might not be able to make decisions as promptly as a single administrator or be able to reach consensus about delegating work (GAO 1992).

Under either approach, the role of the chair and the other members needs to be unambiguous to preclude disagreements between the chairperson and commissioners that could have an adverse effect on the agency's operations. For example, problems in administrative

Case study: Independence of Surgeons General from political influence

In 2007, three former Surgeons General testified before the House Committee on Oversight and Government Reform about their lack of independence from executive branch officials. The President appoints the Surgeon General with the consent of the Senate for a four-year term. The Surgeon General reports to the Assistant Secretary for Health within the Department of Health and Human Services.

The three Surgeons General who testified on facing political influence from administrations of both political parties are: Richard Carmona, MD, who served as Surgeon General between 2002 and 2006; David Satcher, MD, who served between 1998 and 2001; and C. Everett Koop, MD, who served between 1982 and 1989. These individuals reported that administration officials discouraged them from speaking about certain public health topics. They also noted the declining role of the office in dealing with key issues, such as public health preparedness.

The former Surgeons General suggested ways to help ensure the future independence of the office. Koop (2007) called for secure staffing and funding for the office to carry out its responsibilities effectively. Carmona (2007) noted that selection of Surgeons General should be depoliticized; future appointees should be selected from the ranks of career Public Health Service personnel "based on merit and without regard to political, ideological, or theological filters." ■

decision making occurred at the International Trade Commission (ITC), the Government Accountability Office (GAO) concluded, because the statute was not clear about the role of the chairperson and the commissioners (GAO 1992). The statute provided the chairperson with the authority to administer the agency but provided the commission the authority to approve the ITC's budget and to override any administrative decision made by the chairperson.

To ensure transparency, the board would need to meet on a regular basis and such meetings would need to be open to the public. In this way, stakeholders would have the ability to understand, follow, and engage in the process.

Establishing ethics rules

Ethics rules would be necessary to ensure that board members and the entity's staff avoid involvement in any real or apparent conflict of interest. The rules would address issues such as whether board members and staff could accept compensation from outside sources and what requirements would be needed for the regular reporting of their financial interests. Strong conflict-of-interest rules would be needed to preclude questions about the integrity of the research process and the scientific credibility and objectivity of the studies sponsored by the entity.

Recent high-profile cases have called attention to the possible effect of financial holdings, consultancies, research grants, and contracts on the decision-making process at NIH. Congressional and media concerns about conflicts of interest at NIH have included instances of senior scientists failing to disclose income from outside work, failing to get permission to consult with private sector groups, or performing work for private sector groups on government time (McNeil 2005). In response to these concerns, NIH has implemented broad restrictions on employees' outside activities and financial arrangements, including the holding of stock in biotechnology and pharmaceutical companies and the acceptance of prizes (NIH 2008a).

Strong standards of ethics are also important for individuals serving on scientific advisory committees to quell doubts about the impartiality of the committees. For example, observers have raised concerns about whether conflicts of interest have biased the recommendations made by the FDA's advisory committees, which are composed of outside experts and help the FDA reach decisions about the safety and efficacy of medications and medical devices. The FDA generally follows an advisory committee's recommendation but is not bound to do so (FDA 2008b).

In the past, members of FDA's drug advisory committees frequently had financial conflicts of interest but were still permitted to serve. In nearly three-quarters of drug advisory meetings held between 2001 and 2004, at least one advisory participant disclosed a financial conflict. However, few individuals with financial conflicts were recused from the committees (Lurie et al. 2006). In one instance in 2005, 10 of the 32 voting advisory members had financial associations with manufacturers of the drugs (COX–2 inhibitors) being considered at the meeting. The committee's vote favoring continued marketing of certain products would have changed if the 10 members with financial conflicts of interest had not voted (Steinbrook 2005). Lurie and colleagues (2006) reported that drug advisory committee members with conflicts of interest were 10 percent more likely to favor the drug being considered than members without reported conflicts.

The FDA Amendments Act of 2007 added new provisions regarding financial conflicts of interest of advisory committee members, including a requirement to review potential conflicts of interest for advisory committee appointments, public disclosure provisions, and an annual report requirement. Although the new law prohibits advisory committee members from participating in meetings if the member (or an immediate family member) has a financial interest that could be affected by the meeting outcome, it permits the agency to grant waivers to this prohibition if it is necessary to afford the advisory committee essential expertise. The legislation caps the number of waivers the FDA may issue in a given year.[10]

There is a tension between the cost and timeliness of administering an advisory committee and ensuring that it is composed of individuals with the necessary expertise without significant financial conflicts. Under contract to the FDA, the Eastern Research Group assessed the relationship between expertise and financial conflicts of interest of FDA advisory committee members. The contractor concluded that creating conflict-free FDA advisory panels could put an additional burden on the cost and the timeliness of advisory committee operations and that the agency might not always be able to match the specialized expertise of some existing advisory committees (Ackerley et al. 2007).

Finally, if formal stakeholder committees were established, they could not, as a practical matter, exclude individuals with financial conflicts of interest, as stakeholders, by definition, represent a particular interest. It would be important, however, to identify and make public any potential conflicts of interest to help ensure transparency.

Appointing individuals to the board

The process by which individuals are appointed to existing boards varies across public and quasi-public entities (e.g., congressionally chartered nonprofit entities). However, the process partly depends on where the entity is located (e.g., executive or legislative branch) and the function of the agency (e.g., carries out some type of function for the executive branch or advises the executive branch or advises the legislative branch).

The President appoints individuals to the boards of most independent federal agencies within the executive branch (GAO 1992). In addition, the President appoints members to the boards of some quasi-public entities because they support some function of an executive branch agency. For example, the President appoints the board to the Legal Services Corporation and the U.S. Institute of Peace. For some executive branch agencies and quasi-public entities, the Senate confirms the President's appointments. In addition, in many instances, the President selects the chair of the board.

Not all boards of executive branch entities are selected solely by the President. For example, the President and the Congress both appoint the advisory board members to the Commission on Civil Rights. The advisory board of the Reagan-Udall Foundation is selected by executive branch agencies, including the FDA, AHRQ, NIH, and the Centers for Disease Control and Prevention.

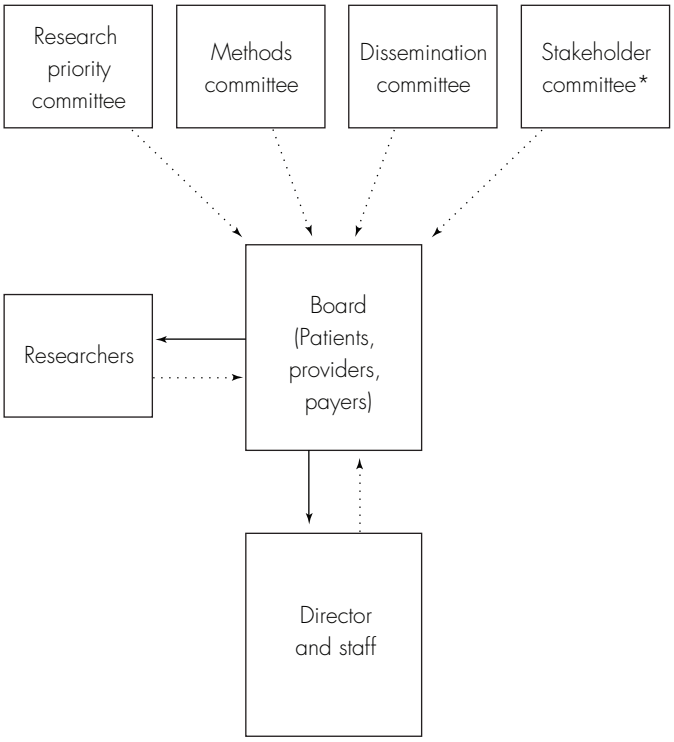
For independent agencies within the legislative branch, the Comptroller General of the United States at the GAO (a congressional agency) appoints members to one board (MedPAC), whereas Democratic and Republican leaders in the Senate and the House of Representatives appoint members to another board (the Stennis Center).

The process of selecting members to an entity's board also contributes to the general perception of the entity's objectivity. Having a neutral individual, such as the Comptroller General, select the board's chair and members could help ensure the board's objectivity and stability. It may be preferable to the presidential appointee process, which can bog down into lengthy delays when the President and the Senate, in its confirmation responsibilities, do not reach agreement. Vacancies on the board could have a negative effect on the entity's stability.

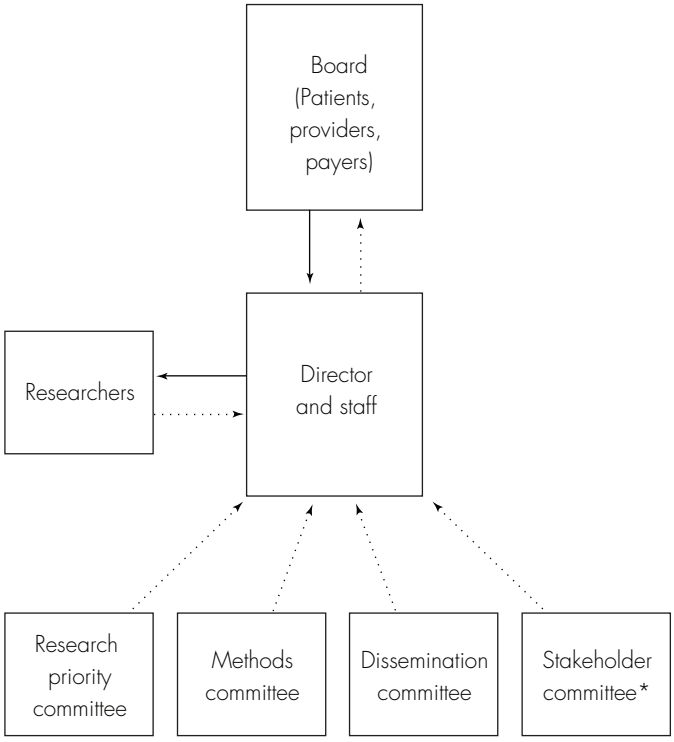
FIGURE 5–1

Two examples, using multiple consultative committees, for structuring a comparative-effectiveness entity

5-1A Committees provide input to the board



5-1B Committees provide input to director and staff



Note: The dashed line denotes input, while the solid line denotes direction.
*Composed of stakeholders such as manufacturers of health products and advocacy groups.

Longer term appointments would help ensure the independence of board members and the stability of the board. For example, members of the Federal Reserve's Board of Governors serve 14-year appointments. Staggering the terms of the board members (so that all the members' terms are not up at once) is a way to ensure the stability of the board.

Multiple advisory committees could allow for broad input from interested individuals

In addition to the board of experts, a regular process could be established to gain input from interested individuals. Multiple advisory committees could allow for broad input from individuals with specific technical expertise and individuals with interests in the entity's research agenda. These committees could provide input either to the board or to the staff and director.

As shown in Figure 5-1A, a full-time board could be advised by committees that individually have a single focus: for example, one focused on the research agenda, another on study methods, and another on communication strategies. The committee on study methods could advise the board about developing methodological guidelines for its studies and updating the guidelines to incorporate new and innovative study approaches. A board member with the pertinent expertise could act as chair and select the individual committee members. Alternatively, under a part-time board, multiple advisory committees could provide direct input to the director and staff (Figure 5-1B).

Neither the board of experts nor the staff would be bound by the information the advisory committees furnish. Advisory committee meetings held regularly throughout the year and open to the public would enhance the entity's

TABLE 5–3 **Options for structuring a comparative-effectiveness entity**

Type	Description	Examples
FFRDC: Nonprofit private organizations sponsored by an executive branch agency and administered by a private sector entity. Usually funded through contracts from the sponsoring executive branch agency.	According to current regulations, FFRDCs must meet a special long-term research need, which cannot be met as effectively by existing government or contractor resources (Code of Federal Regulations 2007).	National Cancer Institute at Frederick Center for Naval Analyses Lincoln Laboratory National Defense Research Institute Lawrence Livermore National Laboratory
Independent executive branch agency: Federal agencies in the executive branch, which are not under any cabinet department	Some agencies serve regulatory purposes while others are advisory.	Federal Reserve Federal Communications Commission International Trade Commission Securities and Exchange Commission
Independent legislative branch agency: Federal agencies in the legislative branch	Agencies generally advise the Congress.	Congressional Budget Office Congressional Research Service Government Accountability Office MedPAC Stennis Center for Public Service
Congressionally chartered nonprofit corporations: An entity chartered by the Congress in the private sector	Private entities that can accept and expend government and private funds on services that may be underprovided by the private market.	Legal Services Corporation U.S. Institute of Peace National Park Foundation American Institute in Taiwan

Note: FFRDC (federally funded research and development center).

transparency and ability to respond to constituents and stakeholders.

The use of advisory committees by federal entities is not uncommon. For example, several standing committees advise CMS—including MedCAC, the Practicing Physicians Advisory Council, and the Advisory Panel on Medicare Education—in areas such as physician services, coverage, beneficiary education, and management. Members include beneficiaries, physicians, pharmacists, providers of service, consumer and industry representatives, and other experts in the health care delivery field.

In addition, in the United Kingdom, NICE also employs multiple advisory committees. Multiple committees called "panels" select topics for study, review studies, and make recommendations.

Options for structuring a comparative-effectiveness entity

In this section, we compare governance approaches encompassing the full spectrum of public and private sector involvement: a federally funded research and development center (FFRDC), an independent federal agency within the executive branch, an independent federal agency within the legislative branch, and a

congressionally chartered nonprofit organization (Table 5-3).

We did not evaluate two other public–private options—government corporations and government-sponsored enterprises—because they are less relevant to the research objectives of a comparative-effectiveness entity. Government corporations, which are owned by the public sector, are generally created to serve a public function of a predominantly business nature with revenue potential, such as the Pension Benefit Guaranty Corporation (GAO 1996a).[11] Government-sponsored entities, such as the Federal Agricultural Mortgage Corporation (FarmerMac), are privately owned federally chartered financial institutions that have the implicit financial backing of the federal government (GAO 1996a, Kosar 2007).[12]

Creating an FFRDC sponsored by an existing Department of Health and Human Services agency

An FFRDC is a nonprofit private sector organization that is sponsored by a federal government agency and administered by an academic or a private sector entity. FFRDCs were established during World War II to meet specialized or unique research and development needs that could not be readily satisfied by government personnel or commercial contractors. Because there is a history of using such organizations for research purposes, it is a natural option to consider as the governance structure for an entity that sponsors comparative-effectiveness research.

Currently, 38 FFRDCs exist (NSF 2008). Most FFRDCs fall into the following categories: policy-focused study and analysis centers (e.g., the National Defense Research Institute operated by RAND Corporation for the Office of the Secretary of Defense), research and development laboratories (e.g., Lawrence Livermore National Laboratory operated by the University of California for the Department of Energy), and systems engineering and integration centers (e.g., the Aerospace Federally Funded Research and Development Center operated by the Aerospace Corporation for the Department of the Air Force) (IOM 2007). About two-thirds of all FFRDCs are associated with the Department of Defense or the Department of Energy. Many of the private organizations administering the 38 FFRDCs have established non-FFRDC divisions that perform research.

The sponsoring federal agency is responsible for the FFRDC's general oversight.[13] FFRDCs typically receive most of their funding from the sponsoring federal agency through a multiyear contract. FFRDCs are prohibited from competing for other government contracts. However, up to 30 percent of their funding may come from the private sector.

One advantage of FFRDCs is that they might provide a buffer against efforts by outside interests to reduce the sponsoring agency's funding because of disputed research findings (AcademyHealth 2005). An FFRDC sponsored by either AHRQ or NIH would provide a direct link to a federal agency that already carries out comparative-effectiveness research.

Flexibility would be another advantage of FFRDCs, which have no standard or required structure. FFRDCs can change staff on a project basis, hire staff for short durations, attract key researchers who would not wish to be employed by the federal government, and offer salaries that would be competitive with other private research organizations. This flexibility with staff could enhance the proposed entity's expertise, credibility, and visibility.

Some observers have suggested that FFRDCs might be too closely aligned to an executive branch department. Because the sponsoring federal agency is responsible for defining the FFRDC's scope of activities, some observers are concerned that FFRDCs may be susceptible to political influence. Wilensky (2006) questioned whether there is sufficient distance between the FFRDC and its sponsoring agency to ensure the FFRDC's objectivity.

Another issue concerns the stability of FFRDCs. The sponsoring federal agency decides whether to recompete the management and operating contract of its FFRDC.[14] On the one hand, periodically recompeting the contract of an FFRDC established to perform comparative-effectiveness analysis might be disruptive to the research process. On the other hand, recompeting the FFRDC's contract periodically might be healthy, encouraging a rotation of researchers into the environment. Periodic contract competition could enhance transparency and buy-in for the work and keep the organization from being locked into one methodology or from resisting reviewing past work.

Historically, most of the questions about FFRDCs' funding have focused on the sponsoring agency awarding contracts without competitive bidding (GAO 2003, Kosar 2007). The sponsoring federal agency may award the FFRDCs' new contracts or extend existing ones with FFRDCs noncompetitively in order to maintain an essential research and development capability (GAO 2002).

Some observers are concerned that an FFRDC's objectivity might be affected if it also conducts research for private sector (commercial) entities. Some observers are also concerned that the private sector entity that administers the FFRDC might benefit from its relationship with the FFRDC while conducting government and commercial research projects. A related concern is the extent to which an FFRDC can insulate its efforts from the private sector entity that administers it (Kosar 2007). Some of these issues might be dealt with by the statute that defines the FFRDC. For example, the statute could require that an organization operate only as an FFRDC comparative-effectiveness organization and not accept any private sector work.

Creating an independent agency within the executive branch

Independent executive branch agencies operate under general management laws of the federal government but typically do not report to a federal department or other federal agency. Many independent agencies exist, such as the Federal Reserve and the Securities and Exchange Commission.

These agencies are not subject to day-to-day executive branch supervision. A board or commission oversees the activities of some independent agencies. Many rely on a staff and a director to help manage the agency.

The responsibilities (regarding budget, personnel, and organizational decisions) of the chair, other board members, and the director vary across the independent agencies. GAO (1992) found that the strength of each chairman's administrative authority varied across 16 independent executive branch agencies.[15] Although statutes generally establish the overall roles and responsibilities of the chair and commission members, they allow for substantial interpretations and discretion (GAO 1992).

Because of their structural independence, these agencies are generally viewed as less vulnerable to political influences. Their independence is not absolute, however, as the members of the board are typically political appointees and most of these agencies are funded through congressional appropriations.

The Federal Reserve is identified as the most successful model of an independent executive branch agency. The Congress created the Federal Reserve as an independent agency to enable the central bank to carry out its responsibilities without excessive outside influence (Smale 2005). Although the Federal Reserve is required to report to the Congress on its activities, neither the president nor the Congress approves its decisions. The Federal Reserve consists of the Board of Governors and 12 private entities, federally chartered corporations known as Federal Reserve Banks (GAO 1996b). The seven-member Board of Governors represents the public sector and is appointed by the President and confirmed by the Senate for staggered 14-year terms. The Chairman and the Vice Chairman of the Federal Reserve Board are named by the President from among the members and are confirmed by the Senate. The Reserve Banks and the local citizens on their boards of directors represent the private sector. The Federal Reserve has been headed by a highly visible and well-respected professional, which helps minimize outside influence.

Most important to its independence is that the Federal Reserve does not receive any federal funding, so it is not subject to threats to cut off financial support. The Federal Reserve funds its activities with the interest earned from loans to banks and investments in government securities and from the revenue received from providing services to financial institutions (Federal Reserve Bank of Dallas 2008). This aspect makes the Federal Reserve more independent than most other independent federal agencies.

One drawback to the Federal Reserve as a model for a comparative-effectiveness entity is its lack of transparency. It has been criticized as being too secretive (Poole 2002). With respect to a comparative-effectiveness entity, the Congress would likely seek to achieve a better balance than exists with the Federal Reserve between ensuring independence for its operations and making the agency accountable for its actions (Smale 2005).[16]

In contrast, the Federal Communications Commission is an example of an independent executive branch agency that has not achieved as much autonomy as some had hoped. Hundt (2000) wrote that as Commissioner of the Federal Communications Commission, he coordinated the Commission's efforts with executive branch officials.

Creating an independent agency within the legislative branch

Like their counterparts in the executive branch, independent agencies within the legislative branch operate under general management laws of the federal government but typically are not subject to day-to-day oversight of their activities from policymakers or other agencies. There are 11 agencies that support the Congress including CBO,

the Congressional Research Service, GAO, MedPAC, and the Stennis Center for Public Service.

There are concerns that an agency within the legislative branch may be too close to policymakers and that it would not be sufficiently independent of political influences. On the other hand, some observers consider the work of some legislative branch agencies as being nonpartisan and objective. GAO notes that its mission is to provide objective, fact-based, nonpartisan, and nonideological analysis to policymakers. CBO's mandate is to provide objective, nonpartisan, and timely analyses to policymakers to aid in economic and budgetary decisions on the wide array of programs covered by the federal budget.

The structures of congressional agencies vary. Some agencies have a board or commission that oversees their activities. For example, the Commission and the Stennis Center for Public Service have an external board of experts overseeing a director and staff. Other congressional agencies, such as CBO and GAO, do not have a board overseeing their activities. Instead, they are headed by a single individual; CBO is headed by a director whereas GAO is headed by the Comptroller General of the United States. The Speaker of the House of Representatives and the President Pro Tempore of the Senate jointly appoint the CBO Director for a four-year term (with no limit on the number of terms). The President, with a slate of candidates the Congress proposes, appoints the Comptroller General to a 15-year term. Although CBO does not have a board overseeing its activities, it has established two advisory panels—the Panel of Economic Advisers and the Panel of Health Advisers—to review economic assumptions, methodologies, and projections and to advise on health research and cost estimates.

Creating congressionally chartered nonprofit corporations

Congressionally chartered nonprofit corporations include entities chartered by the Congress in the private sector. The legal and the organizational structures of these entities vary because the Congress stipulates the charter for each of them. For example, some government corporations:

- Rely on federal appropriations but are not associated with any federal agency. The Legal Services Corporation, established by a federal charter in 1974, relies on annual federal appropriations to sustain its mission of supporting legal assistance to low-income individuals involved in civil matters.
- Are associated with a federal agency and help carry out federal regulations but receive no federal funding. The two federally chartered nonprofit corporations associated with the Securities and Exchange Commission—the Securities Investor Protection Corporation and the Public Company Accounting Oversight Board—rely on funding from the private sector.[17]
- Are linked to a federal agency and perform functions the agency finds difficult to carry out but receive no federal funding. For example, the National Park Foundation administers gifts given to the National Park Service. It relies on private funding.

Like independent agencies we already discussed, some congressionally chartered nonprofit organizations are headed by some type of advisory board.

Some experts have looked at housing a comparative-effectiveness entity within the Institute of Medicine (IOM), which is a part of the National Academy of Sciences, a congressionally chartered nonprofit private corporation. The federal government created the National Academy of Sciences to be an adviser on scientific and technological matters. Neither the National Academy of Sciences nor its associated organizations—IOM and the National Academy of Engineering—receives direct federal appropriations for their work. Federally sponsored studies undertaken by the Academy are generally funded with appropriations made available to federal agencies. The National Academy of Sciences also receives funding from private sources. In 2006, about one-quarter of its total revenues ($228.5 million) were from nonfederal sources (National Academies 2006).

Wilensky (2006) explained that housing a comparative-effectiveness entity within IOM would provide for a trusted and independent intermediary to supervise the use of federal funds while making use of existing capacity in government for research contract management. IOM has generally been highly regarded by both industry and government. On the other hand, some of its meetings are closed to the public (e.g., when the study committee is discussing findings and recommendations of a report). In addition, Wilensky (2006) noted that there is some question about whether IOM can act in a timely way.

Accountability of congressionally chartered entities may be an issue because no single federal department within the executive or legislative branch is charged with overseeing their activities (Kosar 2007). There is

little regular oversight or supervision of government corporations by federal agencies. Kosar (2006) noted that individual corporations come under scrutiny from time to time by the Office of Management and Budget or by the Congress and that governmental oversight typically occurs once concerns are raised about the corporation's management, operations, efficiency, and fiscal practices.

Funding a comparative-effectiveness entity

In establishing a comparative-effectiveness entity, policymakers would need to develop sound budget estimates and design a financing scheme that would foster independence, transparency, and accountability. One way to think about funding is to use a bottom-up approach that assesses current comparative-effectiveness spending levels and estimates required expenditures based on the scope and research capabilities of the envisioned comparative-effectiveness entity. In this section, we present the budget experience for existing comparative-effectiveness organizations in the United States and the United Kingdom, which provides empirical information about the sizes of budgets for research programs that differ in scope. Alternatively, a top-down approach can be used to estimate an entity's funding. Some prominent health care economists have proposed such an approach by specifying a dollar amount or a percentage of current national health expenditures that could be used to fund comparative-effectiveness research. The functions the entity would carry out should inform its funding.

To finance a comparative-effectiveness entity, the Commission supports mandatory funding from a combination of public and private sources to create a comparative-effectiveness trust fund. Engaging both public and private funding sources would distribute the burden equitably, as the research findings would benefit all users—patients, providers, private health plans, and federal health programs. Dedicated funding would also reduce the likelihood of outside influence and would best ensure the entity's stability.

A bottom-up approach to estimate funding

In determining the funding levels necessary to establish a comparative-effectiveness entity, a look at the budgets of groups that currently conduct and sponsor comparative-effectiveness research is instructive. The Drug Effectiveness Review Project (DERP), the most narrowly focused of the existing comparative-effectiveness organizations we examined, is a collaboration of universities, organizations, and state governments to assess the effectiveness and safety of drugs within the same class. Since 2002, DERP has exclusively conducted retrospective research, with an average annual budget of $1.4 million (Gibson 2007). DERP makes its analyses publicly available on its website, but Consumer Reports Best Buy Drugs, a division of Consumers Union, translates DERP's research into reports designed to provide consumers and physicians with information to help guide prescription drug choices based on effectiveness, a drug's track record, safety, and price (Consumer Reports 2007). Consumer Reports Best Buy Drugs has operated since 2004 with a budget largely composed of a $3 million grant from the Engelberg Foundation and a $415,000 grant from NIH's National Library of Medicine.

AHRQ is the primary federal agency tasked with improving the quality, safety, efficiency, and effectiveness of health care. The Medicare Prescription Drug, Improvement, and Modernization Act of 2003 (MMA) mandated that the agency conduct research with a focus on outcomes, comparative clinical effectiveness, and appropriateness of pharmaceuticals. To fulfill this mandate, the agency began the Effective Health Care Program in 2005. In 2008, AHRQ's annual appropriation for the Effective Health Care Program doubled to $30 million (AHRQ 2008a). Research conducted under this effort includes: (1) sponsoring systematic literature reviews of the comparative effectiveness of health care services; (2) undertaking studies on comparative effectiveness using existing databases; and (3) translating comparative-effectiveness information for policymakers, providers, and consumers. To date, the program's Evidence-based Practice Centers have issued 14 comparative-effectiveness reviews. An additional eight reviews are in progress (AHRQ 2008b).

The Department of Veterans Affairs conducts comparative-effectiveness research as part of its Research and Development Program. One of the program's areas of focus is health services research. There are 15 Centers of Excellence, many of which focus on evidence-based medicine and comparative-effectiveness research. The fiscal year 2007 budget for the health services research area was $61 million, not all of which was used for comparative-effectiveness research (American Association for the Advancement of Science 2006).

NIH is the largest federal sponsor of prospective comparative-effectiveness research through head-to-head

TABLE 5–4 **National Institutes of Health comparative-effectiveness studies**

Study	Years	Funding (in millions)	Goal
Clinical Antipsychotic Trials of Intervention Effectiveness	N/A	$43	Compare the effectiveness, side effects, and cost effectiveness of older and newer antipsychotic medication to treat schizophrenia in real-world settings.
Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial	1993–2004	83	Tested whether the occurrence of heart attacks and strokes was lower for high-risk hypertensive patients treated with newer classes of drugs compared with long-established, inexpensive diuretics.
Sudden Cardiac Death in Heart Failure Trial	1997–2003	12	Tested whether an implantable cardiac defibrillator or an antiarrhythmic drug would better prevent sudden death in heart failure patients.
National Emphysema Treatment Trial	1997–2004	35	Tested the role, safety, and effectiveness of bilateral lung volume reduction surgery (LVRS) compared with standard medical care in the treatment of emphysema. A secondary objective was to develop criteria for identifying patients likely to benefit from LVRS.
Diabetes Prevention Program Clinical Trial	1994–2002	176	Tested effectiveness of two approaches to slowing development of type 2 diabetes in high-risk patients with impaired glucose tolerance.
Diabetes Control and Complication Trial	1982–1995	169	Tested whether sustained tight control of blood glucose could prevent or delay onset or progression of symptoms in type 1 diabetes.
Epidemiology of Diabetes Intervention and Complications	1966–ongoing	58	Tested whether sustained tight control of blood glucose could prevent or delay onset or progression of symptoms in type 1 diabetes.
Perinatal HIV Prevention Trial II	2000–2003	4	Compared effectiveness of adding the drug nevirapine to standard zidovudine therapy to lower risk of mother-to-child HIV transmission.
Medical Therapy for Prostatic Symptoms	1992–2002	57	Tested whether the combination of two drugs, doxazosin and finasteride, was more effective than either drug alone, in preventing progression of benign prostatic hyperplasia.
Total		**637**	

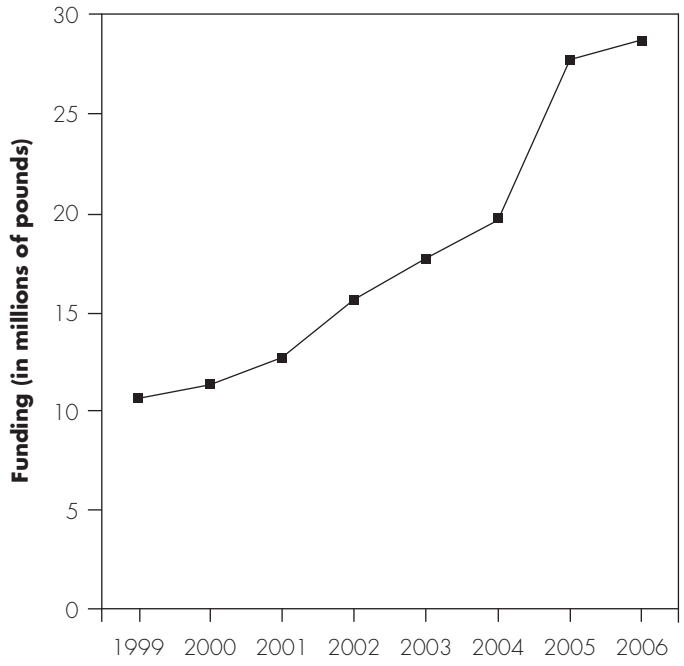
Note: N/A (not available).

Source: National Institutes of Health, Department of Health and Human Services. 2007. *Fact sheet: Research into what works best.* Bethesda, MD: NIH.

clinical trials. To date, NIH has conducted at least nine head-to-head clinical trials and spent more than $575 million since 1982 (Table 5-4). This amount accounts for a tiny fraction that NIH has received in government funding since that time. For example, in just one year (fiscal year 2007), NIH's federal budget allocation totaled $28.8 billion (Executive Office of the President of the United States 2008).

NICE issues guidance on the use of new and existing medicines, procedures, and treatments for specific diseases. As part of the United Kingdom's national health service, NICE was established in 1999 and funded at

FIGURE 5–2 NICE's annual budget



Note: NICE (National Institute for Health and Clinical Excellence).

Source: United Kingdom NICE annual reports, 2000–2007.

roughly £11 million. The budget has since grown to almost £29 million, or roughly $60 million in 2006 (Figure 5-2). NICE does not fund clinical trials or engage in primary data collection but instead issues recommendations based on analysis of existing research.

A top-down approach to estimate funding

Some prominent health care economists and researchers have proposed that spending targets—in nominal dollars and as a percentage of current national health expenditures—provide another means for setting a sound budget for comparative-effectiveness research. Reinhardt has suggested levying a 0.5 percent—or roughly $1 billion—surcharge on the nation's annual prescription drug expenditures to establish several independent pharmacoeconomic research institutes (KFF 2007, Reinhardt 2004).[18] Altman and colleagues suggested setting aside 5 percent to 10 percent—or roughly $1.4 billion to $2.8 billion—of the federal government's basic research funding levels for comparative-effectiveness research that would complement existing efforts (Altman et al. 2003, Executive Office of the President of the United States 2009).[19] Kupersmith and colleagues estimated that conducting 30 necessary new effectiveness studies would require an annual expenditure of $1 billion, or a doubling of the current investment (Kupersmith et al. 2005). The Commonwealth Fund (2007) has proposed a public–private partnership that would be funded with 0.05 percent of projected federal Medicare and Medicaid spending from general revenues and 0.05 percent of private insurance premiums, or $0.8 billion in 2008, $4.4 billion over 5 years, and $10.5 billion over 10 years. Wilensky has proposed a multibillion dollar comparative-effectiveness center, acknowledging that this funding level would not cover all the desired research but would require the entity to prioritize the topics for research (Wilensky 2006). Additionally, some private payers have estimated appropriate expenditures for a comparative-effectiveness entity. The Blue Cross Blue Shield Association recommends an annual budget not to exceed $375 million (BCBSA 2008).[20]

Mandatory public–private financing would provide a stable funding source

The Commission believes that mandatory financing from a combination of public and private sources would ensure maximum stability for a comparative-effectiveness entity. We examined two options for mandatory public–private financing to establish a comparative-effectiveness trust fund.

One option would be to designate a small percentage of the Medicare Part A trust fund and impose a levy on private sector organizations, such as private health plans and self-insured employers. This financing option has the benefit of mandating contributions from all payers—public and private. The impact of this new levy would likely fall on consumers. Additionally, with the fiscal pressures facing Medicare, increasing the burden on the Medicare Part A trust fund may not be the best long-term solution.

Alternatively, funding for a trust fund could come directly from general revenues. As a broadly based revenue source, a mandatory appropriation of general revenue funding would be one way for all payers—public and private—to contribute to a comparative-effectiveness entity. To ensure stability, policymakers could establish a funding reauthorization period similar to the State Children's Health Insurance Program's 10-year funding allocation. Alternatively, policymakers could establish a multiyear mandatory appropriation similar to the Health Care Fraud and Abuse Program (established by the Health Insurance

Portability and Accountability Act of 1996). Specifically, the statute appropriated money from the Medicare Part A Trust Fund to establish mandatory funding for health care fraud and abuse activities for fiscal year 1997 and automatically increased funding between 1998 and 2003. After 2003, the statute capped funding at the 2003 level but subsequent legislation has raised funding for some activities. Regardless of funding structure, periodic evaluation would be needed to ensure that efforts of the comparative-effectiveness entity are meeting the needs of its constituency.

A dedicated public–private funding mechanism would reduce the likelihood of undue influence, particularly for a start-up organization that has not established its own credibility or constituency. The text box (pp. 130–131) summarizes the experience of the Office of Technology Assessment and the National Center for Health Care Technology. Both of these entities, which received funding from annual appropriations, were ultimately defunded.

The Commission supports mandatory multiyear funding because it would be more stable than annual appropriations, which would require policymakers to consider annually the priority of such research compared with other programs. Such decisions could be subject to factors other than the priority of the research. For example, in 1995, funding of AHRQ (then known as the Agency for Healthcare Policy and Research) was severely threatened partly because of findings from a study the agency sponsored on back surgery. According to Gray and colleagues (2003), medical advocacy organizations disagreed with the findings of the research effort, asserting that the research was unsound and wasted taxpayer dollars, but AHRQ survived this threat to its appropriations because of efforts of many individuals and organizations on the agency's behalf.

Voluntary contributions from private groups—such as private plans, private payers, and manufacturers of drugs, biologics, and medical devices—could also be vulnerable to budget uncertainties. Private sponsors might decide to withhold or withdraw funding for subjective reasons, such as disagreeing with the entity's selection of a service for consideration. The influence of private groups that directly fund the research on a study's design and findings could be a concern. In addition, voluntary private contributions might be small because comparative-effectiveness research is a public good, and the benefits of such information accrue to all users, not just to those who pay for it.

Comparative-effectiveness information could help CMS make better policies

The Medicare program faces enormous challenges with financial sustainability. Policymakers will need to use a combination of approaches to address Medicare's long-term financing, including basing payment decisions on comparative-effectiveness information. Some researchers contend that CMS needs to base its payment decisions on more complete clinical evidence when dealing with costly new services (Redberg 2007). Investment in building a process for collecting information about the comparative effectiveness of health care services could lead to future use of this information in Medicare's payment policies.

In the past, CMS has faced obstacles in trying to use evidence about a service's clinical effectiveness in its payment policies. For example, after CMS set the payment rate for a new anti-anemia drug equal to the rate for an existing drug on the grounds that the products were functionally equivalent, the MMA prohibited the agency from using this standard in future cases involving payments to hospital outpatient departments. In another example, the MMA prohibited CMS from using AHRQ's research on comparative clinical effectiveness to withhold coverage of prescription drugs, although private drug plans administering the Part D benefit are not precluded from using such information in designing their formularies.

CMS has also faced obstacles in trying to consider a service's cost effectiveness or value in its coverage process. In 1989, CMS proposed considering cost effectiveness in its coverage decision-making process as a factor to determine whether a treatment was reasonable and necessary. The proposal generated opposition and was withdrawn. In 2000, the agency issued a notice of intent that outlined the criteria the agency would use when making national coverage decisions. The criteria considered whether the service provided added value to the program. Again because of strong opposition, CMS never issued a proposed regulation.

Under current policy and law, CMS generally covers any treatment that is "reasonable and necessary," regardless of its effectiveness or its cost relative to alternative treatments. CMS rarely uses clinical information to set payments. One exception is the use of a least costly alternative (LCA) for certain types of items, including durable medical equipment and drugs used to treat advanced prostate cancer. Using the LCA policy,

Former federal agencies sponsoring health technology assessments

The Office of Technology Assessment (OTA) was a nonpartisan congressional agency created in 1972 that used in-house researchers and outside experts to conduct independent analyses of complex scientific and technical issues. The agency conducted technology assessments in the areas of energy, transportation, and infrastructure; industry, telecommunications, and commerce; international security and space; education and human resources; environment; and health. In its 24 years, OTA published about 750 technology assessments, background reports, technical memos, case studies, and workshop proceedings.

A 13-member technology assessment board governed OTA's activities. As mandated by statute, the board consisted of six Senators, six Representatives (drawn equally from both parties), and OTA's Director. The board's Chairman and Vice Chairman alternated between the Senate and the House with each congressional session. The board made the final decision as to whether OTA could proceed with an assessment and reviewed all reports before their release. In addition to the board, the statute also established a 12-member technology assessment advisory council composed of 10 public members, the Comptroller General, and the Director of the Congressional Research Service. The council reviewed OTA's activities and made recommendations to the technology assessment board.

OTA's federal funding was not mandatory. Its authorizing legislation (the Technology Assessment Act of 1972) provided funding of $5 million for the first two years of its existence. Thereafter, the agency's funding underwent the annual authorization and appropriation process. OTA was disbanded in 1995 as part of budget reductions by the Congress (CRS 2007). Its appropriation was roughly $20 million in the year before its closure. Various reasons have

(continued next page)

Medicare's claims administration contractors do not pay for the added cost of a more expensive service if a clinically comparable service exists. In its January 2007 report to the Congress on payment for Part B drugs, the Commission supported using LCA policies but discussed the need for LCA to be applied in a clinically appropriate and consistent manner.

Because of the difficulties CMS has faced in using information about services' clinical effectiveness and value, the agency might need additional statutory authority to more effectively use such information to promote more effective care. CBO's recent report noted that to reduce spending substantially under Medicare, CMS would probably need additional authority to consider the relative benefits and costs of services when making coverage and payment decisions (CBO 2007). Under current law, Medicare does not have clear authority to take costs into account.

If changes in the statute were made, Medicare could use information about comparative effectiveness to promote the use of more effective care. Using comparative-effectiveness information in the coverage process may not be the area to begin to use this information. As we mentioned earlier, CMS faced opposition in using information about a service's cost effectiveness or value in the national coverage process. Rather, the agency could begin by using results of comparative-effectiveness studies to inform providers and patients about the value of services and to adopt payment policies that account for a service's value.

CMS could also use comparative-effectiveness information to prioritize Medicare's pay-for-performance measures and disease management initiatives or target screening programs. A pay-for-performance program could link providers' bonuses to the provision of services that are clinically effective and of high value. Because there are usually more potential measures than are practical to use, CMS could consider comparative-effectiveness information when choosing measures for pay-for-performance programs.

Former federal agencies sponsoring health technology assessments (cont.)

been put forth for OTA's demise. Eisenberg and Zarin (2002) contended that the medical profession and drug and device manufacturers advocated for eliminating the agency. Bimber (1996) argued that the agency was terminated because of changing priorities within the Congress. Others have said that the agency was defunded because its work was not timely and duplicated the work of other agencies (CRS 2007).

The National Center for Health Care Technology (NCHCT) was established in 1978 in the executive branch to serve as a focus for examining selected new and existing technologies, with the aim of assembling the best current evidence about their clinical effectiveness and cost and information on the social and ethical issues associated with their use. NCHCT's role included: providing information to state and local governments' health facilities planning agencies, advising the Health Care Financing Administration (now CMS) on which new technologies it should cover, prioritizing research on health technology assessment, and developing methodologies for health technology assessment. A National Council on Health Care Technology, composed of 18 members including scientific experts, technology industry representatives, clinicians, lawyers, ethicists, and members of the general public, was created to advise NCHCT. The agency's annual budget was about $4 million per year (Eisenberg and Zarin 2002).

NCHCT ceased operating after three years (in 1981). According to Perry and Thamer (1999), the medical device industry and several medical advocacy groups opposed NCHCT. Perry (1982) noted that the medical device industry objected to NCHCT's efforts to compile a list of emerging technologies, arguing that early assessments might stifle innovation and that assessments could be undertaken by existing federal entities. Eisenberg and Zarin (2002) also concluded that NCHCT survived for only three years because of lobbying by medical advocacy groups and the drug and medical device industries. ■

Researchers have suggested several ways for CMS to use comparative-effectiveness information in the payment process. This information could help CMS:

- create a tiered payment structure that pays providers more for those services that show more value to the program (or less for services that show less value),
- create a tiered cost-sharing structure that requires lower cost sharing for services that show more value to the program (or higher cost sharing for services that show less value), and
- avoid the additional cost of a more expensive service if evidence shows that it is clinically comparable to its alternatives (i.e., limit payment to the cost of the less expensive but comparably effective service).

Another option for using clinical effectiveness in Medicare's payment process is to require manufacturers to enter into a risk-sharing agreement, which links actual beneficiary outcomes to the payment of an item or service based on its comparative effectiveness. Manufacturers could rebate the Medicare program for items or services that did not meet expectations for effectiveness. In the United Kingdom, manufacturers are entering into such agreements with the National Health Service. For example, Johnson & Johnson proposed that the National Health Service pay for a cancer drug only for people who benefited from it (Pollack 2007).

In the United States, some private payers are beginning to enter into risk-sharing agreements with manufacturers of drugs, devices, and tests. For example, UnitedHealthcare is conducting a risk-sharing experiment for a genetic test that predicts the likelihood of breast cancer recurrence in women with newly diagnosed, early stage invasive breast cancer. Under the agreement, the manufacturer is held accountable for the cost of the test if it does not have the intended impact on actual medical practice (i.e., the provision of chemotherapy) (Culliton 2007). Another payer, Cigna, is trying to persuade the makers of cholesterol-lowering drugs to pay the medical expenses of patients who have heart attacks even though they have been taking their medication (Pollack 2007).

To improve its ability to make evidence-based coverage decisions, CMS in 2006 initiated an effort to gather information about some services' clinical effectiveness. The agency modified its national coverage process to require that providers collect clinical evidence for a service the agency might not have covered in the past because of insufficient data about its clinical value. CMS refers to this approach as coverage with evidence development. Currently, CMS requires the collection of additional clinical evidence (via medical registries or clinical trials) for five services.[21]

Additional clinical information is collected for few services. Most services do not go through Medicare's national coverage process. Rather, they are paid through the various fee schedules and prospective payment systems, which generally do not require the submission of clinical evidence, with few exceptions. CMS requires that dialysis providers report clinical information when submitting claims on behalf of dialysis patients.

Expanding the collection of information about a service's clinical effectiveness might in the long run have the potential to promote care that is more efficient and of higher quality. There may be more opportunities for the Medicare program to collect clinical information in the payment process, particularly for services with limited evidence on their effectiveness for Medicare beneficiaries. ■

Endnotes

1 Between 1993 and 1998, the Women's Health Initiative enrolled 161,809 postmenopausal women whose ages ranged from 50 to 79 years in a set of clinical trials on postmenopausal hormone use, low-fat dietary patterns, and calcium and vitamin D supplementation and an observational study at 40 centers in the United States (Writing Group for the Women's Health Initiative 2002).

2 The clinical trial randomly assigned 1,377 patients with atherosclerotic narrowing or obstruction of the internal carotid or middle cerebral arteries either to undergo the procedure or to receive conventional medical treatment (i.e., nonsurgical care). Patients were followed for an average of 56 months.

3 In the initial evaluations of the COX–2 inhibitors, the use of small, short-term trials, the exclusion of high-risk patients, and methodological issues (the lack of attention to cardiovascular side effects) all minimized the possibility of finding evidence of cardiovascular harm (Psaty and Furberg 2005).

4 Dexfenfluramine is the dex-isomer of fenfluramine.

5 The authors concluded that the appearance of clinically significant valvular heart disease (changes in the heart valves that cause leakiness and backflow of blood) in a population less than 50 years old is rare and that the association between the disease and the combination therapy is not likely to be due to chance.

6 The FDA did not request the withdrawal of phentermine, a stimulant that was thought to offset fenfluramine's side effects, drowsiness, and changes in mood.

7 For certain conditions, such as cancer and AIDS, clinical trials often compare the most accepted treatment with a new treatment. For devices, the FDA requires safety and effectiveness information only for high-risk devices, such as stents, that pose a significant risk of illness or injury to patients. (The FDA approves most devices for marketing in the United States based on their similarity to previously approved devices.)

8 CBO estimated the impact of Section 904 of the Children's Health and Medicare Protection Act of 2007 that would have established within AHRQ a center for comparative-effectiveness research.

9 The statute creating the Securities and Exchange Commission specifies that "no commissioner shall engage in any other business, vocation or employment than that of serving as commissioner" (Securities Exchange Act of 1934). The Federal Reserve Act states that "members of the Board shall be ineligible during the time they are in office and for two years thereafter to hold any office, position, or employment in any member bank" (Federal Reserve Act 1913). The five commissioners of the Federal Trade Commission are also not permitted to engage in any other business, vocation, or employment (15USC 41).

10 Specifically, the law requires the Secretary to determine the aggregate percentage of waivers provided in fiscal year 2007 and to decrease the number of waivers by 5 percent in each fiscal year between 2008 and 2012. In addition, the Secretary must disclose all waivers on FDA's website.

11 For example, the Pension Benefit Guaranty Corporation is a federal corporation created by the Employee Retirement Income Security Act of 1974. It protects the pensions of nearly 44 million American workers and retirees in private single-employer and multiemployer defined benefit pension plans. The Pension Benefit Guaranty Corporation receives no funds from general tax revenues. It collects premiums from contributing sponsors of covered pension plans.

12 For example, Farmer Mac provides financing for agricultural real estate and rural housing loans and liquidity to agricultural and rural housing lenders.

13 Federal management of FFRDCs is based primarily on two regulations—the Federal Acquisitions Regulation and the Office of Federal Procurement Policy Letter 84–1.

14 The Federal Acquisition Regulation, which implements federal law, requires that: there must be a written agreement of sponsorship between the government and the FFRDC; the sponsoring agency must justify its use of the FFRDC; before extending the contract, the agency must conduct a comprehensive review of the need for the FFRDC; and when the need for the FFRDC no longer exists, the agency may transfer sponsorship to another government agency or phase out the FFRDC.

15 These agencies are: the Commission on Civil Rights, Commodity Futures Trading Commission, Consumer Product Safety Commission, Equal Employment Opportunity Commission, Federal Communications Commission, Federal Elections Commission, Federal Energy Regulatory Commission, Federal Maritime Commission, Federal Mine Safety Health Review Commission, Federal Trade Commission, Interstate Commerce Commission, International Trade Commission, National Labor Relations Board, Nuclear Regulatory Commission, National Transportation Safety Board, and the Securities and Exchange Commission.

16 The Congress exercises oversight of the Federal Reserve in a variety of ways. GAO has the authority to audit the Board of Governors and the Reserve Banks and branches. According to the Congressional Research Service, such audits are limited, as GAO is prohibited from auditing monetary policy operations, foreign transactions, and the operations of the Federal Open Market Committee (CRS 2007). Congressional oversight on these matters is exercised through the requirement for reports and through semiannual monetary policy hearings.

17 The Securities Investor Protection Corporation ensures that securities held in brokerage firms are protected from losses caused by securities firms' failures. The Public Company Accounting Oversight Board oversees the audit of public companies that are subject to securities laws. The Securities Investor Protection Act of 1970 permits the Securities Investor Protection Corporation to impose assessments on its members—brokers or dealers of securities. The Sarbanes-Oxley Act of 2002 permits the Public Company Accounting Oversight Board to collect support fees from public companies.

18 The Kaiser Family Foundation reports that spending in the United States for prescription drugs was $200.7 billion in 2005.

19 The federal government's basic research budget was $27.7 billion in fiscal year 2007.

20 The budget for the comparative-effectiveness research sponsored by the Blue Cross Blue Shield Technology Evaluation Center is not available on its website.

21 Under its coverage with evidence development policy, CMS requires collection of clinical information for the following services: positron emission tomography (PET) for dementia; PET for brain, cervical, ovarian, pancreatic, small cell lung, and testicular cancers; implantable cardioverter defibrillators; long-term treatment with oxygen; and PET for other types of cancer.

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