

Controlling Costs and Improving Diabetes Care

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A simplification of the threat that diabetes poses to industrialized society is that the costs of inadequate treatment in terms of dollars, suffering, and functional impairment, despite increasing knowledge, are ever increasing. This increased threat is a result of the combined effects of the rising incidence of diabetes, the increasing costs of adequate care, and the perverse effects of a medical care system that fails to encourage lifelong patient commitment and behavior change.

In a 1997 article, American Diabetes Association (ADA) President Mayer Davidson¹ pointed out that, in 1992, 14.6% of all U.S. health care expenditures were spent on treating the 4.5% of the population with confirmed diabetes. An estimated 16 million Americans have diabetes, at least 90% of whom have type 2 diabetes. Furthermore, an estimated 120 to 140 million people worldwide have diabetes, and this number will double by 2025. Some of the causes of increased incidence of diabetes are believed to be related to population growth, longer lifespan, changing ethnic composition, sedentary lifestyle, and the increasing preference for the typical high-calorie, high-carbohydrate "Western" diet. Selby et al.² examined medical care costs for members of a California HMO. Patients with diabetes had \$3500 in excess costs compared with those without diabetes. This figure was broken down as 27% for long-term diabetes-related complications, 3% for acute metabolic complications, 14% for complicated diabetes care, and 56% for general medical conditions.

In 1993, the groundbreaking U.S. Diabetes Control and Complications Trial³ (DCCT) reported that diabetes complications can be prevented in patients with type 1 through meticulous control of blood glucose, frequent insulin injection or pump therapy, frequent blood glucose monitoring, and care by a multispecialist diabetes team. In 1998, the United Kingdom Prospective Diabetes Study (UKPDS) reported similar beneficial effects of improved glycemic control in patients with type 2. Such studies became possible in the 1980s only when glycosylation of proteins was recognized as an effective surrogate for reporting average blood glucose. Based on the DCCT and UKPDS, normalized glycosylated hemoglobin is considered the primary goal of diabetes therapy.

A simultaneous development that allowed patients with diabetes to monitor blood glucose in everyday life and begin to adjust therapy to achieve normoglycemia was the mass production and distribution of home blood glucose testing systems with disposable test strips and inexpensive meters. All of these advances led to the development of treatment guidelines as standards for diabetes care, such as those published by the ADA, which are widely accepted by diabetes specialists.

In addition to treatment recommendations for insulin and oral diabetes agents, the proactive guidelines include equally important prescriptions for diet, exercise, and lifestyle changes. Many patients with type 2 diabetes would be able to control their blood glucose levels without medication if they received and followed treatment recommendations for appropriate dietary and activity changes. Moreover, the practice guidelines also require routine screening examinations and tests for neuropathy, retinopathy, skin changes, vascular diseases, and other risk factors.

Adequate therapy for diabetes means normalizing the patient's hemoglobin A1c, monitoring treatment, and establishing prevention strategies to avoid complications, along with a choice of treatment modes to minimize side effects and maximize quality of care. Unfortunately, the costs of adequate therapy keep rising, and health plans are reluctant to pay for care while accessibility of properly trained caregivers is limited and evidence indicates patients do not modify behavior or follow treatment guidelines indefinitely. Managed health plans in the United States favor the use of generalist providers rather than specialists for treating diabetes despite evidence

that the latter provide better quality of care with less frequent hospitalization, fewer complications, and lower overall costs of care.

In a study of diabetes treatment by a PPO health plan over 1 year, 117 patients with diabetes had 144 admissions. Of those patients with new onset diabetes, a primary care physician (PCP) cared for 58%, and 42% received their care from a diabetes specialist (endocrinologist, diabetologist, or internist with special interest in diabetes). Patients admitted with previously known diabetes received care from a generalist in 83% of cases and a specialist in 17%, which reflects the much greater likelihood of hospitalization by generalists than specialists treating diabetes. The average length of stay for all diabetes admissions was 4.7 days: hospital care by PCPs resulted in a 5.7-day average length of stay, whereas patients under the care of diabetes specialists were hospitalized an average of only 2.7 days. Health plans are reluctant to change this pattern for fear that overuse of specialists would result from all chronic diseases being managed by specialists, that PCPs are effective gatekeepers, and retention of generalists would be impaired. However, none of these allegations has been proven.

The national diabetes care system can be deemed a failure. Practice guidelines are available but not followed by most patients and providers. Some patients have no health care insurance coverage; others have some coverage, but it is inadequate; and still others pay too much for adequate coverage, thus limiting their benefits. Despite specialist care from highly qualified providers, patients frequently do not adhere to the prescribed treatment plan. When it comes to modifying diet, following recommendations for glucose monitoring, exercising, or making any other major lifestyle modification, patients by and large are unable to comply. They require repeated training sessions, examination, and breaking down of resistance to change and reinforcement of the new behavior. A variety of such techniques have been used to improve diabetes care in research studies but rarely are practiced in the reality of routine diabetes care. A team approach that enlists the help of diabetes educators as used in the DCCT is not yet a part of routine practice. Also lacking are a uniform payment structure and dominant organization to provide direction in benefits for diabetes care.

In the past decade, the term *disease management* (DM) has evolved as a concept that embraces the prevention and care of chronic or recurring diseases through the development of systems to guide and assist patients and coordinate resources. The aims of DM are to improve quality of care and patient outcomes and prevent high costs associated with chronic or recurring diseases. DM is more than simple management of component costs through traditional managed care techniques and has been proven effective in short-term studies. However, most DM trials have been short, were not designed to restructure the administration of care, and tended to lower costs by

preventing short-term effects of poor care. Because they failed to lower costs of medical care itself, many of these trials have been abandoned by their sponsors or exist in name only.

What is needed is a redesign of the process for patient care that eliminates costly and ineffective one-on-one patient/physician encounters. A team approach should be substituted in which the patient participates as part of a group with access to multiple caregivers on the team at each visit, cooperation and competition foster improved outcomes with behavior modification, and patients enjoy rather than merely tolerate the process. The team should consist of patients plus family, friends, and support groups; caregivers, including nurse practitioners, nurse educators, registered dietitians, behavioral health professionals, physicians (including endocrinologist, diabetologist, or internist with diabetes interest), ophthalmologists, podiatrists, other specialists as necessary (nephrologists, neurologists, cardiologists, etc.), exercise physiologists or trainers; pharmacists; and care managers (nurse case managers, physicians, or clinical care coordinators).

Care management should be supervised by a professional (nurse or physician) who can look impartially at the entire process. The care manager need not be one of the caregivers on the team. Using practice guidelines and knowing the patients, the care manager can modify the process to improve outcomes and link the patient or group of patients and the care team through personal contact, the Internet, or other communication system. In some health plans, care managers are physically located in an administrative office and maintain contact with clients in diverse locations telephonically; in others, they meet directly with patients. Although not providing care themselves, the care managers ensure that the providers follow practice guidelines, patient outcomes are appropriate, and patients are satisfied with the treatment plan. Interventions at their disposal include discussing patient outcomes with other caregivers, ensuring that patients have educational or clinical materials they need, facilitating visits to specialists outside the team, and obtaining coverage for new or special treatments.

A further step in restructuring diabetes care is to redesign the care environment. The diabetes care center, either free-standing or part of a more comprehensive medical center, should contain classrooms, media rooms, group dining and cooking demonstration rooms, a gymnasium, and physical activity areas. Private offices and examining rooms largely should be eliminated. Located near the patients for regular access, patients also would participate in design and decor. A major aspect would be the addition of amenities to encourage enjoyment, a positive approach, and behavior modification.

Finally, it is imperative to rethink the payment system. Costs are predictable for patients with new onset diabetes and those without long-term complications. Therefore, a prepayment system or a mixed payment system with prepayment for dia-

betes care might be feasible. Whether coverage is through a managed indemnity system, fully prepaid managed care, or even a national single-payer system, trials of various forms of DM and managed diabetes care can provide a meaningful comparison of costs and efficacy.

In summary, the current methods of diabetes care in the community are ineffective and extremely costly. Although we already have methods to improve the quality of care based on research into causes and treatment, these methods require continuous cooperation and the participation of patients and a variety of caregivers. They also are inconsistently and ineffectively applied. Cost-effective diabetes care using a DM approach with an organized team of providers can be applied to average community diabetes populations to improve outcomes. If the process is supervised by an individual care manager and the patients are seen in a restructured diabetes care center, patients should participate eagerly. Employers, patients, and professional organizations should pressure payors to continue to rethink the payment system to cover the more effective care system.

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