Midcourse Review

HEALTHY PEOPLE 2010

Diabetes 5

Co-Lead Agencies:

Centers for Disease Control and Prevention
National Institutes of Health

Contents

Goal: Through prevention programs, reduce the disease and economic burden of diabetes, and improve the quality of life for all persons who have or are at risk for diabetes.

Introduction[*]

Diabetes mellitus continues to increase in both new and total cases, not only in the United States but throughout the world.[1, 2] Because of the increase in the number of persons with diabetes and the earlier onset of both type 1 and type 2 diabetes in many populations, concern is growing about the possibility of substantial increases in diabetes-related complications.[3] The increases in the number of persons with diabetes mellitus could potentially overwhelm existing health care systems. Accordingly, the translation of emerging diabetes management research results into clinical practice needs to be expedited. This strategy must be complemented by a greater emphasis on primary prevention of diabetes.

Opportunities to reduce the health and economic burden of diabetes during the course of the disease are primarily located at four transition points. The first transition point is *primary prevention*, which, when successful, stops the development of diabetes. *Screening/early diagnosis*, when a patient moves from unrecognized to recognized diabetes, is the second transition point. *Access to care* presents the third transition point when the receipt of diabetes-specific care commences. Finally, improved *quality of care* moves from inadequate care to the standard of care.

Progress has been mixed for these four transition points in recent years. Greater progress in each of these four transition points will be one of the most effective methods for ensuring further improvement in quality of life and elimination of disparities. Quality of care, the fourth transition point, is improving.[4, 5] Because fewer people in the United States possess health insurance,[6, 7] access to care for persons with diabetes mellitus is worsening.[8, 9] The second transition point, early diagnosis, is being supported by greater knowledge and efforts such as the Diabetes Detection Initiative,[10] which combines public health strategies with health marketing and health communication techniques to improve risk assessment.[11] Finally, important scientific and economic evidence supports the critical nature of primary prevention, the first transition point.[12, 13]

Preventive behaviors—among persons with diabetes mellitus and their health providers—are increasing. The degree to which preventive behaviors and both intermediate- and long-term outcomes have improved varies by objective.[14] Despite advances in care, several issues regarding continued progress must be addressed. First, the majority of progress may have occurred with "early adopters"—that segment of a population that includes opinion leaders and experimenters who are critical to the spread of innovation. Subsequent positive movement may require new strategies.[15]

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[*] Unless otherwise noted, data referenced in this focus area come from Healthy People 2010 and can be located at http://wonder.cdc.gov/data2010. See the section on DATA2010 in the Technical Appendix for more information.

Modifications to Objectives and Subobjectives

The following discussion highlights the modifications, including changes, additions, and deletions, to this focus area's objectives and subobjectives as a result of the midcourse review.

As stated in *Healthy People 2010*: "Most developmental objectives have a potential data source with a reasonable expectation of data points by the year 2004 to facilitate setting 2010 targets in the mid-decade review. Developmental objectives with no baseline at the midcourse will be dropped." Accordingly, at the midcourse review some developmental objectives and subobjectives were deleted because they lacked a data source. However, the U.S. Department of Health and Human Services (HHS) and the agencies that serve as the leads for the Healthy People 2010 initiative will consider ways to ensure these public health issues retain prominence despite their current lack of data.

Two objectives—decrease the proportion of women with gestational diabetes (5-8) and reduce the frequency of foot ulcers in persons with diabetes (5-9)—were deleted from Healthy People 2010 due to the lack of an adequate, nationally representative data source.

The developmental objective for annual urinary microalbumin measurements among adults with diabetes (5-11) became measurable. The objective was changed to track adults in keeping with the data collected by the new data source, the U.S. Renal Data System developed and maintained by the National Institutes of Health.

Progress Toward Healthy People 2010 Targets

The following discussion highlights objectives that met or exceeded their 2010 targets; moved toward the targets, demonstrated no change, or moved away from the targets; and those that lacked data to assess progress. Progress is illustrated in the Progress Quotient bar chart (see Figure 5-1), which displays the percent of targeted change achieved for objectives and subobjectives with sufficient data to assess progress.

All but 1 of the 15 objectives remaining at the time of the midcourse review were measurable. Three objectives met or exceeded the targets, six moved toward targets, four moved away from targets, and one showed no movement.

Objectives that met or exceeded their targets. Three objectives exceeded their targets: diabetes-related deaths among persons with diabetes (5-6), cardiovascular deaths in persons with diabetes (5-7), and annual urinary microalbumin measurements in persons aged 65 years and older with diabetes (5-11). Regarding the objectives for diabetes-related deaths and diabetes-related cardiovascular deaths, progress reflected the increasing attention now paid to cardiovascular risk factors, including blood lipid levels, high blood pressure, aspirin use, and heart attack treatments among those with diabetes.

A collaboration between the American Cancer Society, American Heart Association, and American Diabetes Association was initiated in June 2004. The collaboration creates a national commitment to the prevention and early detection of cancer, cardiovascular disease, and diabetes and reflects the increased emphasis on prevention of these diseases.[16]

Objectives that moved toward their targets. Six objectives moved toward their targets: diabetes education for persons aged 18 years and older (5-1), diagnosis of diabetes in persons aged 20 years and older (5-4), lower extremity amputations for persons with diabetes (5-10), hemoglobin A1c testing for persons aged 18 years and older with diabetes (5-12), annual dilated eye exams (5-13), and daily self-blood-glucose-monitoring (5-17). Several of these objectives fell under the transitional point of improved quality of care. Individual and collective efforts of the public, private, academic, and professional communities contributed to this progress. Along with academic and industry developments, the National Diabetes Quality Improvement Alliance (Alliance), founded in 1997 as the Diabetes Quality Improvement Project, worked toward influencing change. The Alliance established a comprehensive set of national measures for assessing the quality of diabetes care, which have been incorporated into the Health Plan Employer Data and Information Set, the American Diabetes Association Provider Recognition Program, the American Medical Association Diabetes Measures Group, and the U.S. Department of Veteran Affairs' performance monitoring program. Other programs working to improve the quality of diabetes care are longstanding and include the National Diabetes Education Program (NDEP), the National High Blood Pressure Education Program, and the National Cholesterol Education Program.[17]

Objectives that demonstrated no change. Annual foot examinations in persons aged 18 years and older with diabetes (5-14) neither moved toward its target nor regressed from it.

Objectives that moved away from their targets. Four objectives moved away from their targets: new cases of diabetes in persons aged 18 to 84 years (5-2), overall cases of diagnosed diabetes (5-3), diabetes-related deaths (5-5), and annual dental exams for people aged 2 years and older with diabetes (5-15). For new and overall cases of diabetes (5-2 and 5-3), the movement away from the targets was a reflection of improved disease identification and diagnosis by health care providers, demographic changes,[1] and greater obesity.[18] This trend will continue unless primary prevention programs can be widely implemented and companion efforts to improve care are sustained for persons already affected. Factors associated with the decrease in yearly dental examinations (5-15) are not clear. NDEP has specifically targeted dental care and dental professionals for better diabetes management.[19]

Objectives that could not be assessed. Tracking data were not available to measure progress for aspirin therapy in persons with diabetes (5-16). Additional data to assess the trend are anticipated by the end of the decade.

Progress Toward Elimination of Health Disparities

The following discussion highlights progress toward the elimination of health disparities. The disparities are illustrated in the Disparities Table (see Figure 5-2), which displays information about disparities among select populations for which data were available for assessment.

Progress was made toward Healthy People 2010's two overarching goals to increase quality and years of healthy life and eliminate health disparities. In general, the white non-Hispanic population, females, and persons with higher education levels were identified as having the best group rates. Exceptions, however, existed; for example, the Asian or Pacific Islander population had the best group rate for diabetes-related deaths among the general population (5-5), and the Hispanic population had the best group rate for cardiovascular deaths in persons with diabetes (5-7).

Large disparities exist in rates of diabetes. The American Indian or Alaska Native population's number of overall cases of diabetes (5-3) was twice that observed in the white non-Hispanic population. Persons with less than a high school education experienced twice the rate for new cases of diabetes (5-2) as did persons with at least some college. Rates for new cases and overall cases of diabetes (5-2 and 5-3) among persons with disabilities were three times the rates among persons without disabilities.

The diabetes-related death rate (5-5) was more than twice as high in the black non-Hispanic population as in the Asian or Pacific Islander population. Similarly, persons with less than a high school education and high school graduates experienced diabetes-related death at more than twice the rate of persons with at least some college. The rate for lower extremity amputation among males with diabetes was twice that observed among females with diabetes (5-10).

Between 1997 and 2003, disparity in overall cases of diabetes (5-3) decreased between persons with a high school education or less and persons with at least some college (best population). Disparity also decreased between the Hispanic and the white non-Hispanic (best) populations. However, between 1997 and 2003, each of these populations had an increase in new cases of diabetes. Thus, the declines in disparity resulted because the best populations moved away from the target at a faster pace than the other populations.

Disparities among various populations were largely unchanged from baseline assessments. A few positive trends were evident: disparities in receiving an annual dilated eye exam (5-13) and disparities between high school graduates and persons with at least some college decreased by 10 to 49 percentage points. Diabetes-related deaths (5-5) showed a 10 to 49 percentage point decrease in the disparity gap between the American Indian or Alaska Native and the Asian or Pacific Islander populations. Finally, both the white non-Hispanic population and persons with less than a high school education had reductions in disparities for cardiovascular deaths related to diabetes (5-7).

New cases of diabetes (5-3) demonstrated a 50 to 99 percentage point decrease in disparity between persons with less than a high school education and those with at least some college. For the same objective (5-3), a 10 to 49 percentage point decrease occurred in the disparities between the Hispanic and white non-Hispanic populations and persons with a high school education and those with at least some college.

Of concern were increases in disparities tied to education. The disparities for the proportion of persons diagnosed with diabetes (5-4) (rather than total cases) and the rate for diabetes-related deaths (5-5) increased among persons with a high school education and the best populations. High school graduates also showed an increase in disparity from the best group in obtaining annual dental exams (5-15). Finally, the disparity in cardiovascular deaths in persons with diabetes (5-7) between the black non-Hispanic and Hispanic (best) populations widened by 10 to 49 percentage points. This result was particularly alarming because of the greater rate for co-morbidities, like high blood pressure, among the black non-Hispanic population affected by diabetes mellitus.

Opportunities and Challenges

Improvements in diabetes management are now being documented in health care settings on a national scale. However, since aspects of diabetes management are not improving at similar rates, overall progress is slow. Moreover, broader, systemic changes in U.S. health care are needed for further improvement.[20] Individual efforts by health professionals and patients may have reached maximal impact.[21]

With an increasing rate for type 2 diabetes mellitus cases occurring throughout the world, including 70 percent of new cases of diabetes mellitus in developing countries,[22] health system capacities face a challenge. The gradual benefits that have occurred in the management of diabetes mellitus may be reversed as more people require care.[23] Yet, studies indicate that with modest behavioral changes, persons with prediabetes can reduce the likelihood of progression to type 2 diabetes mellitus by approximately 50 percent. These efforts are cost effective since they avoid the chronic care costs associated with the development of diabetes mellitus and thus save money over the long term.[13] Therefore, additional progress in this focus area will require commitment to primary prevention of type 2 diabetes mellitus and improved diabetes management practices.

Emerging Issues

Major challenges exist to both the public health and clinical implementation of lifestyle intervention for preventing type 2 diabetes. For a serious commitment to primary prevention, four areas need to be addressed: identification of candidates for diabetes prevention, delivery of lifestyle interventions, economics, and ethics.
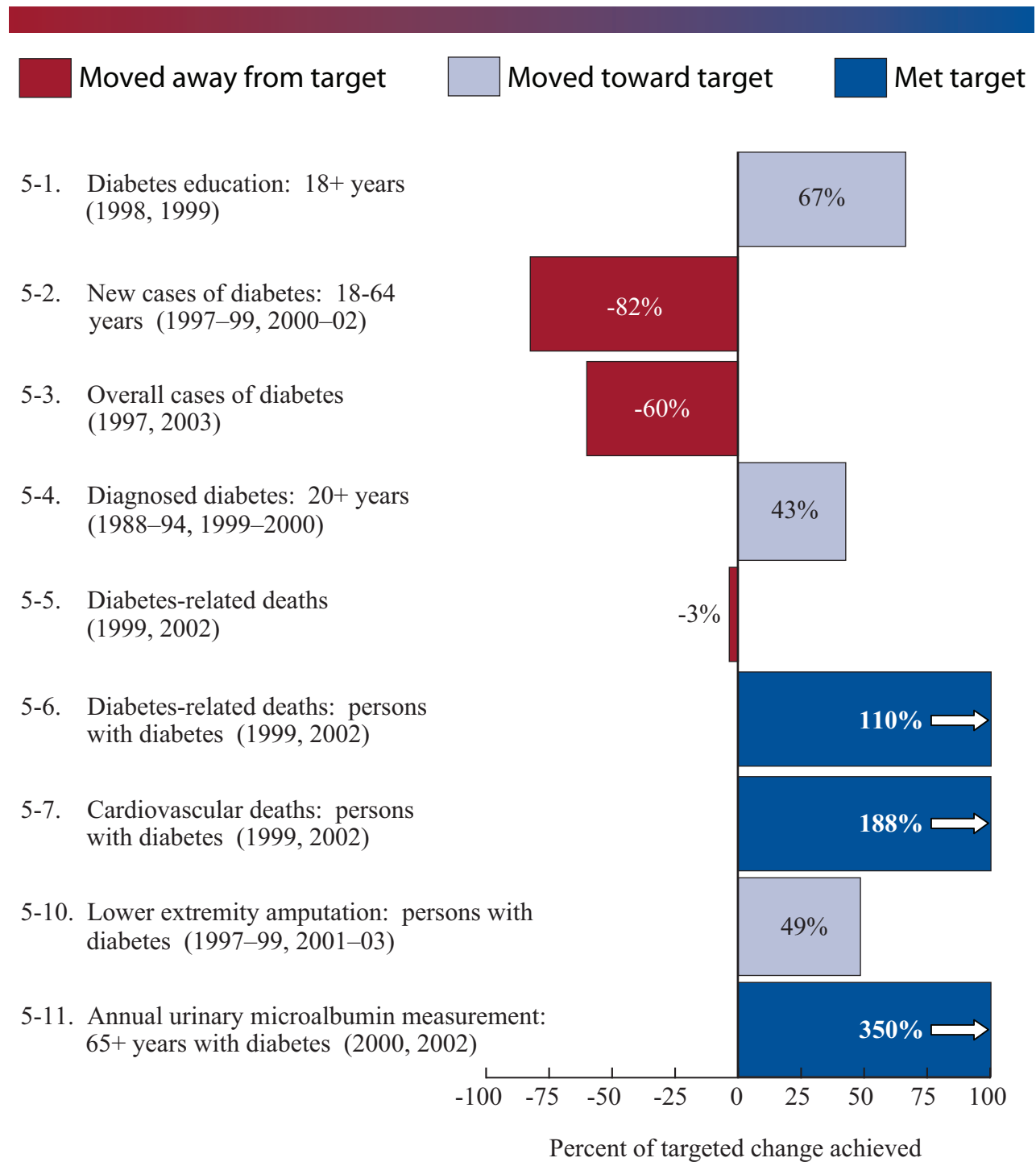
Although an estimated 54 million people have prediabetes in the United States, how best to identify persons at high risk for diabetes is not clear.[24] One approach is to identify candidates for primary prevention in the clinical care system at an opportunistic encounter (that is, during a visit by patients to their health care providers for conditions unrelated to diabetes prevention). Limitations to opportunistic screening exist because persons with limited or no access to health care will be overlooked. Persons who have health insurance and persons who are more likely to use the health care system will be preferentially identified. Screening for diabetes outside of the opportunistic clinical setting raises the issues of how programs can ensure that persons with positive results are referred and receive the necessary clinical care and how patients will receive access to appropriate interventions if prediabetes or diabetes is diagnosed. The responsibility of clinical followup is equally challenging.

At present, evidence is not clear whether lifestyle intervention from the Diabetes Prevention Program (DPP) can be delivered with similar efficacy through integration into health care systems or in the community. Physicians may not have the means to deliver these interventions and may have little or no resources necessary to support them. It is also unclear whether other practicing professionals will be able to match the success of the DPP interventionists who were trained in counseling on nutrition, exercise, and behavior modification.[22] Furthermore, it is not certain who will be responsible for the administration of lifestyle interventions, how quality will be assessed and ensured, or how these services will be covered. Economic studies may help to address these issues. For example, the DPP included a prospective economic evaluation to address two issues about the interventions to prevent type 2 diabetes: the cost of interventions to prevent type 2 diabetes and whether these interventions are a good value. According to the results, on balance, primary prevention is a good investment for health insurers and society.[25] While health insurers may be primarily responsible for reimbursement of the interventions' direct medical costs, including the costs of delivering the interventions and the costs of treating adverse effects of the interventions, other sectors of society will be responsible for the patient-specific direct medical costs, including deductibles and copayments, direct nonmedical costs, and time off from work.

The ethical implications of translating diabetes prevention by lifestyle interventions into public health and clinical practice are complex and challenging. According to results of the DPP, some experts assert that the health promotion activities and drug interventions should be widely applied because the results are obviously beneficial and without substantial adverse effect.
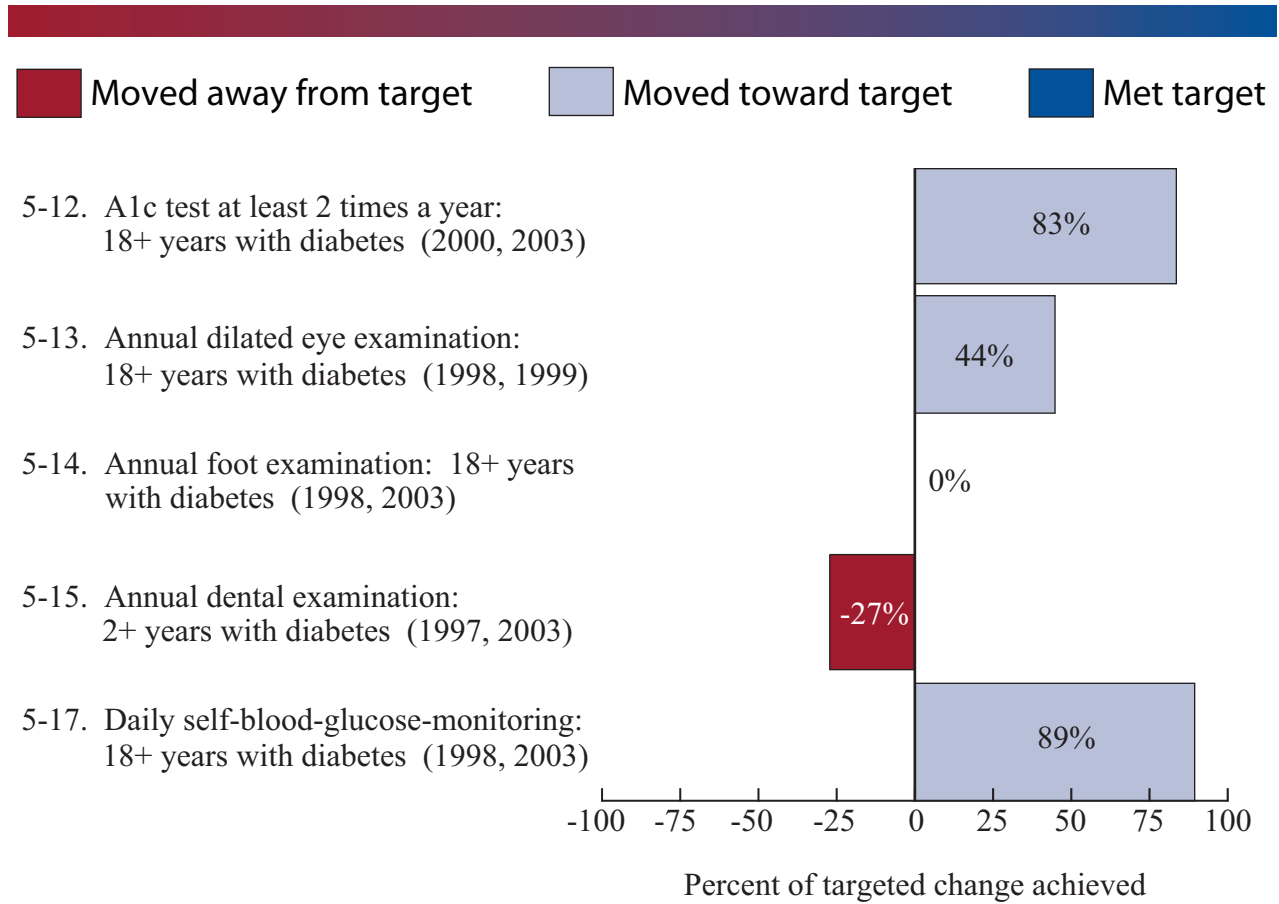
Diabetes prevention science has evolved over the past two decades, with major breakthroughs in controlling complications and now in preventing the disease's onset. Continuing efforts are needed as more Americans develop type 2 diabetes and spend increasing periods of time living with the complications of the disease.

Figure 5-1. Progress Quotient Chart for Focus Area 5: Diabetes

■ Moved away from target	■ Moved toward target	■ Met target

5-1. Diabetes education: 18+ years (1998, 1999) — 67%

5-2. New cases of diabetes: 18-64 years (1997–99, 2000–02) — -82%

5-3. Overall cases of diabetes (1997, 2003) — -60%

5-4. Diagnosed diabetes: 20+ years (1988–94, 1999–2000) — 43%

5-5. Diabetes-related deaths (1999, 2002) — -3%

5-6. Diabetes-related deaths: persons with diabetes (1999, 2002) — 110%

5-7. Cardiovascular deaths: persons with diabetes (1999, 2002) — 188%

5-10. Lower extremity amputation: persons with diabetes (1997–99, 2001–03) — 49%

5-11. Annual urinary microalbumin measurement: 65+ years with diabetes (2000, 2002) — 350%

-100 -75 -50 -25 0 25 50 75 100

Percent of targeted change achieved

See notes at end of chart. *(continued)*

Figure 5-1. *(continued)*

Percent of targeted change achieved

Notes: Tracking data for objective 5-16 are unavailable. Objectives 5-8 and 5-9 were deleted at the midcourse.

Years in parentheses represent the baseline data year and the most recent data year used to compute the percent of Healthy People 2010 target achieved.

$$\text{Percent of targeted change achieved} = \left(\frac{\text{Most recent value} - \text{baseline value}}{\text{Year 2010 target} - \text{baseline value}} \right) \times 100$$

Figure 5-2. Disparities Table for Focus Area 5: Diabetes

Disparities from the best group rate for each characteristic at the most recent data point and changes in disparity from the baseline to the most recent data point.

Population-based objectives	American Indian or Alaska Native	Asian	Native Hawaiian or other Pacific Islander	Two or more races	Hispanic or Latino	Black non-Hispanic	White non-Hispanic	Summary index	Female	Male	Less than high school	High school graduate	At least some college	Summary index	Urban or metropolitan	Rural or nonmetropolitan	Persons with disabilities	Persons without disabilities
			Race and ethnicity						Gender		Education				Location		Disability	
5-1. Diabetes education: 18+ years (1998, 1999) *[1]								B	B				B		B		B	
5-2. New cases of diabetes: 18-84 years (1997-99, 2000-02) *								B	B				B		B			B
5-3. Total cases of diabetes (1997, 2003) *[1]					↓			B	B		↓↓	↓	B	↓	B			B
5-4. Diagnosed diabetes: 20+ years (1988-94, 1999-2000) †					b[2]	B				B	B	↑	↑	↑	B[3]	B[3]	B	
5-5. Diabetes-related deaths (1999, 2002) *	↓		B[4]						B			↑		B				
5-6. Diabetes-related deaths: persons with diabetes (1999, 2002) *					b		B		B									
5-7. Cardiovascular deaths: persons with diabetes (1999, 2002) *					B	↑	↓		B		↓		B	↓				
5-10. Lower extremity amputation: persons with diabetes (1997-99, 2001-03) *						5	B[5]		B									
5-11. Annual urinary microalbumin measurement: 65+ years with diabetes (2000, 2002) *		B				5	5			B								
5-12. A1C test at least two times a year: 18+ years with diabetes (2000, 2003) *		4					B		B				B					
5-13. Annual dilated eye exam: 18+ years with diabetes (1998, 1999) *										B		↓	B					
5-14. Annual foot exam: 18+ years with diabetes (1998, 2003) *	b	4				B				B			B					
5-15. Annual dental exam: 2+ years with diabetes (1997, 2003) *							B			B		↑	B					B
5-16. Aspirin therapy at least 15 times a month: 40+ years with diabetes (1988-94) *							B			B		B						
5-17. Daily self-blood-glucose-monitoring: 18+ years with diabetes (1998, 2003) *		4				B				B	B							

Notes: Objectives 5-8 and 5-9 were deleted at the midcourse.

Years in parentheses represent the baseline data year and the most recent data year (if available).

Disparity from the best group rate is defined as the percent difference between the best group rate and each of the other group rates for a characteristic (for example, race and ethnicity). The summary index is the average of these percent differences for a characteristic. Change in disparity is estimated by subtracting the disparity at baseline from the disparity at the most recent data point. Change in the summary index is estimated by subtracting the summary index at baseline from the summary index at the most recent data point. See Technical Appendix for more information.

(continued)

Figure 5-2. *(continued)*

The **best group rate** at the most recent data point.	B	The group with the best rate for specified characteristic.	b	Most favorable group rate for specified characteristic, but reliability criterion not met.		Best group rate reliability criterion not met.

	Percent difference from the best group rate			
Disparity from the best group rate at the most recent data point.	Less than 10 percent or not statistically significant	10-49 percent	50-99 percent	100 percent or more

	Increase in disparity (percentage points)		
Changes in disparity over time are shown when the change is greater than or equal to 10 percentage points and statistically significant, or when the change is greater than or equal to 10 percentage points and estimates of variability were not available.	↑ 10-49	↑↑ 50-99	↑/↑↑ 100 or more
	Decrease in disparity (percentage points)		
	↓ 10-49	↓↓ 50-99	↓↓/↓ 100 or more

Availability of data.	Data not available.	Characteristic not selected for this objective.

* The variability of best group rates was assessed, and disparities of ≥ 10% are statistically significant at the 0.05 level. Changes in disparity over time, noted with arrows, are statistically significant at the 0.05 level. See Technical Appendix.

† Measures of variability were not available. Thus, the variability of best group rates was not assessed, and the statistical significance of disparities and changes in disparity over time could not be tested. See Technical Appendix.

[1] Baseline data by race and ethnicity are for 1999.

[2] Data are for Mexican Americans.

[3] Baseline data only.

[4] Data are for Asians or Pacific Islanders.

[5] Data include persons of Hispanic origin.

Objectives and Subobjectives for Focus Area 5: Diabetes

Goal: Through prevention programs, reduce the disease and economic burden of diabetes, and improve the quality of life for all persons who have or are at risk for diabetes.

As a result of the Healthy People 2010 Midcourse Review, changes were made to the Healthy People 2010 objectives and subobjectives. These changes are specific to the following situations:

- Changes in the wording of an objective to more accurately describe what is being measured.
- Changes to reflect a different data source or new science.
- Changes resulting from the establishment of a baseline and a target (that is, when a formerly developmental objective or subobjective became measurable).
- Deletion of an objective or subobjective that lacked a data source.
- Correction of errors and omissions in *Healthy People 2010.*

Revised baselines and targets for measurable objectives and subobjectives do not fall into any of the above categories and, thus, are not considered a midcourse review change.[1]

When changes were made to an objective, three sections are displayed:

1. In the Original Objective section, the objective as published in *Healthy People 2010* in 2000 is shown.
2. In the Objective With Revisions section, strikethrough indicates text deleted, and underlining is used to show new text.
3. In the Revised Objective section, the objective appears as revised as a result of the midcourse review.

Details of the objectives and subobjectives in this focus area, including any changes made at the midcourse, appear on the following pages.

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[1] See Technical Appendix for more information on baseline and target revisions.

NO CHANGE IN OBJECTIVE

5-1. **Increase the proportion of persons with diabetes who receive formal diabetes education.**

Target: 60 percent.

Baseline: 45 percent of persons aged 18 years and older with diabetes received formal diabetes education in 1998 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

NO CHANGE IN OBJECTIVE
(Data updated and footnoted)

5-2. **Prevent diabetes.**

Target: 3.8[1] new cases per 1,000 population per year.

Baseline: 5.5[2] new cases of diabetes per 1,000 population aged 18 to 84 years (3-year average) occurred in 1997–99[2] (age adjusted to the year 2000 standard population).

Target setting method: Better than the best (retain year 2000 target).

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

[1] Target revised from 2.5 because of baseline revision after November 2000 publication.
[2] Baseline and baseline year revised from 3.5 and 1994–96 after November 2000 publication.

NO CHANGE IN OBJECTIVE

5-3. **Reduce the overall rate of diabetes that is clinically diagnosed.**

Target: 25 overall cases per 1,000 population.

Baseline: 40 overall cases (including new and existing cases) of diabetes per 1,000 population occurred in 1997 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best (retain year 2000 target).

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

NO CHANGE IN OBJECTIVE
(Data updated and footnoted)

5-4. **Increase the proportion of adults with diabetes whose condition has been diagnosed.**

Target: 78[1] percent.

Baseline: 64[2] percent of adults aged 20 years and older with diabetes had been diagnosed in 1988–94 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

[1] Target revised from 80 because of baseline revision after November 2000 publication.
[2] Baseline revised from 68 after November 2000 publication.

NO CHANGE IN OBJECTIVE
(Data updated and footnoted)

5-5. **Reduce the diabetes death rate.**

Target: 46[1] deaths per 100,000 population.

Baseline: 77[2] deaths per 100,000 population were related to diabetes in 1999[2] (age adjusted to the year 2000 standard population).

Target setting method: 43 percent improvement.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

[1] Target revised from 45 because of baseline revision after November 2000 publication.
[2] Baseline and baseline year revised from 75 and 1997 after November 2000 publication.

NO CHANGE IN OBJECTIVE
(Data updated and footnoted)

5-6. **Reduce diabetes-related deaths among persons with diabetes.**

Target: 7.8 deaths per 1,000 persons with diabetes.

Baseline: 8.8 deaths per 1,000 persons with diabetes listed anywhere on the death certificate occurred in 1999[1] (age adjusted to the year 2000 standard population).

Target setting method: 11 percent improvement.

NO CHANGE IN OBJECTIVE *(continued)*
(Data updated and footnoted)

Data sources: National Vital Statistics System (NVSS), CDC, NCHS; National Health Interview Survey (NHIS), CDC, NCHS.

[1] Baseline year revised from 1997 after November 2000 publication.

NO CHANGE IN OBJECTIVE
(Data updated and footnoted)

5-7. **Reduce deaths from cardiovascular disease in persons with diabetes.**

Target: 299[1] deaths per 100,000 persons with diabetes.

Baseline: 332[2] deaths from cardiovascular disease per 100,000 persons with diabetes occurred in 1999[2] (age adjusted to the year 2000 standard population).

Target setting method: 10 percent improvement.

Data sources: National Vital Statistics System (NVSS), CDC, NCHS; National Health Interview Survey (NHIS), CDC, NCHS.

[1] Target revised from 309 because of baseline revision after November 2000 publication.
[2] Baseline and baseline year revised from 343 and 1997 after November 2000 publication.

OBJECTIVE DELETED

5-8. *(Objective deleted due to lack of data source)* **(Developmental) Decrease the proportion of pregnant women with gestational diabetes.**

OBJECTIVE DELETED

5-9. *(Objective deleted due to lack of data source)* **(Developmental) Reduce the frequency of foot ulcers in persons with diabetes.**

NO CHANGE IN OBJECTIVE
(Data updated and footnoted)

5-10. **Reduce the rate of lower extremity amputations in persons with diabetes.**

Target: 2.9[1] lower extremity amputations per 1,000 persons with diabetes per year.

Baseline: 6.6[2] lower extremity amputations per 1,000 persons with diabetes occurred in 1997–99[2] (age adjusted to the year 2000 standard population).

NO CHANGE IN OBJECTIVE *(continued)*
(Data updated and footnoted)

Target setting method: 55 percent improvement.

Data sources: National Hospital Discharge Survey (NHDS), CDC, NCHS; National Health Interview Survey (NHIS), CDC, NCHS.

[1] Target revised from 1.8 because of baseline revision after November 2000 publication.
[2] Baseline and baseline year revised from 4.1 and 1997 after November 2000 publication.

ORIGINAL OBJECTIVE

5-11. **(Developmental) Increase the proportion of persons with diabetes who obtain an annual urinary microalbumin measurement.**

Potential data source: Behavioral Risk Factor Surveillance System (BRFSS), CDC, NCCDPHP.

OBJECTIVE WITH REVISIONS

5-11. **~~(Developmental)~~ Increase the proportion of ~~persons~~ <u>adults</u> with diabetes who obtain an annual urinary microalbumin measurement.**

Target: 14 percent.

Baseline: 12 percent of adults aged 65 years and older with diabetes obtained an annual urinary microalbumin measurement in 2000.

Target setting method: Better than the best.

Potential d~~Data~~ source: ~~Behavioral Risk Factor Surveillance System (BRFSS), CDC, NCCDPHP~~U.S. Renal Data System (USRDS), NIH, NIDDK.

REVISED OBJECTIVE

5-11. **Increase the proportion of adults with diabetes who obtain an annual urinary microalbumin measurement.**

Target: 14 percent.

Baseline: 12 percent of adults aged 65 years and older with diabetes obtained an annual urinary microalbumin measurement in 2000.

Target setting method: Better than the best.

Data source: U.S. Renal Data System (USRDS), NIH, NIDDK.

NO CHANGE IN OBJECTIVE
(Data updated and footnoted)

5-12. **Increase the proportion of adults with diabetes who have a glycosylated hemoglobin measurement at least once a year.**

Target: 65[1] percent.

Baseline: 59[2] percent of adults aged 18 years and older with diabetes had a glycosylated hemoglobin measurement at least once a year (mean of data from 39 States in 2000[2]; age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: Behavioral Risk Factor Surveillance System (BRFSS), CDC, NCCDPHP.

[1] Target revised from 50 because of baseline revision after November 2000 publication.
[2] Baseline and baseline year revised from 24 and 1998 after November 2000 publication.

NO CHANGE IN OBJECTIVE
(Data updated and footnoted)

5-13. **Increase the proportion of adults with diabetes who have an annual dilated eye examination.**

Target: 76[1] percent.

Baseline: 49[2] percent of adults aged 18 years and older with diabetes had an annual dilated eye examination in 1998 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

[1] Target revised from 75 because of baseline revision after November 2000 publication.
[2] Baseline revised from 47 after November 2000 publication.

NO CHANGE IN OBJECTIVE
(Data updated and footnoted)

5-14. **Increase the proportion of adults with diabetes who have at least an annual foot examination.**

Target: 91[1] percent.

Baseline: 68[2] percent of adults aged 18 years and older with diabetes had at least one annual foot examination (mean value of data from 39 States in 1998; age adjusted to the year 2000 standard population).

NO CHANGE IN OBJECTIVE *(continued)*
(Data updated and footnoted)

Target setting method: Better than the best.

Data source: Behavioral Risk Factor Surveillance System (BRFSS), CDC, NCCDPHP.

[1] Target revised from 75 because of baseline revision after November 2000 publication.
[2] Baseline revised from 55 after November 2000 publication.

NO CHANGE IN OBJECTIVE
(Data updated and footnoted)

5-15. Increase the proportion of persons with diabetes who have at least an annual dental examination.

Target: 71[1] percent.

Baseline: 56[2] percent of persons aged 2 years and older with diagnosed diabetes saw a dentist at least once within the preceding 12 months in 1997 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

[1] Target revised from 75 because of baseline revision after November 2000 publication.
[2] Baseline revised from 58 after November 2000 publication.

NO CHANGE IN OBJECTIVE

5-16. Increase the proportion of adults with diabetes who take aspirin at least 15 times per month.

Target: 30 percent.

Baseline: 20 percent of adults aged 40 years and older with diabetes took aspirin at least 15 times per month in 1988–94 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

NO CHANGE IN OBJECTIVE
(Data updated and footnoted)

5-17. **Increase the proportion of adults with diabetes who perform self-blood-glucose-monitoring at least once daily.**

Target: 61[1] percent.

Baseline: 43[2] percent of adults aged 18 years and older with diabetes performed self-blood-glucose-monitoring at least once daily (mean of data from 39 States in 1998; age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: Behavioral Risk Factor Surveillance System (BRFSS), CDC, NCCDPHP.

[1] Target revised from 60 because of baseline revision after November 2000 publication.
[2] Baseline revised from 42 after November 2000 publication.

References

1 Boyle, P., et al. Projection of diabetes burden through 2050. *Diabetes Care* 24:1936–1940, 2001.

2 Wild, S., et al. Global prevalence of diabetes: Estimates for the year 2000 and projections for 2030. *Diabetes Care* 27:1047–1053, 2004.

3 Engelgau, M., et al. The evolving diabetes burden in the United States. *Annals of Internal Medicine* 140:945–949, 2004.

4 Geiss, L., et al. A national progress report on diabetes: Successes and challenges. *Diabetes Technology & Therapeutics* 7:198–203, 2005.

5 Saaddine, J., et al. A diabetes report card for the U.S.: Quality of care in the 1990s. *Annals of Internal Medicine* 136:565–574, 2002.

6 More information available at www.cmwf.org/surveys/surveys_show.htm?doc_id=367929; accessed October 31, 2006.

7 More information available at www.cmwf.org/usr_doc/Collins_gapshltins_920.pdf; accessed October 31, 2006.

8 Nelson, K.M., et al. The association between health insurance coverage and diabetes care; data from the 2000 Behavioral Risk Factor Surveillance System. *Health Services Research* 40(2):361–372, 2005.

9 Oladele, C.R., and Barnett, E. Racial/ethnic and social class differences in preventive care practices among persons with diabetes. *BMC Public Health* 6(259):1–8, 2006.

10 More information available at http//ndep.nih.gov/ddi/; accessed October 31, 2006.

11 U.S. Department of Health and Human Services (HHS). HHS launches new effort to reach people with diabetes who are undiagnosed. [HHS press release.] November 3, 2003.

12 Diabetes Prevention Program Research Group. Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *New England Journal of Medicine* 346:393–403, 2002.

13 Zhang, P., et al. Application of economic analysis to diabetes and diabetes care. *Annals of Internal Medicine* 140:972–977, 2004.

14 Improvements have occurred in lipid measurements and control, frequency of hemoglobin A1c testing, proper vaccination rates, and eye examinations. More limited progress has been demonstrated in absolute values of hemoglobin A1c levels and control of blood pressure.

15 Berwick, D. Disseminating innovations in health care. *Journal of the American Medical Association* 289:1969–1975, 2003.

[16] Eyre, H., et al. American Cancer Society, American Diabetes Association, and American Heart Association. Preventing cancer, cardiovascular disease, and diabetes: A common agenda for the American Cancer Society, the American Diabetes Association, and the American Heart Association. *Circulation* 109(25):3244–3255, 2004.

[17] Saaddine, J., et al. Improvements in diabetes processes of care and intermediate outcomes: United States, 1988–2002. *Annals of Internal Medicine* 144(7):465–475, 2002.

[18] Gregg, E., et al. Trends in the ratio of diagnosed to undiagnosed diabetes according to obesity levels in the U.S. *Diabetes Care* 27:2806–2812, 2004.

[19] More information available at www.ndep.nih.gov/; accessed October 31, 2006.

[20] Wagner, E. Chronic disease management: What will it take to improve care for chronic illness? *Effective Clinical Practice* 1:2–4, 1998.

[21] Bodenheimer, T. High and rising health care costs. Part 3: The role of health care providers. *Annals of Internal Medicine* 142:996–1002, 2005.

[22] Knowler, W., and Barrett-Conner, E. Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *New England Journal of Medicine* 346:393–403, 2002.

[23] Brown, A., et al. Socioeconomic position and health among persons with diabetes mellitus: A conceptual framework and review of the literature. *Epidemiologic Reviews* 26:63–77, 2004.

[24] Cowie, C., et al. Prevalence of diabetes and impaired fasting glucose in adults in the U.S. population: National Health and Nutrition Examination Survey 1999–2002. *Diabetes Care* 29:1263–1268, 2006.

[25] Diabetes Prevention Program Research Group. Costs associated with the primary prevention of type 2 diabetes mellitus in the Diabetes Prevention Program. *Diabetes Care* 26:36–47, 2003.

Related Objectives From Other Focus Areas

1. Access to Quality Health Services
1-1.   Persons with health insurance
1-3.   Counseling about health behaviors

4. Chronic Kidney Disease
4-1.   End-stage renal disease
4-2.   Cardiovascular disease deaths in persons with chronic kidney failure
4-7.   Kidney failure due to diabetes
4-8.   Medical evaluation and treatment for persons with diabetes and chronic kidney disease

9. Family Planning
9-3.   Contraceptive use
9-11.   Reproductive health education

12. Heart Disease and Stroke
12-1.   Coronary heart disease (CHD) deaths
12-2.   Knowledge of symptoms of heart attack and importance of calling 911
12-7.   Stroke deaths
12-8.   Knowledge of early warning symptoms of stroke
12-9.   High blood pressure
12-10. High blood pressure control
12-11. Action to help control blood pressure
12-12. Blood pressure monitoring
12-13. Mean total cholesterol levels
12-14. High blood cholesterol levels
12-15. Blood cholesterol screening
12-16. LDL-cholesterol level in CHD patients

14. Immunization and Infectious Diseases
14-5.   Invasive pneumococcal infections
14-29. Influenza and pneumococcal vaccination of high-risk adults

16. Maternal, Infant, and Child Health
16-6.   Prenatal care
16-10. Low birth weight and very low birth weight
16-19. Breastfeeding

19. Nutrition and Overweight
19-1.   Healthy weight in adults
19-2.   Obesity in adults
19-3.   Overweight or obesity in children and adolescents
19-16   Worksite promotion of nutrition education and weight management
19-17. Nutrition counseling for medical conditions

22. Physical Activity and Fitness

22-1. No leisure-time physical activity
22-2. Moderate physical activity
22-3. Vigorous physical activity
22-6. Moderate physical activity in adolescents
22-7. Vigorous physical activity in adolescents

28. Vision and Hearing

28-1. Dilated eye examinations
28-5. Impairment due to diabetic retinopathy
28-10. Vision rehabilitation services and devices