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Cancer Trends Progress Report - 2005 Update

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Director's Message

In addition to its sizable portfolio of basic and clinical research, as well as population science, the National Cancer Institute is charged with communicating our nation's progress against cancer to the public. The 2005 update to the *Cancer Trends Progress Report* is an important part of that process. This Web site provides up-to-date information on topics across the cancer continuum – from disease prevention to the impact of deaths from cancer – and tracks the successful application of cancer research into practice.

Cancer is a complex problem, and working to alleviate its burden requires many key partnerships. The *Cancer Trends Progress Report – 2005 Update* draws on data from many Federal agencies, including the Centers for Disease Control and Prevention, Department of Agriculture, Environmental Protection Agency, National Institute on Alcohol Abuse and Alcoholism, Office of Disease Prevention and Health Promotion, and Substance Abuse and Mental Health Administration. The content, design, and production of this report are the result of the collaborative efforts of an external working group composed of Federal and State partners, consumer advocates, the American Cancer Society, and others.

The overall message of the report remains positive. Cancer mortality continues its gradual decline since the mid-1990s. Many preventive and early detection practices have improved; screening rates for colorectal, breast, and cervical cancer are rising, albeit modestly. The smoking rate among adolescents now appears to be heading downward, but this recent trend must be accelerated.

We realize, as well, that there is much work left to be done. More intense research and interventions are needed for several cancers whose death rates are on the rise, including esophageal cancer and non-Hodgkin lymphoma.

Unacceptable disparities in cancer incidence and outcomes among major racial and ethnic groups remain a difficult challenge, against which we as a nation have invested substantial resources. We still require reliable and accurate ways to measure and track the delivery of quality care to all, and we are excited that progress can now be reported in this area as well. Recent analyses have shown that the overall number of cancers will increase with the aging and growth of our nation's population. We are making progress, but there is much to be done before our goals are met.

In the last 30 years, we have witnessed substantial progress against cancer. Laboratory studies continue to provide the best leads towards unraveling cancer's mysteries at the cellular and molecular levels. Molecular progression models for most cancers have enabled the identification of numerous markers that have already improved early cancer diagnosis, as well as our ability to predict the clinical outcomes of disease. As a result of these data, cancer is now recognized to be one possible result of a long and potentially modifiable process, not an inevitable biologic event. In addition, newly identified molecular targets are transforming the way we identify and develop interventions.

Definitive data have proven the value of screening for cervical, breast, skin, and colorectal cancers. In addition, serum markers such as alpha-fetoprotein and LDH or beta-HCG now routinely guide management decisions for patients with testicular cancer. Rational drug combinations not only treat but cure many patients with malignancies that were once uniformly fatal (e.g., leukemias, lymphomas, testicular cancer); and reduce the risk of recurrence in others (e.g., in patients with breast, ovarian, or colorectal cancer) and/or improve their quality of life (e.g., in patients with pancreatic or prostate cancer). Surgical procedures remain the bedrock of treatment for most cancers, and even these have become progressively less disfiguring, more convenient, and/or more effective. For example, many patients with laryngeal cancer are effectively treated with radiation alone, or limited surgery that preserves critical functions such as the ability to speak.

One of the major goals that we are beginning to achieve is a significant reduction in the rate of recurrence following surgery for common solid tumors, such as breast and colorectal cancers. Clinical trials of post-surgical, adjunctive chemotherapy for men and women with either breast or colorectal cancers that involve regional lymph nodes demonstrate major improvements in overall survival for patients receiving multi-agent systemic chemotherapy. Importantly, refinements in the specific treatment programs utilized, based on the availability of several new, more effective drugs have led to substantively better survival rates for both of these diseases over the past five years. Based on further recent improvements in the treatment of advanced breast and colorectal cancers with antiagiogenic therapies, monoclonal antibodies, and molecularly targeted drugs, it can be expected that our ability to significantly decrease the risk of relapse for these diseases after primary surgery will only continue to improve.

Each of these (and many other) advances reflects on an even more exciting future for cancer research, treatment and prevention, all of which bode well for public health. New imaging techniques and panels of molecular markers achieve earlier insights into cancer with increasing accuracy and convenience. Targeted therapies, such as Gleevec (imatinib mesylate), which was recently approved for the management of acute myelogenous leukemia, are now being aggressively pursued. All of these advances arise from laboratory insights into the molecular evolution of cancer, which have been subsequently tested and proven in the clinic. This has redirected our focus towards incipient disease before it poses a clinical or lethal threat. Finally, increasing public awareness of cancer coupled with improvements in early diagnosis and treatment, have only intensified the commitment of researchers, policymakers, and health care providers to overcome scientific and practical challenges to progress.

We at NCI, along with our *Cancer Trends Progress Report – 2005 Update* partners, hope that you will find the report to be a valuable reference tool and a stimulus for action. We must not forget that numbers in this report are not just dry statistics, but reflections of the lives and struggles of millions of our fellow citizens. NCI remains committed to leading the way.

John E. Niederhuber, M.D.
Director, National Cancer Institute

◧ Introduction

The nation's investment in cancer research is making a difference.

- Many people are adopting good health habits that reduce the chances of getting certain types of cancer.
- The U.S. cancer death rate began to drop for the first time in 1993.
- The incidence rates of all new cancers combined has been relatively stable since the mid 1990s after adjusting for delayed reporting.
- Many people who have had cancer live longer, and enjoy a better quality of life, than was possible years ago.

Yet cancer remains a major public health problem—one that profoundly affects the more than 1 million people diagnosed each year, as well as their families and friends.

- Overall, declining death rates have slowed.
- Not all cancer death rates are going down. For example, the death rate for lung cancer in females has continued to rise.
- The rates of cancer of the esophagus have continued to rise, as have the rates of new cases of melanoma, leukemia, non-Hodgkin lymphoma, myeloma, and cancers of the prostate, thyroid, kidney, and breast.
- The burden of some types of cancer weighs more heavily on some groups than others. The rates of both new cases and deaths from cancer vary by socioeconomic status, sex, and racial and ethnic group.
- The economic burden of cancer also is taking its toll. As our nation's population grows and ages, more people will get cancer. Meanwhile, the costs of cancer diagnosis and treatment are on the rise. The combination of these trends will accelerate the national costs of cancer treatment.

Why a Progress Report Is Needed

For the past 34 years, our country has vigorously fought the devastating effects of cancer. Now it is time to see how far we have come. The *Cancer Trends Progress Report – 2005 Update* is the third in a series of reports describing the nation's progress against cancer through research and related efforts. The report is based on the most recent data from the National Cancer Institute, the Centers for Disease Control and Prevention, other Federal agencies, professional groups, and cancer researchers.

The *Cancer Trends Progress Report – 2005 Update* was designed to help the nation review past efforts and plan future ones. The public can use the report to better understand the nature and results of strategies to fight cancer. Researchers, clinicians, and public health providers can focus on the gaps and opportunities identified in the report, paving the way toward future progress against cancer. Policymakers can use the report to evaluate our progress relative to our investment in cancer research discovery, program development, and service delivery.

What's in the Report

The *Cancer Trends Progress Report – 2005 Update* includes key measures of progress along the cancer control continuum.

- **Prevention.** The measures in this section cover behaviors that can help people prevent cancer—the most important of which is avoiding tobacco. This section also covers exposures to chemicals in the environment.
- **Early Detection.** Screening tests provide ways to find cancers early, when there is the best chance for cure. This section describes the proportion and types of people using recommended screening tests.
- **Diagnosis.** We can learn much about progress against cancer by looking at the rates of new cancer cases (incidence) and of cancers diagnosed at late stages. This section describes both.
- **Treatment.** Few treatment measures have been tracked at a national level. This section explains the current status of treatment measures and describes the kinds of measures that are emerging from ongoing research and monitoring activities.
- **Life After Cancer.** Trends in the proportion of cancer patients alive 5 years after their diagnosis and the costs of cancer care are addressed in this section.
- **End of Life.** This section includes the rate of deaths (mortality) from cancer and the estimated number of years of life lost (person-years of life lost) due to cancer.

Where possible, the *Cancer Trends Progress Report – 2005 Update* shows changes in these data over time (trends). All trends have been evaluated statistically and are significant, unless stable or otherwise specified. When there were sufficient numbers of data points in a series (i.e., 5 or more), the trend graphs were made using a statistical method that illustrates changes in direction, instead of merely connecting one data point to the next. This report also shows whether the trends are "rising" or "falling" using standard definitions and tests of the statistical significance of the trend (Appendix D). For some measures, differences in the cancer burden among some U.S. racial and ethnic groups are also presented.

Most of the measures for age-adjusted cancer death rates in this report are identical to those in Healthy People 2010, a comprehensive set of 10-year health objectives for the nation sponsored by the U.S. Department of Health and Human Services. This enabled us to show the nation's progress relative to Healthy People cancer-related targets for 2010.

How Data Were Selected

In selecting measures that would be meaningful to readers of this report, we relied on those measures based on scientific evidence and largely from long-term national (rather than State or local) data collection efforts. The report includes more measures for prevention than for other segments of the continuum because more data on trends are available in that area. Some measures such as "quality of life" were not included in this report, even though they are important in assessing the cancer burden, because there simply is no consensus currently on how to best track these measures on a population basis over time.

The data in the *Cancer Trends Progress Report – 2005 Update* come from a variety of systems and surveys with different collection techniques and reporting times, so time periods may vary. The starting point or baseline year against which to measure how well the nation is progressing toward the Healthy People 2010 targets depends on the data available. For example, data for most Diagnosis, Life after Cancer, and End of Life measures are available starting from 1975, while data for most Prevention, Early Detection, and Treatment measures are available beginning in the late 1980s or early 1990s.

Cancer Trends Progress Report - 2005 Update, National Cancer Institute, NIH, DHHS, Bethesda, MD, December 2005, http://progressreport.cancer.gov

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❯ Report Highlights

Major Conclusions

The nation is making progress toward major cancer-related Healthy People 2010 targets.

- Death rates for the four most common cancers (prostate, breast, lung, and colorectal), as well as for all cancers combined, continue to decline.
- The rate of cancer incidence has been relatively stable since the mid 1990s.
- Some prevention behaviors have shown improvement. Adult smoking is down dramatically since the 1960s, although rates fell only slightly in the 1990s. Alcohol and fat consumption are headed down, while fruit and vegetable consumption is up only slightly since about 1990.
- Youth smoking was on the rise during much of the 1990s, but has shown declines since 1997.
- The use of screening tests for breast and cervical cancers is high and remained stable between 2000 and 2003. Screening for colorectal cancer remains low, despite its proven effectiveness, though use is increasing.
- People are doing slightly more to protect themselves from the sun.

The nation is losing ground in other important areas that demand attention.

- The incidence of non-Hodgkins lymphoma and cancers of lung and bladder and brain in women, prostate and testis in men, as well as, leukemia, non-Hodgkin lymphoma, myeloma, melanoma of skin, and cancers of the thyroid, kidney, pancreas, liver, and esophagus is rising. Childhood cancer is increasing slightly.
- Lung cancer death rates in women continue to rise, but not as rapidly as before. Death rates for cancer of the esophagus and thyroid in men, as well as of the liver, are increasing.
- More people are overweight and obese, and leisure time physical activity is increasing only slightly.
- Cancer treatment spending continues to rise along with total health care spending.
- Unexplained cancer-related health disparities remain among population subgroups. For example, Blacks and people with low socioeconomic status have the highest rates of both new cancers and cancer deaths.

▶ Trends-at-a-Glance

The Trends-at-a-Glance offers an overview of trend direction measure by measure. Trends shown in green are moving in a favorable direction, while trends shown in *red italics* are moving in an unfavorable direction. Trends noted as stable are not changing significantly. Click on any trend to view the figure associated with that measure.

The table below gives a snapshot of the latest trend in all measures included in this report. For a more complete summary of the measures, including their progress compared with the Healthy People 2010 target, see the summary tables by topic.

Measure	Trend	Measure	Trend
PREVENTION		**DIAGNOSIS (continued)**	
Age at smoking initiation	Stable	Incidence (continued)	
Youth smoking	Falling	Cancers that are increasing	
Adult smoking	Falling	Female lung	*Rising*
Quitting smoking	*Falling*	Non-Hodgkin lymphoma	*Rising*
Doctor/dentist advice to quit smoking		Melanoma of skin (White only)	*Rising*
Doctor	Rising	Stage at diagnosis	
Dentist	Rising	Colon	Falling
Secondhand smoke		Female breast	Stable
Exposed nonsmokers	Falling	Rectum	Falling
Workers in smoke-free environment	Rising	Cervix	Falling
States with smoke-free air laws	Rising	Prostate	Falling
Alcohol consumption	Stable	**TREATMENT**	
Fruit & vegetable consumption		Breast cancer treatment	
Fruit	Rising	Mastectomy	Falling
Vegetables	*Falling*	No surgery	*Rising*
Fat consumption	Stable	BCS with radiation	*Falling*
Healthy weight	*Falling*	BCS without radiation	*Rising*
No leisure time physical activity	Falling	Multiagent chemotherapy	Rising
Sun protection	Stable	Colorectal cancer treatment	Rising
Pesticide levels in the blood	*Rising*	**LIFE AFTER CANCER**	
Dioxin levels in the human body	Falling	Survival	
EARLY DETECTION		All cancers	Rising
Breast cancer screening	Stable	Prostate	Rising
Cervical cancer screening	*Falling*	Female breast	Rising
Colorectal cancer screening		Colorectal	Rising
Fecal Occult Blood Test (FOBT)	*Falling*	Lung and bronchus	Rising
Endoscopy	Rising	Costs of cancer care	N/A
Colorectal test use	Rising	**END OF LIFE**	
DIAGNOSIS		Mortality	
Incidence		All cancers	Falling
All cancers	Stable	White	Falling
White	Falling	Black	Falling
Black	Falling	Hispanic	Falling
Hispanics	Falling	American Indian/Alaskan Natives	Falling
American Indian/Alaskan Natives	Falling	Asian/Pacific Islander	Falling
Asian/Pacific Islanders	Falling	Prostate	Falling
Four most common cancers		Female breast	Falling

Prostate	*Rising*	Colorectal	Falling
Female breast	Falling	Lung and bronchus	Falling
Colorectal	Falling	Person-years of life lost	N/A
Lung and bronchus	Falling		

▶ Summary Tables by Topic

How to Read the Summary Tables

The tables in this section summarize the measures that are described at greater length in the body of this report. A graph, which addresses two questions, is included for most measures:

1. **Is the trend good or bad?**

   - A graph shows the trend direction for the measure. The desired trend direction is shown below the graph. The statistical significance of all trends has been calculated. Trends shown in this report are statistically significant, unless stable, or not statistically significant, indicated by (ns) following the trend direction.

   - Each line in the graph is coded by color and line style to indicate whether the trend is:

     ———————— solid green - headed in the right direction
     ▪▪▪▪▪▪▪▪▪▪▪▪ dotted red - headed in the wrong direction
     ▬ ▬ ▬ ▬ dashed black - stable

2. **How does the nation's progress compare to the Healthy People 2010 target?**

   Not all measures have an associated Healthy People 2010 target. When there is a target for a specific measure, it is shown by a solid blue horizontal line labeled "Healthy People 2010 Goal".

   The example below demonstrates the Adult Smoking trend, which is heading in the right direction (solid green line) toward the Healthy People 2010 Goal (solid blue horizontal line).
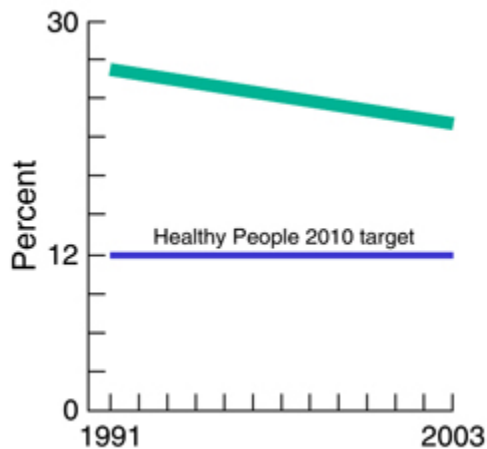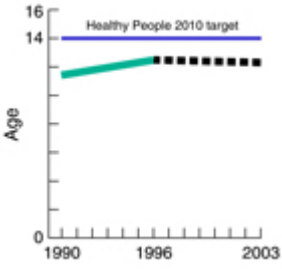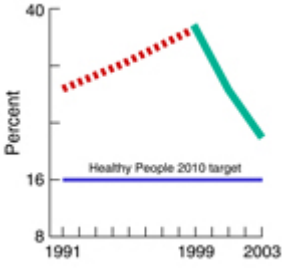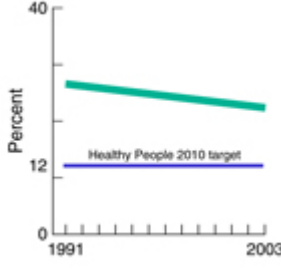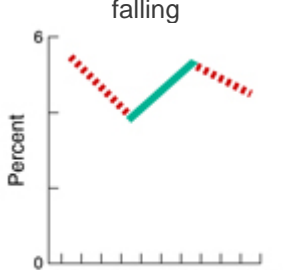
▣ Summary Table: Prevention - Smoking

All trend segments are statistically significant unless stable or noted as ns (annual percent change is not statistically significant, p < 0.05).

Only one measure per topic is displayed in the summary table. A complete set of measures, where they exist, can be found in the report.

Trend key:
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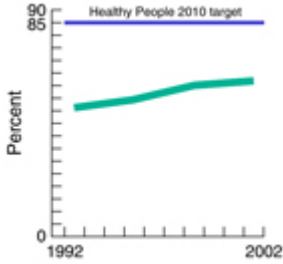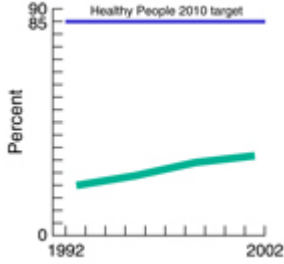
	Age at smoking initiation 1990-2003	Youth smoking 1991-2003	Adult smoking 1991-2003	Quitting smoking 1992-2002
Measure	Average age of first use of cigarettes, based on responses from people ages 12 to 17.	Percent of high school students grades 9 to 12 who were current users of cigarettes.	Percent of adults ages 18 and older who were current cigarette smokers.	Percent of daily cigarette smokers ages 25 and older, who successfully quit smoking cigarettes for 3 months or longer in the past year.
Trend	Rising then stable	Rising, then falling	Falling slightly	Falling, then rising, then falling
Desired direction	Rising ▲	Falling ▼	Falling ▼	Rising ▲
Most recent estimate	In 2003, the average age at first use among people ages 12 to 17, was 12.3.	Among high school students in 2003, 21.9% were current cigarette smokers.	In 2003, 21.5% of adults - 23.7% of men and 19.4% of women - were current cigarette smokers.	In 2001-2002, 4.5% of those who reported daily smoking a year ago were able to stay off cigarettes for 3 months or longer.
Healthy People 2010 target	Increase the average age at first use of cigarettes to 14 years of age for 12- to 17-year-olds.	Decrease the proportion of high school students who currently smoke cigarettes to 16%.	Reduce to 12% the proportion of adult current cigarette smokers.	Increase to 75% the proportion of adult smokers ages 18 and older, who stop smoking for a day or longer because they are trying to quit.
More information	Age at Smoking Initiation	Youth Smoking	Adult Smoking	Quitting Smoking

Page last reviewed: April 3, 2006

▶ Summary Table: Prevention - Advice to Quit

All trend segments are statistically significant unless stable or noted as ns (annual percent change is not statistically significant, p < 0.05).

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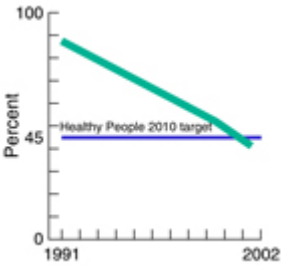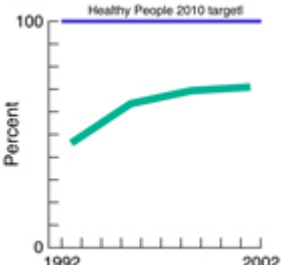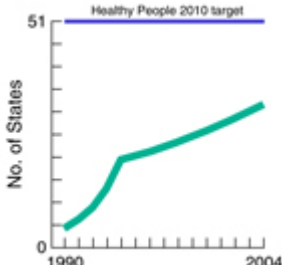
	Doctors' advice to quit smoking 1992-2002	Dentists' advice to quit smoking 1992-2002
Measure	Percent of current smokers ages 18 and older, who were advised by a doctor in the past year to quit smoking.	Percent of current smokers ages 18 and older, who were advised by a dentist in the past year to quit smoking.
Trend	Rising, then rising slightly	Rising
Desired direction	Rising ▲	Rising ▲
Most recent estimate	In 2001-2002, 62% of smokers (60% of males, 63% of females) reported being advised by a physician to quit smoking during the past year.	In 2001-2002, 32% of smokers (33% of males, 30% of females) reported being advised by a dentist to quit smoking during the past year.
Healthy People 2010 target	Increase the percent of physicians who counsel their at-risk patients about tobacco use cessation to 85%.	Increase the percent of dentists who counsel their at-risk patients about tobacco use cessation to 85%.
More information	Doctors' and Dentists' Advice to Quit Smoking	

◪ Summary Table: Prevention - Secondhand Smoke

All trend segments are statistically significant unless stable or noted as ns (annual percent change is not statistically significant, $p < 0.05$).

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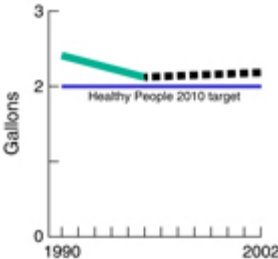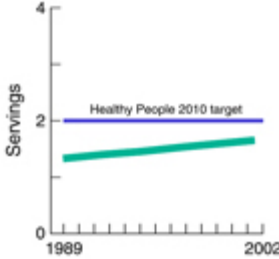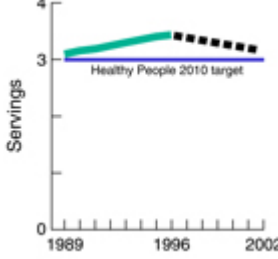
	Secondhand smoke Nonsmokers 1988-2002	Secondhand smoke Indoor workers 1992-2002	Secondhand smoke States with smoke-free air laws 1990-2004
Measure	Percent of nonsmokers exposed to secondhand tobacco smoke.	Percent of indoor workers reporting a smoke-free work environment.	States (and the District of Columbia) with laws on smoke-free air in public places and worksites. (Example: day care centers).
Trend	Falling	Rising, then rising slightly	Rising
Desired direction	Falling ▼	Rising ▲	Rising ▲
Most recent estimate	In 2001-2002, serum cotinine levels indicate that 41 percent of nonsmokers are exposed to secondhand tobacco smoke. (Healthy People 2010 target met).	In 2001-2002, 71% of the workforce ages 18 and older reported that there was a smoke-free policy at their workplace.	As of 2004, 33 states had smoke-free indoor air laws covering day care centers.
Healthy People 2010 target	Decrease to 45% nonsmokers' secondhand tobacco smoke exposure.	Increase to 100% the proportion of work sites with formal smoking policies that prohibit smoking or limit it to separately ventilated areas.	Increase to 51 the number of jurisdictions (50 states and the District of Columbia) with smoke-free indoor air laws for public places and work sites.
More information	Secondhand smoke		

⏩ Summary Table: Prevention - Diet

All trend segments are statistically significant unless stable or noted as ns (annual percent change is not statistically significant, p < 0.05).

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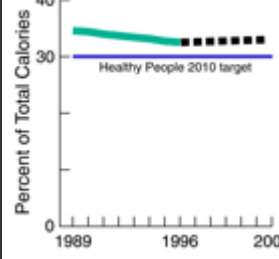▬ ▬ ▬ ▬ dashed black - stable
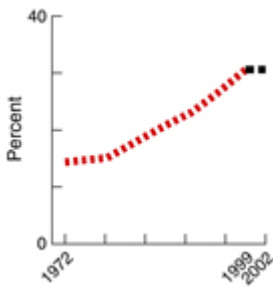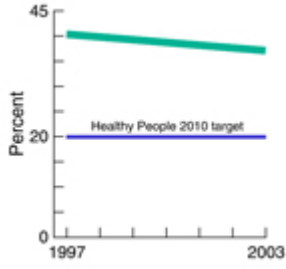
	Alcohol consumption 1990-2002	Fruit consumption 1989-2002	Vegetable consumption 1989-2002	Fat consumption 1989-2002
Measure	The estimated number of gallons of pure alcohol drunk per person (ages 14 and older), per year.	Average daily servings of fruits for people ages 2 and older. This measure includes fruits from all sources.	Average daily servings of vegetables for people ages 2 and older. This measure includes vegetables from all sources.	Intakes of total fat as a percentage of total calories.
Trend	Falling, then stable	Rising	Rising, then falling slightly (ns)	Falling slightly, then stable
Desired direction	**Falling ▼**	**Rising ▲**	**Rising ▲**	**Falling ▼**
Most recent estimate	In 2002, per capita alcohol consumption was 2.20 gallons for all beverages, including beer, wine, and liquor.	In 2001-2002, people ages 2 and older had, on average, 1.6 servings of fruits.	In 2001-2002, people ages 2 and older had, on average, 3.2 servings of vegetables. (Healthy People 2010 target met).	In 2001-2002 total fat made up 33% of the calories consumed.
Healthy People 2010 target	Reduce annual per capita alcohol consumption to 2 gallons.	Consume at least 2 daily servings of fruits.	Consume at least 3 daily servings of vegetables, with at least one-third being dark-green / orange.	Consume no more than 30 percent of daily calories from fat.
More information	Alcohol consumption	Fruit and Vegetable Consumption		Fat consumption

◪ Summary Table: Prevention - Weight and Physical Activity

All trend segments are statistically significant unless stable or noted as ns (annual percent change is not statistically significant, p < 0.05).

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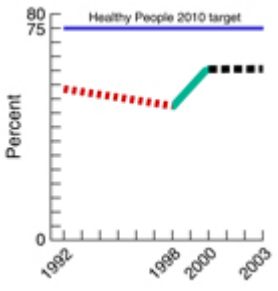
	Weight 1971-2002	Physical activity 1997-2003
Measure	Percent of adults (ages 20-74) who are at a healthy weight, overweight, or obese (Example: obese).	Percent of adults ages 18 and older who had no leisure-time physical activity during the past month.
Trend	Rising slightly (ns), then rising, then stable	Falling slightly
Desired direction	**Falling ▼**	**Falling ▼**
Most recent estimate	Among adults in 2001-2002, 33 percent were at a healthy weight, 65 percent were overweight, and 30 percent were obese.	The 2003 National Health Interview Survey (NHIS), an in-person household survey, indicates that 37 percent of adults 18 and older reported no physical activity in their leisure time.
Healthy People 2010 target	Increase to 60 percent the proportion of adults who are at a healthy weight and decrease to 15 percent the proportion of obese adults. There is no Healthy People 2010 target for overweight.	Reduce to 20 percent the percent of adults who engage in no leisure-time physical activity.
More information	Weight	Physical Activity

▶ Summary Table: Prevention - Sun Protection

All trend segments are statistically significant unless stable or noted as ns (annual percent change is not statistically significant, p < 0.05).

Only one measure per topic is displayed in the summary table. A complete set of measures, where they exist, can be found in the report.

Trend key: ━━━━━━ solid green - headed in the right direction
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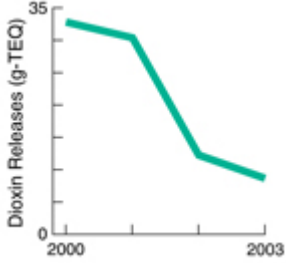
	Sun Protection 1992-2003
Measure	Percent of adults ages 18 and older who reported they were "very likely" to practice at least one of three sun protection behaviors if they were outside on a sunny day for more than 1 hour.
Trend	Falling, then rising, then stable
Desired direction	**Rising ▲**
Most recent estimate	In 2003, 61 percent of adults said they were very likely to practice at least one of three sun protection behaviors.
Healthy People 2010 target	Increase to 75 percent the proportion of adults who are very likely to use sunscreen with an SPF of 15 or higher, wear protective clothing, or seek shade.
More information	Sun Protection

◪ Summary Table: Prevention - Environmental Toxins

All trend segments are statistically significant unless stable or noted as ns (annual percent change is not statistically significant, $p < 0.05$).

Only one measure per topic is displayed in the summary table. A complete set of measures, where they exist, can be found in the report.

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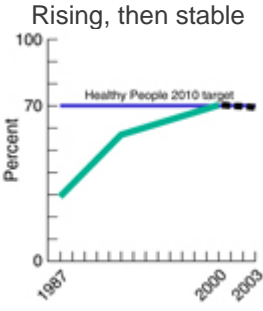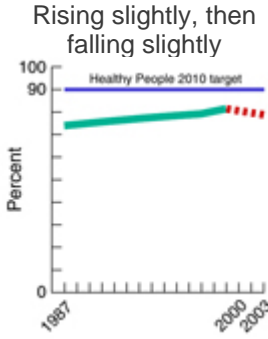
	Pesticides 1999-2002	Dioxins 1999-2003
Measure	Possible carcinogens, pesticides chlordane and DDT and their metabolites, measured in human blood.	Measurement of TCDD in human blood adjusting for lipids, and toxic release inventory of dioxin releases in the environment. (Example: dioxin release).
Trend	Rising (concentrations of DDT and oxychlordane); falling (trans-nonachlor and heptachlor epoxide) **(No graph is available for this measure)**	Falling for the last 30 years due to reductions in man-made sources.
Desired direction	Falling ▼	Falling ▼
Most recent estimate	In 2001-2002, blood and urine concentrations (nanograms per gram) were: 49.7 for oxychlordane, 78.2 for trans-nonachlor, 21.6 for heptachlor epoxide, and 2,320 for DDT (DDE).	Dioxin releases – 8.59 g-TEQ
Healthy People 2010 target	Reduce blood and urine concentrations of: oxychlordane to 31.4 ng/g, trans-nonachlor to 55.6 ng/g, heptachlor epoxide) to 16.7 ng/g, and DDT (DDE) to 1,250 ng/g.	Reduce exposure of the population to pesticides, heavy metals, and other toxic chemicals, as measured by blood and urine concentrations of the substances or their metabolites.
More information	Pesticides	Dioxins

▶ Summary Table: Early Detection - Breast and Cervical Cancers

All trend segments are statistically significant unless stable or noted as ns (annual percent change is not statistically significant, p < 0.05).

Only one measure per topic is displayed in the summary table. A complete set of measures, where they exist, can be found in the report.

Trend key: ━━━━━ solid green - headed in the right direction
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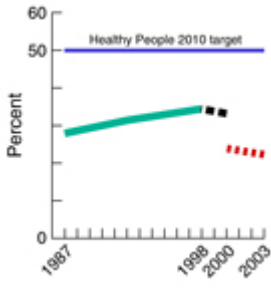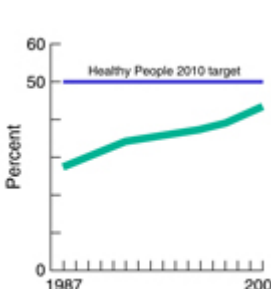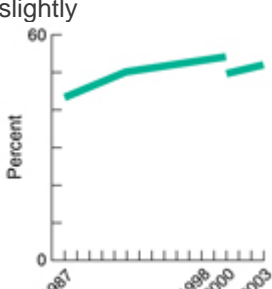
	Breast cancer screening 1987-2003	Cervical cancer screening 1987-2003
Measure	Percent of women ages 40 and older, by racial/ethnic, geographic, and low-income groups, who reported they had a mammogram within the past 2 years.	Percent of women ages 18 years and older who reported they had a Pap test within the past 3 years.
Trend	Rising, then stable	Rising slightly, then falling slightly
Desired direction	Rising ▲	Rising ▲
Most recent estimate	In 2003, 70 percent of women ages 40 and older had a mammogram within the past 2 years. (Healthy People 2010 target met).	In 2003, 79 percent of women ages 18 and older had a Pap test within the past 3 years.
Healthy People 2010 target	Increase to 70 percent the proportion of women ages 40 and older who have received a mammogram within the past 2 years.	Increase to 90 percent the proportion of women ages 18 and older who have received a Pap test within the past 3 years.
More information	Breast Cancer Screening	Cervical Cancer Screening

▣ Summary Table: Early Detection - Colorectal Cancer

All trend segments are statistically significant unless stable or noted as ns (annual percent change is not statistically significant, p < 0.05).

Only one measure per topic is displayed in the summary table. A complete set of measures, where they exist, can be found in the report.

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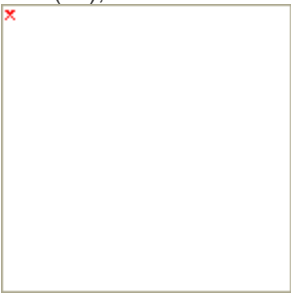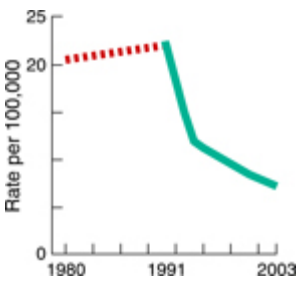
	Fecal Occult Blood Test 1987-2003	Colorectal endoscopy 1987-2003	Colorectal cancer test use 1987-2003
Measure	Percent of adults ages 50 and older who reported that they had a fecal occult blood test (FOBT) within the past 2 years, by racial/ethnic group.	Percent of adults ages 50 and older who reported that they ever had a sigmoidoscopy.	Percent of adults ages 50 and older who had a colorectal cancer test.
Trend	Rising, then falling (ns), then falling	Rising, then rising slightly, then rising (ns), then rising	Rising, then rising slightly, then rising slightly (ns), then rising slightly
Desired direction	Rising ▲	Rising ▲	Rising ▲
Most recent estimate	In 2003, 23 percent of people ages 50 and older had a home FOBT within the past 2 years.	In 2003, 44 percent of people 50 and older had ever had a colorectal endoscopy.	In 2003, 52 percent of people 50 and older had used a colorectal cancer test.
Healthy People 2010 target	Increase to 50 percent the proportion of adults ages 50 and older who have had an FOBT within the past 2 years.	Increase to 50 percent the proportion of adults ages 50 and older who have ever had a sigmoidoscopy.	There is no Healthy People 2010 target for the proportion of adults who should receive colonoscopy screenings.
More information	Colorectal Cancer Screening		

▶ Summary Table: Diagnosis

All trend segments are statistically significant unless stable or noted as ns (annual percent change is not statistically significant, p < 0.05).

Only one measure per topic is displayed in the summary table. A complete set of measures, where they exist, can be found in the report.

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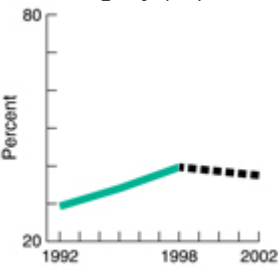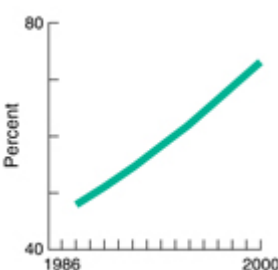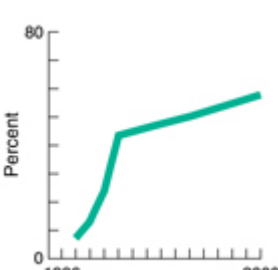
	Incidence 1975-2003	Stage at Diagnosis 1980-2003
Measure	The observed number of new cancer cases per 100,000 people per year, and the estimated number of new cases per 100,000, adjusted for reporting delays, based on data from approximately 10 percent of the U.S. population.	The number of new cancer cases diagnosed at a late (distant) stage, per 100,000 people per year. (Example: prostate cancer).
Trend	Rising slightly, then rising, then falling slightly (ns), then stable 	Rising slightly, then falling
Desired direction	Falling ▼	Falling ▼
Most recent estimate	In 2003, the rate of new cases of all cancers combined was 473 per 100,000 people per year.	In 2003, 6.9 new cases of prostate cancer per 100,000 men were diagnosed at a late stage.
Healthy People 2010 target	There is no Healthy People 2010 target for cancer incidence.	There is no Healthy People 2010 target for stage at diagnosis.
More information	Incidence	Stage at Diagnosis

▶ Summary Table: Treatment

All trend segments are statistically significant unless stable or noted as ns (annual percent change is not statistically significant, p < 0.05).

Only one measure per topic is displayed in the summary table. A complete set of measures, where they exist, can be found in the report.

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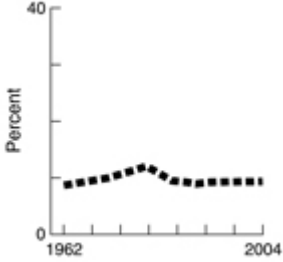
	Breast Cancer Treatment		Colorectal cancer Treatment 1987-2000
	Breast-conserving surgery + radiation 1992-2002	**Multi-agent chemotherapy 1992-2002**	
Measure	Percent of women ages 20 and older, diagnosed with early-stage breast cancer (less than stage IIIA), receiving breast-conserving surgery and radiation treatment.	Percent of women ages 20 and older, diagnosed with node positive, stage I - IIIa breast cancer, receiving multi-agent chemotherapy.	Percent of individuals, ages 20 and over, diagnosed with stage III colon cancer who received 5-FU plus either levamisole or leucovorin or diagnosed with stage II or stage III rectal cancer who received 5-FU with or without radiotherapy.
Trend	Rising, then falling slightly (ns)	Rising	Rising
Desired direction	**Rising ▲**	**Rising ▲**	**Rising ▲**
Most recent estimate	In 2002, 41 percent of women ages 20 and older diagnosed with early-stage breast cancer (less than stage IIIA) received mastectomy, 37 percent received breast-conserving surgery plus radiation, and 19 percent received breast-conserving surgery only.	In 2000, 69 percent of women ages 20 and older, diagnosed with node positive breast cancer, received multi-agent chemotherapy.	In 2000, 57 percent of stage III colon, and stage II and III rectal patients ages 20 and older received adjuvant chemotherapy.
Healthy People 2010 target	There is no Healthy People 2010 target for breast-conserving surgery and radiation treatment.	There is no Healthy People 2010 target for multi-agent chemotherapy treatment.	There is no Healthy People 2010 target for cancer treatment including colorectal cancer treatment.
More information	Breast Cancer Treatment		Colorectal Cancer Treatment

▣ Summary Table: Life After Cancer

All trend segments are statistically significant unless stable or noted as ns (annual percent change is not statistically significant, p < 0.05).

Only one measure per topic is displayed in the summary table. A complete set of measures, where they exist, can be found in the report.

Trend key: ▬▬▬▬▬   solid green - headed in the right direction
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	Survival 1975-1998 (year diagnosed)	Costs of cancer care 1963-2004
Measure	The proportion of patients surviving cancer 5 years after diagnosis.	Cancer treatment spending as a percent of total U.S. treatment spending.
Trend	Rising slightly, then rising, then rising slightly ☒	Stable
Desired direction	Rising ▲	Falling ▼
Most recent estimate	For adults diagnosed with cancer (all sites) in 1998, 66 percent had survived their cancer for at least 5 years.	2004: 4.7% of total U.S. treatment spending was for cancer treatment.
Healthy People 2010 target	Increase to 70 percent the proportion of cancer survivors who are living 5 years or longer after diagnosis.	There is no Healthy People 2010 target for costs of cancer care.
More information	Survival	Costs of Cancer Care

Summary Table: End of Life

All trend segments are statistically significant unless stable or noted as ns (annual percent change is not statistically significant, p < 0.05).

Only one measure per topic is displayed in the summary table. A complete set of measures, where they exist, can be found in the report.

Trend key: ———————— solid green - headed in the right direction
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	Mortality 1975-2003	Person-years of life lost (PYLL) 2003
Measure	The number of cancer deaths per 100,000 people per year, age-adjusted to a U.S. 2000 standard population.	The difference between the actual age of death due to a cancer and the expected age of death.
Trend	Minimally rising, then stable, then falling slightly	No trend data are available for person-years of life lost. **(No graph is available for this measure)**
Desired direction	Falling ▼	Falling ▼
Most recent estimate	In 2003, the death rate for all cancers was 190.0 cancer deaths per 100,000 people per year.	In 2003, cancer deaths were responsible for nearly 8.7 million PYLL. Also in 2003, lung cancer accounted for over 2.4 million PYLL, the most by far for any cancer. In contrast, prostate cancer, which primarily affects older men, accounted for fewer than 277,000 PYLL.
Healthy People 2010 target	Reduce the overall cancer death rate to 159.9 cancer deaths per 100,000 people per year.	There is no Healthy People 2010 target for PYLL.
More information	Mortality	Person-years of Life Lost

⊡ Prevention

Cancer can be caused by a number of different factors and may develop over a number of years. Some risk factors can be controlled. Choosing the right health behaviors and preventing exposure to certain environmental risk factors can help prevent the development of cancer. For this reason, it is important to follow national trends data to monitor the reduction of these risk factors. This section focuses on national trends data from two major groups of risk factors: Behavioral and Environmental.

Behavioral Factors

Scientists estimate that as many as 50 to 75 percent of cancer deaths in the United States are caused by human behaviors such as smoking, physical inactivity, and poor dietary choices. The first part of the Prevention section describes trends in the following behaviors that can help to prevent cancer:

- Not using cigarettes or other tobacco products:
    - Age at smoking initiation
    - Youth smoking
    - Adult smoking
    - Quitting smoking
    - Doctors' and dentists' advice to quit smoking
- Not drinking too much alcohol
- Eating five or more daily servings of fruits and vegetables
- Eating a moderate-fat diet
- Consuming a diet in which total calories eaten are balanced with calories expended by physical activity
- Maintaining or reaching a healthy weight
- Being physically active
- Protecting skin from sunlight

Smoking causes about 30 percent of all U.S. deaths from cancer. Avoiding tobacco use is the single most important step Americans can take to reduce the cancer burden in this country.

Obesity and physical inactivity cause about 25 to 30 percent of several of the major cancers in the U.S., including colon, breast, endometrial, kidney, and esophageal cancers. Obesity is estimated to cause 14 percent of cancer deaths in men and 20 percent of cancer deaths in women.

Additional important steps include maintaining a healthy weight, being physically active, eating a moderate-fat diet and enough fruits and vegetables, balancing calories with physical activity, avoiding too much alcohol, and protecting skin from sunlight.

Environmental Factors

Certain chemicals, biological agents, toxins, etc. are associated with cancer development. In this section, trend data associated with environmental exposures and their relationship to cancer are reported.

- Secondhand tobacco smoke (also known as environmental tobacco smoke)
- Pesticides
- Dioxins

The environmental measures highlighted in this report were chosen based on the availability of national trends data and their inclusion in the Healthy People 2010 Report. Because national trends data were unavailable for other environmental exposures that cause cancer, they were excluded from this report.

◪ Age at Smoking Initiation

The average age at which people first begin smoking has been relatively stable since the mid 1990s.

Age at Smoking Initiation and Cancer

The younger a person starts smoking, the greater the lifelong risk of developing smoking-related cancers. That is because young smokers are more likely to become addicted, and the more years a person smokes, the greater the risk of cancer.

Measure

Average age of first use of cigarettes, based on responses from people ages 12 and older, 12 to 17, and 18 to 25.

Period 1990-2003

Trends

Age 12 and older: Rising slightly in the early 1990s, then stable
Age 12-17: Rising in the early 1990s, then stable
Age 18-25: Rising slightly until 1997, then minimally falling.

Most Recent Estimates

In 2003, the average age at first use among people 12 and older was 15.4 years. Among 12- to 17-year-olds, the average age was 12.3. Among those 18 to 25, the average age was 14.7.

Healthy People 2010 Targets

Increase the average age at first use of cigarettes to:

- 14 years of age for 12- to 17-year-olds
- 17 years of age for 18- to 25-year-olds

There is no Healthy People 2010 target for ages 12 and older as a group.

Groups at High Risk for Beginning Smoking

Young people who come from low-income families with less education are more likely to smoke. So are those who have less success and involvement in school and fewer skills to resist the pervasive pressures to use tobacco. Tendencies to take risks and rebel are among the other risk factors for beginning smoking.

Key Issues

Most smokers try their first cigarette before the age of 18 and become addicted during adolescence.

Efforts to help young people delay or avoid smoking may help to prevent some cancers.

A recent concern is the increase in cigarette smoking among young adults, ages 18 to 24. In 2003, those 18 to 25 years of age had the highest smoking prevalence of any age group 12+. A college study of 15,000 students found that cigarette use increased from 1993 to 1997. Efforts to reduce smoking among adolescents should be extended to young adults and college students.

Links to Additional Information on Age at Smoking Initiation

- Healthy People 2010, Volume 2, Chapter 27 - Tobacco Use
  http://www.health.gov/healthypeople/Document/html/volume2/27tobacco.htm
- National Cancer Institute, Applied Research Program - Tobacco Use Supplement to the Current Population Survey
  http://riskfactor.cancer.gov/studies/tus-cps/
- Population-Based Smoking Cessation: Smoking and Tobacco Control Monograph #12 (NCI)
  http://cancercontrol.cancer.gov/tcrb/monographs/12/index.html
- Preventing Tobacco Use Among Young People: A Report of the Surgeon General, 1994 (CDC)
  http://www.cdc.gov/tobacco/sgr/sgr_1994/index.htm
- Reducing Tobacco Use: A Report of the Surgeon General (Tobacco Information and Prevention Source, CDC)
  http://www.cdc.gov/tobacco/sgr/sgr_2000/index.htm
- Smoking and Tobacco Control Monograph 8 - Changes in Cigarette-Related Disease Risks and their Implication for Prevention and Control (NCI)
  http://cancercontrol.cancer.gov/tcrb/monographs/8/index.html
- Substance Abuse and Mental Health Services Administration (SAMHSA)
  http://oas.samhsa.gov/nsduh.htm#NSDUHinfo
  http://oas.samhsa.gov/NHSDA/2k3NSDUH/2k3results.htm#ch4
- Tobacco Cessation Guideline (The Surgeon General)
  http://surgeongeneral.gov/tobacco/
- Wechsler H, Rigotti NA, Gledhill-Hoyt J, Lee H. Increased levels of cigarette use among college students: a cause for national concern. Journal of the American Medical Association. 1998; 280(19): 1673-8.
  http://jama.ama-assn.org/content/vol280/issue19/index.dtl

▶ Youth Smoking

Cigarette smoking by high school students rose early and through the mid 1990s, but has fallen more steeply since the end of the 1990s. Smokeless tobacco use appears to be falling as well.

Youth Tobacco Use and Cancer

For most of the 1990s, about 3,000 youths under 18 became regular cigarette smokers each day. This number has declined recently to just over 2,000 each day. Of these 2,000, nearly 700 will die early due to lung cancer or other tobacco-related diseases.

Other forms of tobacco used by young people include smokeless tobacco (chewing tobacco and snuff, also known as spit tobacco), cigars, and bidis (small, brown, hand-rolled, flavored cigarettes). Each of these also can cause cancer.

Measure

Percent of high school students who were current cigarette or smokeless tobacco users: Students (grades 9 to 12) who reported having used cigarettes or smokeless tobacco in the 30 days before the survey.

Period 1991-2003

Trends

Cigarettes: After a rise from 1991 to 1997, current cigarette smoking among youths has fallen, showing a very large and statistically significant trend downward since 1999. In fact, the most recent estimate is lower than the corresponding cigarette smoking estimate for youths in 1991.

Smokeless tobacco: Current smokeless tobacco use is falling.

The source of trend data used in this report does not provide data for use of either "any tobacco" or cigars before 1997.

Most Recent Estimates

Among high school students in 2003:

- 21.9 percent were current cigarette smokers
- 6.7 percent were current users of smokeless tobacco
- 14.8 percent were current cigar smokers
- 27.5 percent were current users of "any tobacco"

Healthy People 2010 Targets

Decrease the proportion of high school students who currently:

- Smoke cigarettes to 16 percent
- Use smokeless tobacco to 1 percent
- Smoke cigars to 8 percent
- Use any tobacco to 21 percent

Groups at High Risk for Tobacco Use

White, non-Hispanic students are more likely to smoke cigarettes than are Hispanic students, who in turn are more likely to smoke than Black, non-Hispanic students.

High school boys are much more likely than girls to use smokeless tobacco, cigars, pipes, and bidis. Overall, White high school students are much more likely than Black high school students to report current smokeless tobacco or cigar use.

Current cigarette smoking was higher among 12th grade students than among 9th or 10th grade students.

In 2004, Blacks were more likely than Whites to smoke cigars among middle school students.

Key Issues

The National Youth Tobacco Survey (NYTS), conducted by CDC in 2004, suggests a slowing in the rate of decline of youth smoking from 2002 to 2004 when compared with the period 1999 to 2002. Comparing the Youth Risk Behavior Surveillance System (YRBSS)-an HP2010 tracking measure-over the period 2001 to 2003 with the period 1999 to 2001 shows a similar or larger rate of decline. Thus, it will be important to access the next YRBSS survey data point for 2005 to see if there is any slowing in the rate of decline among youth smoking as suggested by the NYTS. Declines in cigarette use are encouraging, but prevention efforts (such as increases in cigarette taxes resulting in increased cigarette prices, anti-tobacco media campaigns, and restrictions on public smoking) must be sustained in order to reach the HP2010 goal.

Previous research has suggested a positive relationship between smoking in movies and youth smoking. During 2002 to 2004, a significant overall decline was observed among both middle and high school students who reported seeing actors using tobacco on television or in the movies.

In 2004, 11.7 percent of middle school students (grades 6 to 8) reported using some form of tobacco in the past month. Cigarettes were the most popular choice (8.1 percent), followed by cigars (5.2 percent), then by smokeless tobacco (2.9 percent), pipes (2.5 percent), bidis (2.3 percent), and kreteks (clove cigarettes) (1.5 percent).

Links to Additional Information on Youth Smoking

- Bidi Use Among Urban Youth - Massachusetts, March-April 1999 (MMWR)
  http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4836a2.htm
- Healthy People 2010, Volume 2, Chapter 27 - Tobacco Use
  http://www.health.gov/healthypeople/Document/html/volume2/27tobacco.htm
- Morbidity and Mortality Weekly Report (MMWR)
  http://www.cdc.gov/mmwr/
- Substance Abuse and Mental Health Services Administration (SAMHSA)
  http://www.samhsa.gov/news/news.html
- Tobacco Use Among Middle and High School Students - United States, 2004 (MMWR)
  http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5412a1.htm
- Trends in Cigarette Smoking Among High School Students - United States, 1991-1999 (MMWR)
  http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4933a3.htm
- Youth Risk Behavior Surveillance System (YRBSS) (CDC)
  http://www.cdc.gov/nccdphp/dash/yrbs/index.htm
- Youth Risk Behavior Surveillance - United States, 2003 (MMWR)
  http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5323a1.htm
  http://www.cdc.gov/mmwr/PDF/wk/mm5323.pdf

▶ Adult Smoking

Cigarette smoking by adults has fallen slightly since 1990.

Smoking and Cancer

Cigarette smoking is the most preventable cause of death in the United States. It causes approximately 30 percent (171,000) of all U.S. cancer deaths each year.

Cigarette smoking also causes cancers of the lung, larynx, mouth, esophagus, pharynx, and bladder. In addition, it plays a role in acute myeloid leukemia and cancers of the pancreas, kidney, cervix, stomach, and liver.

Cigar smoking has been found to cause cancers of the larynx, oral cavity (lip, tongue, mouth, and throat), esophagus, lung, pancreas, stomach, and bladder.

Measure

Percent of adults who were current cigarette smokers: Adults ages 18 and older who reported smoking 100 or more cigarettes in their lifetimes and who, at the time of the interview, continued to smoke every day or some days.

Period 1991-2003

Trends Falling slightly for both men and women

Most Recent Estimates

In 2003, 21.5 percent of adults–23.7 percent of men and 19.4 percent of women–were current cigarette smokers.

In 2000, 2.2 percent of adults–4.4 percent of men and 0.2 percent of women–were current cigar smokers, an increase from earlier in the decade (1992), but there is some evidence of stabilization or a slight decrease since 1998. Current cigar smokers have had at least 50 cigars in their lifetimes and, at the time of the interview, continued to smoke every day or some days.

Healthy People 2010 Targets

Reduce to 12 percent the proportion of adult current cigarette smokers.

Reduce to 1.2 percent the proportion of adult current cigar smokers.

Groups at High Risk for Smoking

Men are more likely than women to smoke cigarettes. American Indian/Alaska Natives smoke more than Whites and Blacks, who smoke more than Hispanics and Asians.

High-risk groups include American Indian/Alaska Native women, people living below the poverty level, and those with 9 to 11 years of education.

Cigar use has increased over the decade among young and middle-aged (ages 18-44) White men with higher than average incomes and education, and among women.

Key Issues

Although the rate of smoking has dropped by nearly half since the Surgeon General's first report on smoking in 1964 (42 percent of adults were current smokers in 1965), progress has slowed over the recent decade. Further decreases in tobacco use could vastly improve the public's health.

From 1993 to 1997, U.S. cigar sales soared by almost 50 percent, mostly due to increased sales of large cigars. This followed new cigar marketing approaches that began in 1992. Since 1997, increases in consumption of cigars have been mainly due to usage of small cigars.

Links to Additional Information on Adult Smoking

- 1964 Surgeon General Report: Reducing the Health Consequences of Smoking (CDC)
  http://www.cdc.gov/tobacco/sgr/sgr_1964/sgr64.htm
- 2004 Surgeon General Report: Health Consequence of Smoking
  http://www.cdc.gov/tobacco/sgr/sgr_2004/index.htm
- Cigar Smoking and Cancer (ACS)
  http://www.cancer.org/docroot/PED/content/PED_10_2X_Cigar_Smoking.asp?sitearea=PED
- Healthy People 2010, Volume 2, Chapter 27 - Tobacco Use
  http://www.health.gov/healthypeople/Document/html/volume2/27tobacco.htm
- International Agency on Research and Cancer (IARC)
  http://www-cie.iarc.fr/htdocs/monographs/vol83/01-smoking.html
- MMWR Cigarette Smoking Among Adults United States 2003
  http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5420a3.htm
- National Health Interview Survey (NHIS) (NCHS)
  http://www.cdc.gov/nchs/nhis.htm
- Smoking and Tobacco Control Monograph 9 - Cigar Health Effects and Trends (NCI)
  http://cancercontrol.cancer.gov/tcrb/monographs/9/index.html
- Smoking and Tobacco Control Monograph 9 - Cigar Health Effects and Trends: Chapter 1: Cigar Smoking Overview and Current State of the Science (NCI)
  http://cancercontrol.cancer.gov/tcrb/monographs/9/m9_1.PDF
- State Cancer Profiles, Latest Rates, Percents, and Counts
  http://statecancerprofiles.cancer.gov/micromaps/
- USDA ERS April 2005 Tobacco Outlook
  http://www.ers.usda.gov/publications/tbs/nov04/tbs25702/tbs25702.pdf

Adult quitting rates fell during 2001-2002 at a slower rate than they did in the early 1990s.

The Effects of Quitting Smoking on Cancer

Ten years after quitting smoking, a person's risk of getting lung cancer is about one-third to one-half that of people who continue to smoke. The longer the time off cigarettes, the lower the risk. Quitting also reduces the risk of getting cancers of the larynx, esophagus, pancreas, bladder, and cervix.

The sooner one quits smoking, the better. Long-term smokers who stop smoking at around 50 or 60 years of age are less likely to get lung cancer than are people who continue to smoke. Quitting at around age 30 lowers this risk even more.

The quickest non-cancer health benefit of quitting is a lower risk of coronary heart disease. This risk is cut in half within 1 year after quitting. After 15 years, the chance of getting the disease is similar to that of people who never smoked.

Measures

Those persons (ages 25 and older) who attempted to quit during the past year, among those who reported being a daily cigarette smoker about a year ago.

Those persons (ages 25 and older) who successfully quit smoking cigarettes for 3 months or longer in the past year, among those who reported being a daily cigarette smoker about a year ago.

Period 1992-1993, 1995-1996, 1998-1999, and 2001-2002

Trends - Falling, then rising, then falling again.

Between 1992-1993 and 1995-1996, there was a clear decline in attempts to quit smoking, as well as in successful longer-term quitting. From 1995-1996 to 1998-1999, both quit attempts and successes increased. During the most recent period, 1998-99 to 2001-2002, both quit attempts and successful quitting fell at a slower rate than they did in the first half of the 1990s.

Most Recent Estimates

In 2001-2002, 34 percent of those who reported daily smoking a year ago made some attempt to quit in the past year. The percentage of those reporting daily smoking a year ago who were able to stay off cigarettes for 3 months or longer at the time of the survey was 4.5 percent.

In 2003, 41.1 percent of adult smokers (ages 18 and older) stopped smoking for a day or longer because they were trying to quit.

Healthy People 2010 Target

Increase to 75 percent the proportion of adult smokers (ages 18 and older) who stopped smoking for a day or longer because they were trying to quit.

There are no targets in Healthy People 2010 for the other quit measures in this report.

Groups at High Risk for Not Quitting

Older smokers (ages 65 years and older) are much less likely to try to quit. However, once they do quit, this group is more likely to be successful for 3 months or longer.

Blacks have higher rates of trying to quit than Whites, but lower rates of successfully quitting for 3 months or longer.

Smokers with lower levels of education and income are less likely to be successful quitters.

Key Issues

Studies show that most smokers want to quit.

Efforts to reduce smoking are most effective when multiple techniques are used, including educational, clinical, regulatory (such as clean indoor air laws, which don't allow smoking in work areas and public places), and economic interventions (for example, increasing excise taxes), along with media campaigns and other social strategies.

Several methods utilizing combinations of nicotine replacement products and/or prescription anti-depressants with behavior therapy have been shown to be effective in reducing smoking, but research shows that only a small percentage of smokers utilize these products and methods to help them quit.

The HHS recently launched a national initiative to provide quitline support. Callers are automatically routed to a state-run quitline, if one exists in their area. If there is no state-run quitline, callers are routed to the National Cancer Institute (NCI) quitline.

CDC has recommended minimum levels of tobacco control funding for states. Only 3 states met or exceeded this minimal funding level for 2005, while 10 states fund at least half the level and the other states fund below half this level. Most states have actually had recent funding cuts for tobacco control, likely contributing in part to the recent decline in smoking cessation.

Links to Additional Information on Quitting Smoking

- Campaign for Tobacco-Free Kids. State Tobacco Settlement: Special Reports. Washington, D.C. National Center for Tobacco-Free Kids
  http://www.tobaccofreekids.org/reports/settlements/
- Healthy People 2010, Volume 2, Chapter 27 - Tobacco Use
  http://www.health.gov/healthypeople/Document/html/volume2/27tobacco.htm
- National Network of Tobacco Cessation Quitlines
  http://www.smokefree.gov
- North American Quitline Consortium resource guide - Quitline Operations: A Practical Guide to Promising Approaches
  http://naquitline.org/index.asp?dbid=3&dbsection=operations
- Population-Based Smoking Cessation: Smoking and Tobacco Control Monograph
  #12 (NCI)
  http://cancercontrol.cancer.gov/tcrb/monographs/12/index.html
- Reducing Tobacco Use: A Report of the Surgeon General (Tobacco Information and Prevention Source, CDC)
  http://www.cdc.gov/tobacco/sgr/sgr_2000/index.htm
- Tobacco Cessation Guideline (The Surgeon General)
  http://surgeongeneral.gov/tobacco/
- U.S. Department of Commerce, Census Bureau (1995-2001). National Cancer Institute-Sponsored Tobacco Use Supplement to the Current Population Survey (1992-1999)
  http://riskfactor.cancer.gov/studies/tus-cps/
  - Data files (and/or) technical documentation
    http://riskfactor.cancer.gov/studies/tus-cps/info.html
    http://www.census.gov/apsd/techdoc/cps/cps-main.html
- U.S. Department of Commerce, Census Bureau (2004). National Cancer Institute and Centers for Disease Control and Prevention Co-sponsored Tobacco Use Supplement to the Current Population Survey (2001-2002)
  http://riskfactor.cancer.gov/studies/tus-cps/
  - Data files (and/or) technical documentation
    http://www.census.gov/apsd/techdoc/cps/cpsJun01Nov01Feb02.pdf

➤ Doctors' and Dentists' Advice to Quit Smoking

> **Both medical doctors' and dentists' advice to current smokers to quit smoking is rising; however, dentists provide such advice about half as often as do doctors.**

The Effects of Clinical Advice on Quitting Smoking

Clinicians' advice to quit smoking can by itself produce cessation proportions of 5 to 10 percent and much more, if coupled with behavioral therapy and pharmacological treatment of nicotine addiction. In addition, minimal clinical interventions have been shown to be cost effective in increasing smokers' motivation to quit.

If a patient wants to quit, the national guidelines suggest that the clinician should follow the "5 A's" (Ask, Advise, Assess, Assist, and Arrange). For unmotivated patients, the clinician should instead provide a motivational intervention. The Public Health Service-sponsored "Clinical Practice Guideline: Treating Tobacco Use and Dependence" expert panel's analysis suggests that a wide variety of clinicians, which would include dentists as well as physicians, can successfully implement brief strategies effectively.

Measures

Among adult smokers (ages 18 and older) who have seen a medical doctor/dentist in the past 12 months, the percent of adult smokers who report that a medical doctor/dentist advised them to quit smoking.

Period 1992-1993, 1995-1996, 1998-1999 and 2001-2002

Trends

Doctors: The percent of smokers advised to quit shows a rise between 1993 and 1999 and then rises slightly most recently between 1999 and 2002. This is true for both male and female smokers.

Dentists: The percent of smokers advised to quit, while lower than the percent advised by a medical doctor, shows a rise over the entire period of 1992 to 2002. This also is true for both male and female smokers.

Between 1992-1993 and 1995-1996, there was a clear decline in attempts to quit smoking, as well as in successful longer-term quitting. From 1995-1996 to 1998-1999, both quit attempts and successes increased. During the most recent period, 1998-99 to 2001-2002, both quit attempts and successful quitting fell at a slower rate than they did in the first half of the 1990s.

Most Recent Estimates

In 2001-2002, 62 percent of smokers (60 percent of males, 63 percent of females) reported being advised by a physician to quit smoking during the past year. In contrast to physicians, the corresponding figure reporting dentists' advice is only 32 percent (33 percent of males, 30 percent of females).

Healthy People 2010 Target

Increase the percent of physicians and dentists who counsel their at-risk patients about tobacco use cessation to 85 percent.

Groups at High Risk for Not Quitting

The percent of smokers advised by a medical doctor to quit increases with the age of the smoker. By contrast, there doesn't appear to be much change in terms of smoker's age with regard to reports of dentists' advice to quit, except for the oldest age group (65+), which appears to receive that advice less frequently than do younger age groups.

White non-Hispanics report the highest percent of physician advice, followed by Black non-Hispanics, and then by Hispanics. There doesn't seem to be a corresponding relationship by race/ethnicity with regard to smokers' reports of dentists' advice to quit smoking.

Key Issues

Studies show that most smokers want to quit. The success of clinicians' advice to quit and subsequent counseling increases with the intensity of the program and may be improved by increasing the frequency and duration of contact.

In addition to physicians' and dentists' advice, efforts to reduce smoking are most effective when multiple techniques are used, including educational, regulatory, and economic interventions with media campaigns and other social strategies.

While the increase in both medical doctors' and dentists' advice to quit smoking is encouraging, it is clear that more progress can be made, especially for dentists. Given their access to more than 70 percent of smokers each year, clinicians can play a major role in smoking cessation by advising all of their smoking patients to quit.

Progress needs to be made in removing barriers to clinicians in providing advice and further treatment, as well as barriers to patients in seeking treatment. An important barrier to both groups is lack of medical insurance coverage that includes counseling and pharmacologic treatment for smoking cessation.

Links to Additional Information on Doctors' and Dentists' Advice to Quit Smoking

- Curry SJ, Byers T, Hewitt M. eds. Fulfilling the Potential of Cancer Prevention and Early Detection. Washington DC: The National Academies Press 2003.
- Fiore MC, Bailey WC, Cohen SJ, et al. Treating Tobacco Use and Dependence. Clinical Practice Guideline. Rockville, MD: U.S. Department of Health and Human Services. Public Health Service. June 2000.
  http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=hstat2.chapter.7644
- Healthy People 2010, Volume 1, Chapter 3 - Cancer
  http://www.health.gov/healthypeople/Document/HTML/Volume1/03Cancer.htm
- Population-Based Smoking Cessation: Smoking and Tobacco Control Monograph #12 (NCI)
  http://cancercontrol.cancer.gov/tcrb/monographs/12/index.html
- Reducing Tobacco Use: A Report of the Surgeon General (Tobacco Information and Prevention Source, CDC
  http://www.cdc.gov/tobacco/sgr/sgr_2000/index.htm
- Tobacco Cessation Guideline (The Surgeon General); Treating Tobacco Use and Dependence
  http://surgeongeneral.gov/tobacco/
- U.S. Department of Commerce, Census Bureau (1995-2001). National Cancer Institute Sponsored Tobacco Use Supplement to the Current Population Survey (1992-1999)
  http://riskfactor.cancer.gov/studies/tus-cps/
  - Data files and/or technical documentation
    http://riskfactor.cancer.gov/studies/tus-cps/info.html
    http://www.census.gov/apsd/techdoc/cps/cps-main.html
- U.S. Department of Commerce, Census Bureau (2004). National Cancer Institute and Centers for Disease Control and Prevention Co-sponsored Tobacco Use Supplement to the Current Population Survey (2001-2002)
  http://riskfactor.cancer.gov/studies/tus-cps/
  - Data files and/or technical documentation
    http://www.census.gov/apsd/techdoc/cps/cpsJun01Nov01Feb02.pdf

◪ Alcohol Consumption

Per capita alcohol consumption has stabilized since 1995.

Alcohol and Cancer

Drinking alcohol increases the risk of cancers of the mouth, esophagus, pharynx, larynx, and liver in men and women, and of breast cancer in women. In general, these risks increase after about one daily drink for women and two daily drinks for men. (A drink is defined as 12 ounces of regular beer, 5 ounces of wine, or 1.5 ounces of 80-proof liquor.) Two drinks daily increase the risk of getting breast cancer by about 25 percent.

The chances of getting liver cancer increase markedly with five or more drinks per day. Heavy alcohol use may also increase the risk of colorectal cancer, and leads to greater increases in risk for most of the alcohol-related cancers. The earlier that long-term, heavy alcohol use begins, the greater the cancer risk. Also, using alcohol with tobacco is riskier than using either one alone, because it further increases the chances of getting cancers of the mouth, throat, and esophagus.

Measure

Per capita alcohol consumption: The estimated number of gallons of pure alcohol drunk per person (ages 14 and older), per year. This measure accounts for the varying alcohol content of wine, beer, and liquor. People as young as 14 are included because a large number of adolescents begin drinking at an early age.

Period 1990-2002

Trends - Falling from 1990 to 1995, then stable from 1995 to 2002.

Most Recent Estimate

In 2002, per capita alcohol consumption was 2.20 gallons for all beverages, including beer, wine, and liquor.

Healthy People 2010 Target

Reduce annual per capita alcohol consumption to 2 gallons.

Groups at High Risk for Using Alcohol

The Dietary Guidelines for Americans state that alcoholic beverages should not be consumed by some individuals, including those who cannot restrict their alcohol intake, women of childbearing age who may become pregnant, pregnant and lactating women, children and adolescents, individuals taking medications that can interact with alcohol, and those with certain medical conditions.

Many people start drinking as early as middle school (13- to 14-year-olds). Among 12- to 17-year-olds, Whites and Hispanics are more likely than Blacks to use alcohol. Among alcohol drinkers, those ages 18 to 25 consume greater quantities than any other group.

Key Issues

Some studies suggest that alcohol consumption is associated with lower risk of some non-cancer health conditions. However, it is not recommended that anyone begin drinking or drink more frequently on the basis of health considerations.

Links to Additional Information on Alcohol Consumption

- Alcohol Alert (NIAAA)
  http://pubs.niaaa.nih.gov/publications/aa39.htm
- Alcohol and Youth (NIAAA)
  http://pubs.niaaa.nih.gov/publications/arh22-2/toc22-2.htm
- Alcohol Increases Hormone Levels, Raising Breast Cancer Risk (ACS)
  http://www.cancer.org/docroot/nws/content/update/
  nws_1_1xu_alcohol_increases_hormone_levels__raising_breast_cancer_risk.asp
- Apparent per capita ethanol consumption for the United States, 1850-2003 (NIAAA)
  http://www.niaaa.nih.gov/Resources/DatabaseResources/QuickFacts/ AlcoholSales/consum01.htm
- Food, Nutrition and the Prevention of Cancer: A Global Perspective, (AICR)
  http://www.aicr.org/research/report.lasso
- Healthy People 2010, Volume 2, Chapter 28 - Substance Abuse
  http://www.health.gov/healthypeople/Document/html/volume2/26Substance.htm
- What is Moderate Drinking? Defining "Drinks" and Drinking Levels (NIAA)
  http://pubs.niaaa.nih.gov/publications/arh23-1/05-14.pdf

❯ Fruit and Vegetable Consumption

Americans are eating only slightly more vegetables and slightly less fruit than in the 1990s.

Limited Fruit and Vegetable Consumption is a Cancer Risk

People whose diets are rich in fruits and vegetables have a lower risk of getting cancers of the colon, mouth, pharynx, esophagus, stomach, and lung, and possibly prostate cancer. They are also less likely to get diabetes, heart disease, and hypertension. A diet high in fruits and vegetables helps to reduce calorie intake and may help to control weight.

To help prevent these cancers and other chronic diseases, experts recommend 4 to 13 servings of fruits and vegetables daily, depending on energy needs. This includes 2 to 5 servings of fruits and 2 to 8 servings of vegetables, with special emphasis on dark-green and orange vegetables and legumes. There is no evidence that the popular white potato protects against cancer.

Measure

Average daily servings of fruits and vegetables for people ages 2 and older. This measure includes fruits and vegetables from all sources.

Period 1989-1991, 1994-1996, 1999-2000, and 2001-2002

Trends

Fruits: Rising slightly.

Vegetables: Rising slightly from 1989 to 1996, then appears to be falling slightly (not significant).

Total average daily servings of fruits and vegetables fluctuated only slightly, just under 5 servings, from 1989-1991 to 2001-2002. Over the same period, fruit servings rose from 1.3 to 1.6, while vegetable servings rose from 3.2 to 3.4, then dropped back to 3.2.

Most Recent Estimates

In 2001-2002, people ages 2 and older had, on average, 1.6 servings of fruits and 3.2 servings of vegetables, for a total of 4.8 servings of fruits and vegetables. Total vegetable servings included:

- Dark-green/orange: 0.3 servings
- Starchy: 1.3 servings (largely comprising fried potatoes)
- Tomatoes and other vegetables: 1.5 servings

Among racial and ethnic groups, Blacks had 4.5 total servings of fruits and vegetables, while Whites had 4.8 and Mexican-Americans had 5.0.

Healthy People 2010 Targets

At least two daily servings of fruits.

At least three daily servings of vegetables, with at least one-third being dark-green/orange.

(The Healthy People 2010 targets call for 75 percent of the population to consume the minimum servings of fruits and 50 percent to consume the minimum servings of vegetables. However, the minimum number of servings in these targets predates the 2005 Dietary Guidelines for Americans, which recommend higher intakes.)

Groups at High Risk for Not Eating Enough Fruits and Vegetables

Fruit consumption is highest among the youngest and oldest segments of the population. Total fruit and vegetable consumption tends to increase with age, education and income. Among racial and ethnic groups, Blacks have the lowest intake and Mexican Americans have the highest.

Key Issues

New dietary guidance released in 2005 recommended increased intake of fruits and vegetables based on evolving evidence of the benefit of eating a diet rich in fruits and vegetables. The average combined recommendation for fruits and vegetables of 10 servings (5 cups) is twice the level targeted by Healthy People and about twice the current average intake. Additional servings of fruits and vegetables should replace sources of "empty calories" in the diet, such as added sugars (honey, syrup, soft drinks) and solid fats (butter, sour cream), to avoid taking in too many calories. Individuals should be especially encouraged to consume dark green/orange varieties of vegetables such as broccoli or carrots, and legumes or dried beans, such as pinto beans or lentils.

Links to Additional Information on Fruit and Vegetable Consumption

- Choose a Variety of Fruits and Vegetables Daily: Understanding the Complexities
  http://www.nutrition.org/cgi/content/full/131/2/487S?maxtoshow=&HITS=10&hits=

▶ Fat Consumption

Americans are getting a smaller portion of their calories from fat.

Fat Consumption and Cancer

Some studies have linked high-fat diets or high intakes of different types of fat in the diet to several cancers, including cancers of the colon, prostate, lung, and endometrium, as well as heart disease and other chronic diseases. Saturated and trans fatty acids are thought to be the most harmful kinds.

More research is needed to better understand which types of fat and what amounts alter cancer risk. Although monounsaturated and polyunsaturated fatty acids have been studied for a number of years, their effects are still unclear. More recent research on the effects of trans fatty acids also has yet to reach definitive conclusions.

The 2005 Dietary Guidelines for Americans recommend getting less than 10 percent of calories from saturated fatty acids and keeping trans fatty acid consumption as low as possible for general health and the prevention of chronic disease, including cancer and heart disease. The Guidelines also recommend keeping total fat intake between 20 and 35 percent of calories, with most fats coming from sources of polyunsaturated and monounsaturated fatty acids, such as fish, nuts, and vegetable oils.

Measure

Intakes of total fat, and of the major fatty acids—saturated, monounsaturated, and polyunsaturated–all as a percentage of total calories

Period 1989-1991, 1994-1996, 1999-2000, and 2001-2002

Trends - Relatively stable overall

Total fat: Falling slightly, then stable
Saturated fat: Falling slightly, then stable
Monounsaturated fat: Rising slightly (but not statistically significantly), then minimally falling
Polyunsaturated fat: Stable

Most Recent Estimates

Data collected in 2001-2002 show that total fat made up one-third (33 percent) of the calories people consumed, a level within the recommendations. In the same period, saturated fatty acids accounted for 11 percent of calories; monounsaturated, 12 percent; and polyunsaturated, 7 percent.

Healthy People 2010 Target

No more than 30 percent of daily calories from fat.

(The Healthy People 2010 target calls for 75 percent of the population to reach this level. However, this recommended level pre-dates the 2005 Dietary Guidelines for Americans.)

Groups at High Risk for Eating Too Much Fat

Whites, Blacks, and Mexican Americans all have average total fat intakes between 20 and 35 percent of calories, though their saturated fat intakes are slightly above current dietary recommendations. Polyunsaturated fat intakes tend to increase as education levels increase.

Key Issues

Researchers are studying how fat and fatty acids alter cancer risk. Precise and reliable measures of the amount and type of fat are needed—such as improved self-report measures and biological indicators of fat intake that might be determined from a blood test.

Trans fatty acids account for only about 2 to 3 percent of energy intake, but most of these come from industrial sources that are not clearly labeled. Major food sources of trans fatty acids are cakes, cookies, crackers, etc; animal products; margarine; fried potatoes; chips; and shortenings. Some manufacturers have recently discontinued the use of trans fatty acids.

Links to Additional Information on Fat Consumption

- Choose a Diet That Is Low in Saturated Fat and Cholesterol and Moderate in Total Fat: Subtle Changes to a Familiar Message
  http://www.nutrition.org/cgi/content/full/131/2/510S?maxtoshow=&HITS=10&hits=
- Dietary Guidelines for Americans 2005
  http://www.healthierus.gov/dietaryguidelines/
- Healthy People 2010, Volume 2, Chapter 19 - Nutrition and Overweight
  http://www.health.gov/healthypeople/Document/html/volume2/19Nutrition.htm
- World Health Organization Report (2003) - Diet, Nutrition and the Prevention of Chronic Diseases
  http://www.who.int/hpr/NPH/docs/who_fao_expert_report.pdf

Page last reviewed: December 21, 2005

Only about two-thirds of adults get any physical activity in their leisure time.

Physical Activity and Cancer

Physical activity at work or during leisure time is linked to a 50 percent lower risk of getting colon cancer. Both vigorous and moderate levels of physical activity appear to reduce this risk. Physical activity also is connected with a lower risk of breast cancer and possibly prostate and endometrial cancers. Studies continue to look at whether physical activity has a role in reducing the chances of getting other cancers.

Physical activity improves quality of life among cancer patients and survivors. Studies are beginning to explore the potential for physical activity to improve cancer survival. Studies have not yet determined if any specific types of physical activity, such as aerobic, strength, or flexibility training have different effects on cancer outcomes.

Several national groups have recommended that people engage in regular physical activity. Recommendations within the 1997 Surgeon General's Report on Physical Activity and Health and the CDC/American College of Sports Medicine suggested engaging in at least 30 minutes per day of moderate physical activity for most days of the week. In 2002, the IOM Panel on Dietary Reference Intakes for Macronutrients recommended that adults and children should obtain at least 60 minutes of moderately intense physical activity every day. The higher time recommendation was noted to be important for weight maintenance, beyond the health effects achieved with 30 minutes of activity per day. The recent 2005 U.S. Dietary Guidelines agreed with the IOM report, recommending at least 30 minutes of moderate activity daily to improve health, up to 60 minutes per day to prevent adult weight gain, and as much as 90 minutes per day to prevent regain of weight that has been lost.

Measure

Percent of adults ages 18 and older who had no leisure-time physical activity during the past month.

Period 1997-2003

Trends - Falling slightly

This means that only slightly more adults have any physical activity in their leisure time.

Most Recent Estimates

The 2003 National Health Interview Survey (NHIS), an in-person household survey, indicates that 37 percent of adults 18 and older reported no physical activity in their leisure time.

Results from the 2003 Behavioral Risk Factor Surveillance System (BRFSS), a telephone survey that used different questions to assess physical activity, show that 24 percent of adults ages 18 and older reported no physical activity in their leisure time.

Healthy People 2010 Target

Reduce to 20 percent the percent of adults who engage in no leisure-time physical activity.

Groups at High Risk for Being Inactive in Their Leisure Time

Women are more likely than men, and Blacks and Hispanics are more likely than Whites, to report no leisure-time physical activity. Lack of physical activity also is more common among those with less education.

For youth, physical activity is lower among females, especially Blacks. Also, physical activity decreases as children get older.

Key Issues

Since the mid 1980s, fewer high school students have taken part in physical education classes.

Removing barriers (such as lack of physical education classes) and setting up supports (such as bicycle and walking paths) can help to promote physically active lifestyles.

Physical activity appears to be effective in reducing the amount of weight gained during and after treatment of breast cancer.

Links to Additional Information on Physical Activity

- CDC, Behavioral Risk Factor Surveillance System (BRFSS)
  http://www.cdc.gov/brfss
- Healthy People 2010, Volume 2, Chapter 22 - Physical Activity and Fitness
  http://www.health.gov/healthypeople/Document/HTML/Volume2/22Physical.htm
- Morbidity and Mortality Weekly Report (MMWR)
  http://www.cdc.gov/mmwr/
- National Health Interview Survey (NHIS) (NCHS)
  http://www.cdc.gov/nchs/nhis.htm
- Physical Activity Trends - United States, 1990-1998 (MMWR)
  http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5009a3.htm
- State Cancer Profiles, Latest Rates, Percents, and Counts
  http://statecancerprofiles.cancer.gov/micromaps/

More adults are becoming overweight and obese.

Overweight, Obesity, and Cancer

Compelling evidence exists that prevention of obesity reduces the risk for many of the most common cancers, such as colon, postmenopausal breast, uterine, esophageal, and renal cell cancers. It is estimated that 20 to 30 percent of these cancers-some of the most common cancers in the United States-may be related to overweight and/or physical inactivity.

Recent studies indicate that obesity and being overweight may increase the risk of death from many cancers, accounting for up to 14 percent of cancer deaths in men and 20 percent of cancer deaths in women.

Measure

Percent of adults (ages 20-74) who are at a healthy weight, overweight, or obese

These weight groups are defined by a measurement called body mass index (BMI). BMI is found by dividing weight (in kilograms) by height (in meters) squared.

Period 1971-1974, 1976-1980, 1988-1994, 1999-2000, and 2001-2002

Trends

Healthy weight: Stable, then falling slightly, then falling
Overweight: Stable, then rising slightly, then rising, then rising slightly
Obesity: Rising slightly, then rising, then stable

Most Recent Estimates

Among adults in 2001-2002:

- 33 percent were at a healthy weight
- 65 percent were overweight
- 30 percent were obese

Healthy People 2010 Target

Increase to 60 percent the proportion of adults who are at a healthy weight.

There is no Healthy People 2010 target for overweight.

Decrease to 15 percent the proportion of obese adults.

Groups at High Risk for Being Overweight or Obese

Overweight and obesity are most common among Black and Mexican- American women. The same patterns are seen for children and teens in these groups.

Overweight children are more likely to become overweight adults and to suffer from associated illnesses, as well as premature death. As with adults, the trend toward excess weight among children has greatly increased in recent years.

Key Issues

Daily physical activity, balanced with appropriate calorie intake, is one of the most effective ways to avoid weight gain. Lack of activity is believed to be one of the major reasons for the increase in overweight among U.S. youth and adults.

Increased TV watching and similar sedentary activity is linked with excess weight.

See Physical Activity for trends in physical activity.

Links to Additional Information on Weight

- Body Mass Index Table (National Heart, Lung, and Blood Institute)
  http://www.nhlbi.nih.gov/guidelines/obesity/bmi_tbl.htm
- Healthy People 2010, Volume 2, Chapter 19 - Nutrition and Overweight
  http://www.health.gov/healthypeople/Document/html/volume2/19Nutrition.htm
- National Health and Nutrition Examination Survey (NHANES) (NCHS)
  http://www.cdc.gov/nchs/nhanes.htm
- Physical Activity and Health: A Report of the Surgeon General - Chapter 4: The Effects of Physical Activity on Health and Disease (CDC)
  http://www.cdc.gov/nccdphp/sgr/chap4.htm
- Relationship of Physical Activity and Television Watching With Body Weight and Level of Fatness Among Children: Results From the Third National Health and Nutrition Examination Survey
  http://jama.ama-assn.org/cgi/content/abstract/279/12/938
- Robinson, TN. Television viewing and childhood obesity. Pediatric Clinics of North America 48 (4), 1017-1025, 2001.
- State Cancer Profiles, Latest Rates, Percents, and Counts
  http://statecancerprofiles.cancer.gov/micromaps/

▣ Sun Protection

Only 61 percent of adults say they are likely to protect themselves from the sun.

Sun Protection and Cancer

Skin cancers are most common in light-skinned people, although they also occur in people with darker skin. Studies suggest that reducing long-term exposure to the sun, and to artificial light from tanning beds, booths, and sun lamps, can lower the risk of non-melanoma skin cancer. Avoiding burns and other damage from these sources-especially in children and teens-may reduce the chances of getting melanoma skin cancer. The rate of new cases of melanoma increased from 1975 to 2002, although the rate of increase has slowed since 1981.

Measure

Percent of adults ages 18 and older who reported they were "very likely" to practice at least one of three sun protection behaviors -use sunscreen, wear protective clothing, or seek shade-if they were outside on a sunny day for more than 1 hour.

Period 1992, 1998, 2000, and 2003

Trends - Falling from 1992-1998, rising between 1998 and 2000, and most recently stable or rising slightly between 2000 and 2003

Protective clothing: The percent of people very likely to use at least one sun protection method is rising after falling earlier in the 1990s, as is the percent of people very likely to wear protective clothing.

Shade: The percent of people very likely to seek shade fell between 1992 and 1998, then rose between 1998 and 2000, and again fell during the most recent period of 2000 to 2003.

Sunscreen: The percent of people very likely to use sunscreen rose slightly after 1992, was stable from 1998 to 2000, and is showing a greater rise between 2000 and 2003. Note: The rise between 2000 and 2003 for those using sunscreen with a Sun Protection Factor (SPF) of 15 or more was even greater. In 2000, we began to track this level of detail, which is more in line with the intent of the Health People 2010 goal.

Most Recent Estimates

In 2003, 61 percent of adults said they were very likely to practice at least one of three sun protection behaviors:

- 33 percent were very likely to use sunscreen, and 30 percent were very likely to use sunscreen with a sun protection factor (SPF) of 15 or greater
- 33 percent were very likely to wear protective clothing
- 31 percent were very likely to seek shade

Healthy People 2010 Target

Increase to 75 percent the proportion of adults who are very likely to use sunscreen with an SPF of 15 or higher, wear protective clothing, or seek shade.

Groups at High Risk for Getting Too Much Sun

Younger adults and men are less likely to use some form of sun protection. Adults with lower incomes and less education are less likely to use sunscreen.

Youths (ages 11 to 18) also are less likely to protect themselves from the sun. A 1998 survey found that on sunny days, few young people routinely practiced these behaviors: wearing long pants (21 percent), staying in the shade (22 percent), and using sunscreen (31 percent).

Key Issues

In general, increased exposure to the sun-especially without adequate use of sunscreen and protective clothing-increases the chances of getting skin cancer.

Some research suggests that people apply less than an adequate amount of sunscreen and fail to reapply it appropriately. This coupled with research which shows that those who use sunscreen tend to increase time spent in the sun is likely to result in more skin damage rather than sun protection.

Also, in most states indoor tanning facilities are unregulated with no lower age restriction for usage.

Links to Additional Information on Sun Protection

- Healthy People 2010, Volume 1, Chapter 3 - Cancer
  http://www.health.gov/healthypeople/Document/HTML/Volume1/03Cancer.htm
- Intersun: The Global UV Project (World Health Organization)
  http://www.who.int/uv/publications/en/Intersunguide.pdf
  http://www.who.int/docstore/peh-uv/pub/who-ehg-95-16.htm
- National Health Interview Survey (NHIS) (NCHS)
  http://www.cdc.gov/nchs/nhis.htm
- Preventing Skin Cancer: Findings of the Task Force on Community Preventive Services on Reducing Exposure to Ultraviolet Light
  http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5215a1.htm
- SEER Cancer Statistics Review, 1975-2002 (NCI)
  http://seer.cancer.gov/csr/1975_2002/

▶ Secondhand Smoke

Much progress has been made in reducing secondhand smoke exposure over the last decade. More than a 50 percent reduction has occurred among non-smokers.

Secondhand Smoke and Cancer

Secondhand smoke—also known as environmental tobacco smoke-comes from a burning cigarette, pipe, or cigar, and is also emitted when a smoker exhales. Tobacco smoke is known to contain at least 60 carcinogens. People who are exposed to secondhand smoke inhale these chemicals, just as smokers do, although at lower levels.

In 1993, the U.S. Environmental Protection Agency (EPA) reported that secondhand smoke is a "known human carcinogen." The EPA also reported that secondhand smoke causes some 3,000 lung cancer deaths each year among U.S. nonsmokers. Secondhand smoke also is responsible for contributing to various other cancers, other respiratory illnesses (especially in children), and heart disease.

Progress has been made in decreasing secondhand tobacco smoke exposure among nonsmokers. This has been likely due in part to voluntary efforts at most work sites and from local clean indoor air laws resulting in smoke-free work sites in the 1990s. Only more recently has there been an overall increase in state clean indoor air laws for many types of work sites that would further reduce secondhand smoke.

Measure

Presented here are three measures of progress in this area:

1. The percent of nonsmokers exposed to secondhand tobacco smoke. (The percent of nonsmokers ages four and older with a serum cotinine level between 0.05 and less than 11 ng/ml.)
2. The percent of indoor workers reporting a smoke-free work environment.
3. States (and the District of Columbia) with laws on smoke-free air in State government worksites, private work sites, restaurants, and day care centers.

Period 1990-2002, 2004

Trends

Percent of nonsmokers exposed to environmental tobacco smoke—Exposure has been declining during the entire period 1988-2002 (1988-1994, 1999-2000, and 2001-2002).

Percent of indoor workers reporting a smokefree work policy—Workers reported a steep rise in smoke-free policies at their place of work from 1992-93 to the mid 1990s. The increase continued, but less steeply, between 1995-96 and 1999. The most recent period, 1998-1999 to 2001-2002, shows a slight rise.

States with smoke-free indoor air laws—The number of states with clean indoor air laws for day care centers is rising, but is still below the goal of 100 percent. Sites other than day care centers have been uniformly slow to enact clean indoor air laws over most of the 1990s, but have shown increases during the most recent period of 2000-2004.

Most Recent Estimates

In 2001-2002, serum cotinine levels indicate that 41 percent of nonsmokers are exposed to secondhand tobacco smoke. This represents the lowest value in over a decade, resulting in a decrease of 53 percent since 1988-1994 and reaching the Healthy People 2010 target goal for the overall population. Among females, the corresponding value for the percent of nonsmokers exposed to secondhand smoke is 38 percent; among males it is 45 percent.

Results of a survey show that in 2001-2002, 71 percent of the workforce (ages 18 and older) reported that there was a smoke-free policy at their workplace. For males, the corresponding number is 66 percent; among females, the number is significantly higher at 75 percent. Also during that time, 67 percent of people ages 18 and older reported that smoking is not allowed in their home. These figures represent significant increases since 1992-1993.

As of 2004, the number of States with smoke-free indoor air laws, as measured at four types of sites, were as follows:

1. State government worksites: 15
2. Private worksites: 11
3. Restaurants: 11
4. Day care centers: 33

Healthy People 2010 Targets

Decrease to 45 percent nonsmokers' secondhand tobacco smoke exposure.

Increase to 100 percent the proportion of work sites with formal smoking policies that prohibit smoking or limit it to separately ventilated areas.

Increase to 51 the number of jurisdictions (States and the District of Columbia) with smoke-free indoor air laws for public places and work sites.

Groups at High Risk for Exposure to Secondhand Smoke

In 2001-2002, serum cotinine levels in children ages 4 to 7 years old (57 percent) are more than double those of adults ages 65 years of age and older (28 percent) and exposure to secondhand smoke among those 4 to 7 years of age is 58 percent higher than exposure among adults 25 years of age and older (36 percent). People with lower income and education levels are more likely to be exposed to smoking in their workplaces and homes. Men and younger adults are more likely to work at sites that allow smoking.

Key Issues

Although secondhand smoke remains a major public health concern, especially for population subgroups and many states, nonsmoker exposure to tobacco smoke declined more than 50 percent from 1988-1994 to 2001-2002.

Non-Hispanic Blacks ages 4 and older have higher exposures (68 percent) than non-Hispanic Whites (37 percent).

In 2001-2002, more than 7 out of 10 U.S. workers report a smoke-free policy in their workplace. There is still more work to be done to reach the 100 percent goal. States' compliance with respect to a smoke-free policy for work sites ranges from 51 percent for Nevada to 85 percent for Utah in 2001-02.

State laws that protect against secondhand smoke gradually became more common in the 1990s. It appears that additional improvement has come from voluntary or local efforts during this period. Since 2000, the state clean indoor air laws have contributed further to progress in this area.

Smoke-free initiatives, such as clean indoor air laws, reduce exposure of nonsmokers to secondhand tobacco smoke, thereby helping to change social norms about smoking.

Contrary to general concerns highlighted by the tobacco industry, smoke-free legislation, when implemented, has not had deleterious effects on restaurants, bars, and other venues of the hospitality industry.

Links to Additional Information on Secondhand Smoke

- Cancer Facts: Environmental Tobacco Smoke (February 22, 2005) (NCI)
  http://cis.nci.nih.gov/fact/10_18.htm
- Centers for Disease Control and Prevention, National Center for Health Statistics. National Health and Nutrition Examination Survey, 1988-1994, 1999-2000, and 2001-2002
  http://www.cdc.gov/nchs/nhanes.htm
- Environmental Protection Agency (EPA)
  http://www.epa.gov/
- Healthy People 2010, Volume 2, Chapter 27 - Tobacco Use
  http://www.health.gov/healthypeople/Document/html/volume2/27tobacco.htm
- Respiratory Health Effects of Passive Smoking, January 1993 (EPA Fact Sheet)
  http://cfpub1.epa.gov/ncea/cfm/recordisplay.cfm?deid=2835
- State Cancer Legislative Database Program (NCI)
  http://www.scld-nci.net/
- Third National Report on Human Exposure to Environmental Chemicals: Tobacco Smoke (National Center for Environmental Health, CDC), July 21, 2005
  http://www.cdc.gov/exposurereport/3rd/
- National Toxicology Program of National Institute of Environmental Health Science/NIH/HHS
  http://ntp.niehs.nih.gov/index.cfm?objectid=72016262-BDB7-CEBA-FA60E922B18C2540
- U.S. Department of Commerce, Census Bureau (1995-2001). National Cancer Institute-Sponsored Tobacco Use Supplement to the Current Population Survey (1992-1999)
  http://riskfactor.cancer.gov/studies/tus-cps/
  - Data files (and/or) technical documentation
    http://riskfactor.cancer.gov/studies/tus-cps/info.html
    http://www.census.gov/apsd/techdoc/cps/cps-main.html
- U.S. Department of Commerce, Census Bureau (2004). National Cancer Institute and Centers for Disease Control and Prevention Co-sponsored Tobacco Use Supplement to the Current Population Survey (2001-2002)
  http://riskfactor.cancer.gov/studies/tus-cps/
  - Data files (and/or) technical documentation
    http://www.census.gov/apsd/techdoc/cps/cpsJun01Nov01Feb02.pdf

▶ Pesticides

General studies of people with high exposures to pesticides have found high rates of certain types of cancers.

Pesticides and Cancer

Pesticides are chemicals used to eliminate or control unwanted or harmful insects, plants, fungi, animals, or microorganisms in order to protect food crops and other plants. Some pesticides have been classified as carcinogens. Chlordane and dichlorodiphenyltrichloroethane (DDT) are possible human carcinogens. General studies of people with high exposures to pesticides, such as farmers, pesticide applicators, manufacturers, and crop dusters, have found high rates of blood and lymphatic system cancers, cancers of the lip, stomach, lung, brain, and prostate, as well as melanoma and other skin cancers.

Measure

Possible carcinogens, pesticides chlordane and DDT and their metabolites, measured in human blood.

Period 1999-2002

Trends

Concentrations of DDT (and its metabolites) and chlordane (and its metabolite, oxychlordane) have risen, and chlordanes (trans-nonachlor and heptachlor epoxide) have declined from 1999-2002. Pesticide levels in human metabolites were measured in a random sample of participants from the National Health and Nutrition Examination Survey (NHANES).

Table P1. Blood (lipid-adjusted) concentrations of DDT and chlordane, nanogram/gram (ng/g), 1999-2002.

	1999-2000 (ng/g)	2001-2002 (ng/g)
Chlordane metabolites		
oxychlordane	44.9	49.7
Trans-nonachlor	79.4	78.2
Heptachlor epoxide	23.9	21.6
DDT		
DDE	1780.0	2320.0

Source: National Report on Human Exposure to Environmental Chemicals, Centers for Disease Control and Prevention, 2005

Most Recent Estimates

Blood concentrations (nanograms per gram, ng/g):

- Chlordane
    - oxychlordane 49.7 ng/g
    - trans-nonachlor 78.2 ng/g
    - heptachlor epoxide 21.6 ng/g
- DDT(DDE) 2320 ng/g

Healthy People 2010 Targets

Reduce exposure of the population to pesticides, heavy metals, and other toxic chemicals, as measured by blood and urine concentrations of the substances or their metabolites.

- Reduce chlordane (oxychlordane) from 44.9 ng/g to 31.4 ng/g.
- Reduce chlordane (trans-nonachlor) from 79.4 ng/g to 55.6 ng/g.
- Reduce chlordane (heptachlor epoxide) from 23.9 ng/g to 16.7 ng/g.
- Reduce DDT (DDE) from 1780 ng/g to 1250 ng/g.

Groups at Risk for Pesticide Exposure

Farmers, pesticide applicators, crop dusters, pesticide manufacturers, and home gardeners could be at high risk of exposure to pesticides. The general population may be exposed to low doses of pesticides from fruits and vegetables bought from the supermarket or from contaminated surface or ground water.

Key Issues

National goals have been set, but not yet reached, to reduce pesticide exposure. To help prevent pesticide exposure, people who apply pesticides should follow application directions and wear appropriate personal protective equipment (gloves, masks, etc.). For the general public, washing fruits and vegetables with water also helps to reduce pesticide exposure.

Links to Additional Information on Pesticides

- Cancer and the Environment
  http://www.niehs.nih.gov/oc/factsheets/cancer-environment.pdf
- Eleventh Report on Carcinogens, Revised 2005 (EHIS)
  http://ehis.niehs.nih.gov/roc/
- EPA's Annual Pesticide Report 2000-2001
  http://www.epa.gov/oppbead1/pestsales/01pestsales/historical_data2001_3.html
- Healthy People 2010-Environment
  http://www.healthypeople.gov/Document/HTML/Volume1/08environmental.htm
- List of environmental exposures that cause cancer
  http://www-cie.iarc.fr/monoeval/crthall.html
- NCI's Cancer Prevention Overview
  http://www.healthypeople.gov/Document/HTML/Volume1/08environmental.htm#_Toc490564699
- Sixth IARC Monographs Advisory Group on Priorities for future evaluation
  http://www-cie.iar.fr.htdocs/internrep/2003-prioritylist.html.
- Third National Report on Human Exposure to Environmental Chemicals
  http://www.cdc.gov/exposurereport/3rd/pdf/thirdreport.pdf

▶ Dioxins

> **Dioxin levels in the United States environment have been declining for the last 30 years due to reductions in man-made sources.**

Dioxins and Cancer

Dioxins are chemicals produced through paper and pulp bleaching; burning of municipal, toxic, and hospital wastes; certain electrical fires; and smelters. Dioxins can also be found in some insecticides, herbicides, wood preservatives, and cigarette smoke. There are at least 100 different kinds of dioxins, including Tetrachlorodibenzo-p-dioxin (TCDD). The most common routes of exposure for dioxins occur through the diet, particularly from animal fats.

Not all Dioxins can cause cancer. TCDD is a particular dioxin that is likely to cause cancer in humans. The general population is exposed to low levels of TCDD primarily from eating dairy products, fish, and meat.

Measure

Measurement of TCDD in human blood adjusting for lipids (Table P2) and toxic release inventory of dioxin releases in the environment (Figure 15)

Period 1999-2002 (TCDD) and 2000-2003 (dioxin releases)

Trends

Dioxin levels in the human body appear to be declining (Table P2). Dioxin levels in the United States environment have been declining for the last 30 years due to reductions in man-made sources. However, dioxins break down so slowly that past releases will remain in the environment for many years. Therefore, dioxin levels in the environment will never go to zero (Figure P15).

Table P2. Blood (lipid-adjusted) concentrations of Tetrachlorodibenzo-p-dioxin (TCDD) (picograms per gram), 1999-2002.

	1999-2000 (pg/g)	2001-2002 (pg/g)
TCDD	<LOD, 12.1[*]	<LOD, 5.8[*]

Source: National Report on Human Exposure to Environmental Chemicals, Centers for Disease Control and Prevention, 2005

* For certain chemicals like TCDD, each individual sample has its own limit of detection (LOD), which is the level at which a measurement has a 95% probability of being greater than zero. In 1999-2000 and 2001-2001, 12.1 pg/g and 5.8 pg/g, respectively, represent the maximum LOD among the samples analyzed. Because the geometric mean or average concentration of all the samples for TCDD is less than the maximum LOD, the estimate can be reported as <LOD.

Most Recent Estimates

TCDD – 5.80 pg/g
Dioxin releases – 8.59 g-TEQ

Healthy People 2010 Targets

Reduce air toxic emissions to decrease the risk of adverse health effects caused by airborne toxics. A specific numerical level for environmental concentration has not yet been set for dioxin.

Reduce exposure of the population to pesticides, heavy metals, and other toxic chemicals, as measured by blood and urine concentrations of the substances or their metabolites. A specific numerical level for metabolite concentration has not yet been set for dioxin.

Groups At Risk for Dioxin Exposure

Workers exposed to dioxin-contaminated air are at high risk of exposure. The general population is at risk of inhaling and ingesting dioxins.

Key Issues

A national goal has been set to reduce and measure dioxins in the environment and in the human body. People can help prevent exposure to dioxins by following existing Federal Dietary Guidelines, particularly by increasing consumption of fruits, vegetables, and grain products. Certain occupations are at high risk of dioxin exposure.

Links to Additional Information on Dioxins

- Cancer and the Environment
  http://www.niehs.nih.gov/oc/factsheets/cancer-environment.pdf
- Eleventh Report on Carcinogens, Revised 2005 (EHIS)
  http://ehis.niehs.nih.gov/roc/
- FDA's Q & A about Dioxins
  http://www.cfsan.fda.gov/~lrd/dioxinqa.html#g1
- Healthy People 2010-Environment
  http://www.healthypeople.gov/Document/HTML/Volume1/08environmental.htm
- Third National Report on Human Exposure to Environmental Chemicals
  http://www.cdc.gov/exposurereport/3rd/pdf/thirdreport.pdf

⊠ Early Detection

The use of screening tests to detect cancers early may allow patients to obtain more effective treatment with fewer side effects. Patients whose cancers are found early and treated in a timely manner are more likely to survive these cancers than are those whose cancers are not found until symptoms appear. This section describes trends in the use of the following screening tests, each of which has been found to detect cancers accurately and to decrease the chances of dying from cancer (except colonoscopy, where evidence remains insufficient):

- Mammography (for breast cancer)
- Pap test (for cervical cancer)
- Fecal occult blood test (for colorectal cancer)
- Colorectal endoscopy (sigmoidoscopy or colonoscopy for colorectal cancer)

Trends for newer ways to detect cancer, such as the prostate-specific antigen (PSA) test, may be included in future editions of the *Cancer Trends Progress Report*. PSA use has not yet been shown to reduce deaths from prostate cancer. There is also concern about possible harm caused by unnecessary treatments, because the test can find very early cancers that might not cause any harm if left untreated-especially in older men. Other screening methods, such as new imaging techniques to detect breast or lung cancer and ways to detect early cancer in the blood, also require more research on their effectiveness.

Page last reviewed: December 21, 2005

◢ Breast Cancer Screening

Mammography use rose steadily in women ages 40 and older until 2000 and has been stable since. The 2010 goal for all women was met by 2000, though disparities remain among racial/ethnic, geographic, and low-income groups.

Benefits of Screening Mammography

Regular use of screening mammograms, followed by timely treatment when breast cancer is diagnosed, can help reduce the chances of dying from breast cancer. For women between the ages of 50 and 69, there is strong evidence that screening lowers this risk by 30 percent. For women in their 40s, the risk can be reduced by about 17 percent. For women ages 70 and older, mammography may be helpful, although firm evidence is lacking.

Measure

Percent of women ages 40 and older, by racial/ethnic, geographic, and low-income groups, who reported they had a mammogram within the past 2 years

Period 1987, 1992, 1998, and 2000 - 2003

Trends Rising until 2000 then stable for Whites while continuing to rise for other racial-ethnic groups

Mammography use is increasing among Hispanic, Black and Asian women ages 40 and older. Among White women ages 40 and older it rose until 2000 then fell slightly between 2000-2003.

Most Recent Estimates

In 2003, 70 percent of women ages 40 and older had a mammogram within the past 2 years. Among racial and ethnic groups, 65 percent of Hispanics, 70 percent of Blacks, and 71 percent of Whites had a mammogram within the past 2 years. Notably, differences between Blacks and Whites were minimal, and the overall increase was attributable to increases among Blacks and especially Hispanics. Among Asian women interviewed in California only, 74 percent had a mammogram in 2003.

Healthy People 2010 Targets

Increase to 70 percent the proportion of women ages 40 and older who have received a mammogram within the past 2 years.

Groups at High Risk for Not Being Screened

Poor, less educated women who lack health insurance or a usual source of care are less likely to get screening mammograms.

Key Issues

The barriers that prevent high-risk groups from getting regular mammograms need to be removed.

While millions of women have had at least one screening mammogram, many women still have not. Also, even among those women who had a recent screening mammogram, many do not do so on a regular basis.

Links to Additional Information on Breast Cancer Screening

- Breast Cancer (PDQ®): Screening - Health Professionals
  http://cancer.gov/cancerinfo/pdq/screening/breast/healthprofessional

- Factors Associated with Women's Adherence to Mammography Screening Guidelines (Health Services Research)
  http://www.hospitalconnect.com/hsr/database/viewarticle.jsp?articleId=123
- Free or low-cost programs providing mammography and clinical breast examination in your area
  http://www.cdc.gov/cancer/nbccedp/index.htm
- Healthy People 2010, Volume 1, Chapter 3 - Cancer
  http://www.health.gov/healthypeople/document/HTML/Volume1/03Cancer.htm
- Medicaid coverage for mammography and clinical breast examination
  http://www.cms.hhs.gov/medicaid/
- Medicare coverage for mammography and clinical breast examination
  http://www.medicare.gov/health/cervical.asp
- National Health Interview Survey (NHIS) (NCHS)
  http://www.cdc.gov/nchs/nhis.htm
- State Cancer Profiles, Latest Rates, Percents, and Counts
  http://statecancerprofiles.cancer.gov/micromaps/

▶ Cervical Cancer Screening

Pap test use is high, though it fell slightly between 2000 and 2003 among women ages 18 and older.

Benefits of Pap Testing

Regular use of the Pap test followed by appropriate and timely treatment reduces deaths from cervical cancer. Women who have never been screened or who have not been screened in the past 5 years face a greater risk of developing invasive cervical cancer.

Measure

Percent of women ages 18 years and older who reported they had a Pap test within the past 3 years

Period 1987, 1992, 1998, and 2000-2003

Trends Rising slightly until 2000, and then falling slightly for Whites and continuing to rise for Hispanics, Blacks, and California Asians (not graphed).

Most Recent Estimates

In 2003, 79 percent of women ages 18 and older had a Pap test within the past 3 years. This includes 75 percent of Hispanics, 83 percent of Blacks, and 80 percent of Whites. Among Asian women interviewed in California only, 74 percent had a Pap test in 2003.

Healthy People 2010 Targets

Increase to 90 percent the proportion of women ages 18 and older who have received a Pap test within the past 3 years.

Groups at High Risk for Not Being Screened

Older, poor, less educated women are less likely to be screened for cervical cancer. At the same time, older women are at greater risk than younger women of dying from cervical cancer.

Key Issues

Regular Pap testing needs to be encouraged for all women. Special efforts are needed for the following groups: older, poor, less educated women; women who have immigrated to this country; and sexually active women, who are more likely to be exposed to the human papillomavirus (HPV) and the human immunodeficiency virus (HIV), both of which can increase the risk of developing cervical cancer.

HPV testing is a promising new technique; it may improve screening efforts because detection of viruses known to cause cervical cancer may, in turn, increase the chances of detecting cancer among these higher-risk women.

Links to Additional Information on Cervical Cancer Screening

- Cervical Cancer (PDQ®): Screening - Health Professionals
  http://www.cancer.gov/cancerinfo/pdq/screening/cervical/HealthProfessional
- Free or low-cost Pap test programs in your area
  http://www.cdc.gov/cancer/nbccedp/index.htm
- Healthy People 2010, Volume 1, Chapter 3 - Cancer
  http://www.health.gov/healthypeople/document/HTML/Volume1/03Cancer.htm

- Medicaid coverage for Pap testing and pelvic exams
  http://www.cms.hhs.gov/medicaid/
- Medicare coverage for Pap testing and pelvic exams
  http://www.medicare.gov/health/cervical.asp
- National Health Interview Survey (NHIS) (NCHS)
  http://www.cdc.gov/nchs/nhis.htm
- State Cancer Profiles, Latest Rates, Percents, and Counts
  http://statecancerprofiles.cancer.gov/micromaps/

▶ Colorectal Cancer Screening

Colorectal cancer screening rates have risen but remain low among people ages 50 and older.

Benefits of Screening Tests for Colorectal Cancer

Research supports the use of several screening tests for colorectal cancer. Usage is monitored for two of them:

- **Fecal occult blood test (FOBT).** When done every 1 to 2 years using home test kits in people ages 50 to 80, the FOBT can decrease the number of deaths due to colorectal cancer.
- **Colorectal endoscopy (i.e., sigmoidoscopy or colonoscopy).** Regular sigmoidoscopies can reduce colorectal cancer deaths. More research is needed to learn the best timing between exams and to determine the effectiveness of screening by colonoscopy.

  (Note: The 1987, 1990, and 1992 versions of the National Health Interview Survey only asked about sigmoidoscopy use. Because colonoscopy is now recommended for colorectal cancer screening by major expert groups and covered by Medicare, respondents to the 2000 National Health Interview Survey were asked whether they had a sigmoidoscopy or colonoscopy. The procedures are referred to collectively in this report as colorectal endoscopy.)

Measure

FOBT: Percent of adults ages 50 and older who reported that they had a fecal occult blood test (FOBT) within the past 2 years, by racial/ethnic group. Data through 2000 include both home and office-based (i.e., single stool sample obtained via digital rectal examination) FOBT. Beginning in 2003, only home FOBT is tracked.

Colorectal endoscopy: Percent of adults ages 50 and older who reported that they ever had a sigmoidoscopy.

Colorectal cancer test use: Percent of adults ages 50 and older who had a colorectal cancer test. Between 1987 and 2000, includes home and office-based FOBT in the last 2 years and/or ever had a colorectal endoscopy.

Period 1987, 1992, 1998, 2000, and 2003

Trends

Home FOBT: Recent slight decline. Home FOBT rising until 2000, then falling slightly in Whites. Rising in Blacks and Hispanics, although these trends are not statistically significant.

Colorectal endoscopy: Rising overall. Rising from 1987-1998, and continuing to rise from 1998-2003, with a statistically significant increase between 2000 and 2003. Between 1998-2003, rising in Whites, Blacks, and Hispanics, although this trend is not statistically significant for Hispanics.

Colorectal cancer test use: Rising slightly. Between 2000 and 2003, rising in Whites. Rising in Blacks and Hispanics during this period as well, although the trends are not statistically significant. Among Asians interviewed in California only, rates were stable between 2001 and 2003 (not graphed).

Most Recent Estimates

In 2003, 23 percent of people ages 50 and older had a **home FOBT** within the past 2 years. This includes 17 percent of Hispanics, 22 percent of Blacks, and 23 percent of Whites.

In 2003, 44 percent of people 50 and older had ever had a **colorectal endoscopy**. This includes 30 percent of Hispanics, 38 percent of Blacks, and 46 percent of Whites.

In 2003, 52 percent of people 50 and older had used a **colorectal cancer test**. This includes 38 percent of Hispanics, 48 percent of blacks, and 53 percent of whites. Among Asian women interviewed in California only, 54 percent had a colorectal cancer test.

Healthy People 2010 Targets

Increase to 50 percent the proportion of adults ages 50 and older who have had an FOBT within the past 2 years.

Increase to 50 percent the proportion of adults ages 50 and older who have ever had a sigmoidoscopy.

No Healthy People 2010 target has been set for the proportion of adults who should receive colonoscopy screenings.

Groups at High Risk for Not Being Screened

People with lower incomes, less education, and no health care coverage are less likely to be screened for colorectal cancer.

Key Issues

Despite some improvements over time, colorectal cancer screening rates remain low. It is important to understand and overcome doctor and patient barriers to these life-saving tests.

Newer screening methods, such as virtual colonoscopy and fecal DNA testing, are promising and need further evaluation.

A substantial proportion of reported FOBT and colorectal endoscopy procedures may be used for diagnostic rather than screening purposes.

Links to Additional Information on Colorectal Cancer Screening

- Colon Cancer Screening: More Data for the Debate on Colonoscopy (NCI)
  http://www.cancer.gov/clinicaltrials/results/colonoscopy0700
- Colorectal Cancer (PDQ®): Screening - Health Professionals
  http://www.cancer.gov/cancerinfo/pdq/screening/colorectal/healthprofessional
- Healthy People 2010, Volume 1, Chapter 3 - Cancer
  http://www.health.gov/healthypeople/document/HTML/Volume1/03Cancer.htm
- National Health Interview Survey (NHIS) (NCHS)
  http://www.cdc.gov/nchs/nhis.htm
- State Cancer Profiles, Latest Rates, Percents, and Counts
  http://statecancerprofiles.cancer.gov/micromaps/
- The Annual Report to the Nation on the Status of Cancer, 1973-1997, with a special section on colorectal cancer (Cancer)
  http://www3.interscience.wiley.com/cgi-bin/fulltext/75504286/HTMLSTART

▶ Diagnosis **(2003 data now available)**

The rates of newly diagnosed cancer cases (incidence) are one way to measure progress against cancer. The lower the rates, the better.

Another important measure is the proportion of cancers diagnosed at a late stage. The stage of a cancer shows how far the disease has progressed. The earlier the stage at diagnosis, the better the chances for cure. Downward trends in the proportion of late cancer diagnoses are a sign that screening is working for the cancers for which early detection methods are available.

This section of the *Cancer Trends Progress Report - 2005 Update* provides data on the rates of new cancers, based on the NCI Surveillance, Epidemiology, and End-Results (SEER) Program, by cancer site and by racial and ethnic group. Also included are data on the proportion of cancers diagnosed at a late stage for five of the major cancer sites where cancer screening has been shown or has been evaluated to make a difference in outcomes. Cancer sites include: female breast, colon, rectum, cervix, and prostate.

Page last reviewed: December 21, 2005

▶ Incidence **(2003 data now available)**

After several decades of significant increase, rates have stabilized since 1995 when adjusted for reporting delay.

Measuring New Cancer Cases

In 2006, more than half of all new cancers were cancers of the prostate, breast, lung, and colon/rectum. It was projected that there would be 1,399,790 new cases of cancer in 2006, including 234,460 prostate cancers; 212,920 female breast cancers; 174,470 lung cancers; and 148,610 cancers of the colon/rectum.

Cancer incidence is usually measured as the number of new cases each year for every 100,000 people (for gender-specific cancers, people of the same gender serve as the denominator) and age-adjusted (to a standard population) to allow comparisons over time.

Measure

Incidence rate: The observed number of new cancer cases per 100,000 people per year, and the estimated number of new cases per 100,000, adjusted for reporting delays, based on data from approximately 10 percent of the U.S. population.

Period 1975-2003

Trends

All sites combined: Incidence was on the rise until 1992, when it began to fall slightly (non significant) and then stabilized in 1995.

Prostate cancer: Incidence rose sharply beginning around 1988, peaked in 1992, then declined until around 1995, after which it began to rise again.

Female breast cancer: Incidence rose slightly between 1987 and 2001, then stabilized and began to show non-significant signs of falling through 2003.

Colorectal cancer: Incidence increased slightly until 1985. It has declined steadily since then, except for a slight non-significant rise during the period 1995-1998.

Lung cancer: Incidence of lung cancer increased until 1991, after which it declined slightly.

▶ Stage at Diagnosis (2003 data now available)

> **There are fewer late-stage diagnoses for five major cancers where early detection is either recommended and/or widely used.**

Late-Stage Diagnosis of Cancer

Cancers can be diagnosed at different stages in their development. Stage of cancer diagnosis may be expressed as numbers (I, II, III, or IV, for example) or by terms such as "localized," "regional," and "distant." The lower the number or the more localized the cancer, the better a person's chances of benefiting from treatment and being cured.

Tracking the rates of distant, or late, cancers is a good way to monitor the impact of cancer screening. When more cancers are detected in early stages, fewer should be detected in late stages.

Measure

Late-stage diagnosis rate: The number of new cancer cases diagnosed at a late (distant) stage, per 100,000 people per year. This report shows the rates for cancers of the prostate, colon, breast, and cervix uteri.

Period 1980-2003

Trends

Prostate: Rising for 1975-1992 falling for next three years, and rising slightly for 1995-2003. Late-stage prostate cancer has fallen since the early 1990s, following the introduction of the prostate-specific antigen (PSA) test.

Colon: Falling slightly

Female breast: Stable

Rectum: Falling

Cervix: Falling

Most Recent Estimates

In 2003, five major cancers were diagnosed at a late stage at the following rates:

Prostate: 6.9 new cases per 100,000 men per year

Colon: 7.0 new cases per 100,000 people per year

Female breast: 6.9 new cases per 100,000 women per year

Rectum: 2.1 new cases per 100,000 people per year

Cervix: 0.7 new cases per 100,000 women per year

Healthy People 2010 Targets

There is no Healthy People 2010 target for this measure.

Groups at High Risk for Late-Stage Diagnosis

People who do not have regular, recommended cancer screening tests are at highest risk of being diagnosed with late-stage cancer.

Key Issues

A lower rate of diagnosis at late stages is an early sign of the effectiveness of cancer screening efforts. These lower rates can be expected to occur before decreases in death rates are seen. For example, the drop in new cases of late-stage prostate cancer probably was an early indicator of lower death rates observed for this disease.

Important differences among racial and ethnic groups in the percent of cases diagnosed at a late stage contribute to disparities in cancer mortality.

Links to additional information on Stage at Diagnosis

- SEER Cancer Statistics Review, 1975-2003 (NCI)
  http://seer.cancer.gov/csr/1975_2003
- Staging (ACS)
  http://www.cancer.org/docroot/eto/content/eto_1_2x_staging.asp

◼ Treatment

- [Breast Cancer Treatment](#)
- [Colorectal Cancer Treatment](#)

Cancer treatment is improvingsaving lives and extending survival for people with cancers at many sites, including breast and colon, and for people with leukemias, lymphomas, and pediatric cancers.

Clinical trials are the major avenue for discovering, developing, and evaluating new therapies. However, a relatively small percentage of all adult cancer patients (20 years and older) participate in clinical trials; the exact percentage is unknown because NCI-sponsored trials and industry-sponsored trials are tracked separately. It is important to increase physician and patient awareness of, and participation in, clinical trials if we are to test new treatments more rapidly, find more effective treatments, and broaden the options available to patients.

For treatments already in use, trends in patterns of care have been examined for major cancers including breast, colorectal, prostate, and ovarian cancers. Patterns of care at specific points in time, generally in relationship to the release of new guidance on care, have been documented for additional cancers, including bladder, cervical, endometrial, head and neck, non-Hodgkin Lymphoma, and melanoma. These studies have been supported through the NCI Patterns of Care/Quality of Care and Surveillance, Epidemiology, and End-Results (SEER)-Medicare projects.

Research results on breast cancer treatment have shown that the use of breast-conserving surgery increased markedly over the period 1992 - 2002. However, between 1998 and 2002 the proportion of women receiving breast-conserving surgery who also received radiation treatment declined modestly. The use of recommended adjuvant chemo- and hormonal therapy increased substantially between 1987 and 1995. Similarly, the receipt of adjuvant chemotherapy for stage III colon cancer increased markedly following the publication in 1989 of clinical recommendations for this treatment.

The studies also show that older individuals and members of racial-ethnic minority groups are less likely to receive these treatments. More investigation is required to determine if these differences in treatments received constitute disparities in quality of care that need to be addressed through policy or organizational interventions. In addition, some of these differences have decreased over time; for example, the treatment gap between White and Black patients with stage III colon cancer closed between 1995 and 2000.

NCI is working with many Federal and private partners to improve methods and data systems for tracking the quality of cancer care. For prostate cancer, a major study on quality-of-life outcomes among 3,500 men following diagnosis has provided important new information that will help men and their families and physicians to make more informed decisions about treatment. An ongoing NCI study, the Cancer Care Outcomes Research and Surveillance Consortium, will provide more detailed information on how to link quality-of-care measures to outcomes important to colorectal and lung cancer patients. Other, similar initiatives are being supported by major professional organizations, as well as by NCI.

These and other ongoing studies will provide much new information on treatment. Future editions of the *Cancer Trends Progress Report* will include treatment trends for cancer sites for which there are definitive treatment guidelines based on rigorous evidence of benefit to patients.

▶ Breast Cancer Treatment

The proportion of women with node positive disease receiving appropriate treatment is high. Older women receive less treatment than younger women but there are not major differences in treatment among major racial and ethnic groups.

Breast-Conserving Surgery and Radiation Treatment - Benefits of Treatment

Clinical trials have demonstrated that women with early-stage breast cancer who receive breast-conserving surgery with radiation have survival similar to women who receive a mastectomy. A 1990 NIH Consensus Development Panel concluded that "breast conservation treatment (BCS followed by radiation therapy) is an appropriate method of primary therapy for the majority of women with stage I and II breast cancer and is preferable because it provides survival equivalent to total mastectomy and axillary dissection while preserving the breast."

Measure

Percent of women ages 20 and older, diagnosed with early-stage breast cancer (less than stage IIIA), receiving breast-conserving surgery and radiation treatment

Period 1992-2002

Trends - Rising between 1992 and 1998, falling slightly between 1998 and 2002

Most Recent Estimates

In 2002, 41 percent of women ages 20 and older diagnosed with early-stage breast cancer (less than stage IIIA) received mastectomy, 37 percent received breast-conserving surgery plus radiation, and 19 percent received breast-conserving surgery only.

Healthy People 2010 Targets

There are no Healthy People 2010 targets for cancer treatment including breast conserving surgery and radiation treatment.

Multi-Agent Chemotherapy
Benefits of Treatment

For women with positive lymph nodes, multi-agent chemotherapy has been recommended by NIH since 1985, along with tamoxifen for those women with estrogen-receptor positive tumors, based on the results of numerous randomized controlled treatment trials.

Measure

Percent of women ages 20 and older, diagnosed with node positive, stage I - IIIa breast cancer, receiving multi-agent chemotherapy.

Period 1987-2000

Trends - Rising

Most Recent Estimates

In 2000, 69 percent of women ages 20 and older, diagnosed with node positive breast cancer, received multi-agent chemotherapy.

Healthy People 2010 Targets

There are no Healthy People 2010 targets cancer treatment including for multi-agent chemotherapy.

Groups at High Risk for Not Receiving Appropriate Treatment

Studies have found that older women are less likely to receive radiation treatment in addition to breast-conserving surgery, after adjustment for the higher rate of pre-existing co-morbid conditions among older patients. Even elderly patients with no or very few co-morbid conditions, such as diabetes, kidney, or heart disease, were less likely to receive treatment. Similar decreases in the use of chemotherapy among older women also have been observed.

Key Issues

Treatment options for breast cancer are complex, depending on nodal status, hormone receptor status, and age. Substantial toxicity and other risks are associated with radiation treatment and chemotherapy. As is the case for most cancers, women over the age of 70 have not been well represented in randomized controlled treatment trials. For all of these reasons, appropriate treatment should be the outcome of a fully informed, patient decision-making process that takes complex clinical factors and patient preferences into account. Emerging treatments for breast cancer include the anti-HER2/neu antibody, trastuzumab, for patients with HER2 over expressing cancers, and aromatase inhibitors either in conjunction with or instead of tamoxifen.

Links to additional information on Breast Cancer Treatment

- Breast Cancer (PDQ®): Treatment - Health Professionals
  http://www.cancer.gov/cancertopics/pdq/treatment/breast/healthprofessional/
- NCI Patterns of Care/Quality of Care Studies
  http://healthservices.cancer.gov/surveys/poc/
- SEER-Medicare Studies
  http://healthservices.cancer.gov/seermedicare/

Page last reviewed: December 21, 2005

▶ Colorectal Cancer Treatment

The proportion of patients receiving appropriate adjuvant therapy has increased steadily since 1987. Potential disparities remain for some groups of patients.

Benefits of Treatment

On the basis of accumulated evidence from clinical trials, a 1990 NIH Consensus Development Conference recommended that patients with stage III colon cancer be given adjuvant chemotherapy. The 1990 NIH Consensus Conference also recommended combined adjuvant chemotherapy and high-dose external-beam radiotherapy for stage II and III rectal cancer. Radiation does not appear to affect disease-specific or overall survival for rectal cancer, although it does decrease local recurrence.

Measure

Percent of individuals, ages 20 and over, diagnosed with stage III colon cancer who received 5-FU plus either levamisole or leucovorin or diagnosed with stage II or stage III rectal cancer who received 5-FU with or without radiotherapy

Period 1987-2000

Trends - Rising, rapidly between 1987 and 1990, rising moderately between 1990 and 2000.

Most Recent Estimates

In 2000, 57 percent of stage III colon, and stage II and III rectal patients ages 20 and older received adjuvant chemotherapy.

Healthy People 2010 Targets

There are no Healthy People 2010 targets for cancer treatment including for colorectal cancer treatment.

Groups at High Risk for Not Receiving Appropriate Treatment

Studies have found that older colorectal patients are less likely to receive adjuvant chemotherapy treatment, even after adjustment for the higher rate of pre-existing co-morbid conditions among older patients. Even elderly patients with no or very few co-morbid conditions, such as diabetes, kidney, or heart disease, were less likely to receive treatment. Earlier studies indicated that Black patients were less likely to receive treatment than White patients; however, this disparity was not found in the 2000 NCI Patterns of Care/Quality of Care study.

Key Issues

Chemotherapy for colorectal cancer is a rapidly evolving field. Emerging treatments include chemotherapy regimens that incorporate irinotecan and/or oxaliplatin agents that interfere with DNA synthesis during cancer cell division and, more recently, anti-angiogenesis agents. These newer drugs result in better outcomes for many colorectal cancer patients but they also are much more expensive than earlier treatments.

Links to additional information on Colorectal Cancer Treatment

- NCI Patterns of Care/Quality of Care Studies
  http://healthservices.cancer.gov/surveys/poc/
- PDQ Information on Colon Cancer
  http://www.cancer.gov/cancertopics/pdq/treatment/colon/HealthProfessional/
- PDQ Information on Rectal Cancer
  http://www.cancer.gov/cancertopics/pdq/treatment/rectal/healthprofessional/

- SEER-Medicare Studies
  http://healthservices.cancer.gov/seermedicare/

❯ Life After Cancer (New data now available)

- Survival
- Cost of cancer care

More and more people are benefiting from the early detection of cancer and its successful treatment. These medical advances are improving both quality of life and length of survival, permitting many survivors to continue full and productive lives at home and at work.

Nevertheless, national data regarding life after cancer are limited. They include:

- Survival rates for cancer by each stage at diagnosis
- The estimated total number of survivors
- The economic impact of cancer

Few national measures are available that reflect health-related quality of life for cancer survivors, such as:

- The ability of cancer survivors to perform daily tasks
- The impact of cancer on employment and insurability
- The effects of cancer on family and loved ones

These and other measures related to life after cancer are subjects of intense research interest as well as matters of great concern to cancer survivors themselves. Future editions of the *Cancer Trends Progress Report* will include additional measures in this area.

Page last reviewed: February 20, 2007

Five-year survival rates have improved for all sites combined.

Cancer Survival

Advances in the ways cancer is diagnosed and treated have increased the number of people who live for long periods of time free of their disease. This report looks at trends in 5-year survival rates for cancer, the time period traditionally associated with good prognosis. However, we know that some people have a recurrence of their cancer after 5 years.

In 2003 nearly 10.5 million Americans were alive who had been diagnosed with cancer. Of these, 2.4 million were diagnosed with female breast cancer, 1.9 million were diagnosed with prostate cancer, and 1.1 million were diagnosed with colorectal cancer. Approximately 673,712 (6 percent of the 10.5 million) Americans diagnosed with cancer were longer-term survivors diagnosed at least 28 years earlier.

Measure

Five-year relative cancer survival rate: The proportion of patients surviving cancer 5 years after diagnosis. This report shows survival rates for cancers of the prostate, female breast, colon/rectum, lung, and for all cancers combined.

Period 1975-1998 (year diagnosed)

Trends - Mostly rising

All cancer sites combined: Significantly rising since 1975

Prostate: Significantly rising since 1975

Female breast: Rising since 1975 with most recent increase from 1996-1998 non-significant

Colorectal: Significantly rising from 1975 to 1996 with smaller increases from 1996 to 1998

Lung and bronchus: Significant slight rise since 1987

Five-year survival rates are highest for prostate and female breast cancers and lowest for lung cancer.

Most Recent Estimates

For adults diagnosed with cancer (all sites) in 1997, 65 percent had survived their cancer for at least 5 years.

Healthy People 2010 Targets

Increase to 70 percent the proportion of cancer survivors who are living 5 years or longer after diagnosis.

Groups at High Risk for Limited Survival

Late stage at diagnosis is associated with limited survival. This association supports the need for continued early detection and stage-appropriate treatment strategies.

Key Issues

Improved survival rates result from both early detection and better treatments. It is difficult to separate out the contribution of each factor; results were published for breast cancer.

Despite the positive trends in 5-year survival for three of the most common cancers, lung cancer survival rates remain low.

Links to additional information on Survival

- Healthy People 2010, Volume 1, Chapter 3 - Cancer
  http://www.health.gov/healthypeople/document/HTML/Volume1/03Cancer.htm
- SEER Cancer Statistics Review, 1975-2003 (NCI)
  http://seer.cancer.gov/csr/1975_2003
- Statistics for 2006 (ACS)
  http://www.cancer.org/docroot/stt/stt_0.asp

Page last reviewed: August 16, 2006

Cancer treatment spending has risen but remains stable in proportion to total U.S. treatment spending.

The financial costs of cancer treatment are a burden to people diagnosed with cancer, their families, and society as a whole. Cancer treatment accounted for an estimated $72.1 billion in 2004. This is just under 5 percent of total U.S. spending for medical treatment. Between 1995 and 2004, the overall costs of treating cancer increased by 75 percent. In the near future it is expected that cancer costs may increase at a faster rate than overall medical expenditures. As the population ages, the absolute number of people treated for cancer will increase faster than the overall population, and cancer cases will increase relative to other disease categories-even if cancer incidence rates remain constant or decrease somewhat. Costs also are likely to increase at the individual level as new, more advanced, and more expensive treatments are adopted as standards of care.

NCI will continue to monitor cancer costs and track the percentage of total medical costs accounted for by cancer care. Over the last three decades, this percentage has remained remarkably constant.

As total spending for medical treatment rose between 1963 and 2004, so did spending for cancer treatment.

Table L1: National Cancer Treatment Expenditures in Billions of Dollars (1963-2004)

Year	Cancer treatment spending (billions)	Total personal health care spending (billions)	Percent of cancer treatment spending to total
1963	$1.3	$29.4	4.4%
1972	$3.9	$78.0	5.0%
1980	$13.1	$217.0	6.0%
1985	$18.1	$376.4	4.8%
1990	$27.5	$609.4	4.5%
1995	$41.2	$879.3	4.7%
2004	$72.1	$1540.7	4.7%

Source: 1963-1995: Brown ML, Lipscomb J, Snyder C. The burden of illness of cancer: economic cost and quality of life. Annual Review of Public Health 2001;22:91-113. 2004: NIH Cost of Illness Report to the U.S. Congress, 2005; National Health Care Expenditures Projections: 2003-2013, http://www.cms.hhs.gov/statistics/nhe/projections-2003/proj2003.pdf

Spending for each year is expressed in current dollars for that year. While cancer treatment costs increased dramatically between 1963 and 2004, the proportion of these costs to all health care expenditures remained stable. Cancer spending in this chart does not include screening, which cost an additional $10 to $15 billion in 2004.

Total treatment expenditures for each of the four most common cancers are remarkably similar. However, individual costs for other cancers based on Medicare data show wide variation by type of cancer.

Table L2: Estimates of National Expenditures for Medical Treatment for the 15 Most Common Cancers (based on Cancer Prevalence in 1998 and Cancer-Specific Costs for 1997-1999, projected to 2004 using the medical care component of the Consumer Price Index)

	Percent of all new cancers (1998)	Expenditures (billions; in 2004 dollars)	Percent of all cancer treatment expenditures	Average Medicare payments* per individual in first year following diagnosis (2004 dollars)
Lung	12.7%	$9.6	13.3%	$24,700
Breast	15.9%	$8.1	11.2%	$11,000
Colorectal	10.7%	$8.4	11.7%	$24,200
Prostate	16.8%	$8.0	11.1%	$11,000
Lymphoma	4.6%	$4.6	6.3%	$21,500
Head/Neck	2.8%	$3.2	4.4%	$18,000
Bladder	4.4%	$2.9	4.0%	$12,300
Leukemia	2.4%	$2.6	3.7%	$18,000

	Percent of all new cancers (1998)	Expenditures (billions; in 2004 dollars)	Percent of all cancer treatment expenditures	Average Medicare payments* per individual in first year following diagnosis (2004 dollars)
Ovary	1.9%	$2.2	3.1%	$36,800
Kidney	2.6%	$1.9	2.7%	$25,300
Endometrial	2.9%	$1.8	2.5%	$16,200
Cervix	0.8%	$1.7	2.4%	$20,100
Pancreas	2.3%	$1.5	2.1%	$26,600
Melanoma	4.0%	$1.5	2.0%	$4,800
Esophagus	1.0%	$0.8	1.1%	$30,500
All Other	14.0%	$13.4	18.5%	$20,400
Total	100.0%	$72.1	100%	

Source: Based on methods described in: Brown ML, Riley GF, Schussler N, Etzioni RD. Estimating health care costs related to cancer treatment from SEER-Medicare data. *Medical Care* 2002 Aug;40(8 Suppl):IV-104-17. Phase-specific prevalence and cost estimates are for SEER-Medicare cases diagnosed between 1996-1999, with costs expressed in 2001 dollars using CMS cost adjusters. Estimates are updated to 2004 using the medical care services component of the Consumer Price Index: U.S. Department of Labor, Bureau of Labor Statistics: *CPI Detailed Report and Producer Price Indexes.* Washington. U.S. Government Printing Office. Monthly reports for January 1999-March 2004.
*Medicare payments include copayments and deductibles paid by patient.

Among the four most common cancers, the first-year costs for lung and colorectal cancer are higher because screening is not as commonly used in the detection of these cancers. While there is no lung cancer screening recommendation, if screening for colorectal cancer were performed as recommended, the proportion of cases presenting at advanced stages-when treatment is more extensive and costly-would be reduced.

Medicare does not cover certain cancer care expenses, such as oral medicines commonly used to treat cancers of the breast and prostate. These out-of-pocket costs may add as much as 10 percent to the estimates shown above.

Direct medical expenditures are only one component of the total economic burden of cancer. The indirect costs include losses in time and economic productivity resulting from cancer-related illness and death. The total economic burden of cancer in 2004 is estimated to have been $190 billion.

▶ End of Life **(2003 data now available)**

- Mortality
- Person-Years of Life Lost

The ultimate measure of our nation's success against cancer is how far we can lower the death rate from this group of diseases. This final section of the *Cancer Trends Progress Report - 2005 Update* provides national data not only on cancer mortality by major sites, but also in terms of years of life lost to cancer - a measure that emphasizes the tragedy of common cancers that strike people at a relatively young age.

As highlighted at the beginning of this report, the news is good. For the first time since the government began collecting mortality data early in the last century, cancer death rates began to decline in 1992. It is our job as a nation to maintain and accelerate this trend. Future editions of this report will continue to document how we are doing in the ongoing battle against deaths from cancer.

▶ Mortality (2003 data now available)

After several decades of steady increases, the U.S. cancer death rate stabilized from 1990 to 1993 and has significantly declined from 1993 to 2003.

Measuring Cancer Deaths

In 2003, cancers of the breast, prostate, lung, and colon/rectum accounted for more than half of all cancer deaths in the United States. Lung cancer alone claimed more than one-fourth of the lives lost to cancer. It was projected that in 2006, there would be 564,830 cancer deaths overall, including 162,460 deaths from lung cancer; 55,170 from cancers of the colon/rectum; 40,970 from female breast cancer; and 27,350 from prostate cancer. Cancer mortality usually is measured as the annual number of deaths from cancer for every 100,000 people, adjusted to a standard population.

Measure

Mortality rate: The number of cancer deaths per 100,000 people per year, age-adjusted to a U.S. 2000 standard population

Period 1975-2003

Trends

All sites combined: Death rates increased through 1990, then stabilized until 1993, then fell slightly (statistically significant) from 1993 to 2003

Colorectal cancer: Death rates have been significantly falling since 1978

Female breast cancer: Death rates have been falling since 1990

Lung cancer: Death rates have been falling since 1993 due to declines in men

Prostate cancer: Death rates have been falling since 1994

Most Recent Estimates

In 2003, the death rate for all cancers was 190.0 cancer deaths per 100,000 people per year.

Healthy People 2010 Targets

Reduce the overall cancer death rate to 159.9 cancer deaths per 100,000 people per year by 2010.

Groups at High Risk for Cancer Deaths

Blacks have the highest overall rates for cancer deaths, followed by Whites.

Key Issues

Although overall death rates are on the decline, deaths from some cancers, such as esophageal, liver, and thyroid cancers, are increasing.

Links to additional information on Mortality

- American Cancer Society - Statistics for 2006
  http://www.cancer.org/docroot/stt/stt_0.asp
- Healthy People 2010, Volume 1, Chapter 3 - Cancer
  http://www.health.gov/healthypeople/document/HTML/Volume1/03Cancer.htm
- State Cancer Profiles
  http://statecancerprofiles.cancer.gov

❯ Person-Years of Life Lost (2003 data now available)

Cancer is responsible for more estimated years of life lost than any other cause of death.

Person-Years of Life Lost to Cancer

Death rates alone do not give a complete picture of the burden of cancer deaths. Another useful measure is person-years of life lost (PYLL) - the years of life lost due to early death from a particular cause. PYLL helps to describe the extent to which life is cut short by cancer. On average, each person who dies from cancer loses an estimated 15 years of life.

Measure

PYLL due to cancer: The difference between the actual age of death due to a cancer and the expected age of death.

Period 2003

Trends - No trend data are available.

Most Recent Estimates

In 2003, cancer deaths were responsible for nearly 8.7 million PYLL. This is more than heart disease or any other cause of death.

Also in 2003, lung cancer accounted for over 2.4 million PYLL, the most by far for any cancer. In contrast, prostate cancer, which primarily affects older men, accounted for approximately 277,000 PYLL.

Healthy People 2010 Targets

There is no Healthy People 2010 target for this measure.

Groups at High Risk for the Most PYLL

Cancers that are both common and associated with poor survival are responsible for the most PYLL. Breast and colorectal cancers are also common cancers that strike people at a relatively young age and cause many years of life lost. Deaths from childhood cancers, which are uncommon, lead to the most years of life lost for the individual, but contribute only a small percentage to total PYLL.

Key Issues

The greatest impact on reducing the number of years lost to cancer will come from progress against common cancers-especially lung, breast, and colorectal cancers.

Page last reviewed: August 16, 2006

❯ Person-Years of Life Lost (2003 data now available)

Appendices

Page last reviewed: April 3, 2006

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⊠ Cancer Incidence and Mortality Rates - United States, 2003

The following tables depict the incidence and mortality rates for the cancers included in the *Cancer Trends Progress Report, 2005 Update.* Click on the cancer name to view additional, more detailed data for that particular cancer. For cancers not included in the tables, please visit the Cancer Statistics Review, 1975-2003 (http://seer.cancer.gov/csr/1975_2003/sections.html).

Incidence

Cancer	All races			Whites			Blacks		
	Total	Males	Females	Total	Males	Females	Total	Males	Females
All cancers	459.6	540.0	404.1	467.6	541.3	417.3	499.4	650.4	397.6
Lung and bronchus	62.7	78.5	51.3	63.6	77.1	53.9	78.5	115.5	53.5
Breast	67.5	1.5	124.2	69.1	1.5	128.5	69.5	2.0	120.5
Cervix uteri	7.1	---	7.1	6.6	---	6.6	10.5	---	10.5
Colorectal	49.5	58.0	42.8	49.0	57.1	42.4	60.4	72.6	52.5
Prostate	164.9	164.9	---	160.0	160.0	---	247.0	247.0	---
Non-Hodgkin lymphoma	19.8	23.6	16.9	20.8	24.7	17.7	15.4	18.5	13.1
Melanoma of skin	18.7	23.0	15.8	22.3	26.9	19.2	0.8	---	---

Source: SEER Program, National Cancer Institute. Incidence data are from the SEER 9 areas (http://seer.cancer.gov/registries/terms.html). Data are age-adjusted to the 2000 standard using age groups:<1, 1-4, 5-9, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+. Analysis uses the 2000 Standard Population (Census P25-1130) as defined by NCI (http://seer.cancer.gov/stdpopulations/).
--- Statistic not shown. Rate based on less than 25 cases for the year 2003.

Mortality

Cancer	All races			Whites			Blacks		
	Total	Males	Females	Total	Males	Females	Total	Males	Females
All Cancers	190.1	234.1	160.5	188.3	230.6	159.7	234.5	311.4	188.2
Lung and bronchus	54.2	71.9	41.2	54.5	71.2	42.2	61.2	93.1	40.3
Breast	14.2	0.3	25.2	13.8	0.3	24.6	20.2	0.5	34.1
Cervix uteri	2.5	---	2.5	2.2	---	2.2	4.7	---	4.7
Colorectal	19.0	23.0	16.1	18.5	22.4	15.5	26.4	32.1	22.7
Prostate	26.6	26.6	---	24.5	24.5	---	58.0	58.0	---
Non-Hodgkin lymphoma	7.3	9.3	5.9	7.6	9.7	6.1	4.9	5.8	4.3
Melanoma of skin	2.7	3.9	1.7	3.0	4.4	2.0	0.4	0.4	0.4

Source: National Center for Health Statistics data as analyzed by NCI.
Data are age-adjusted to the 2000 standard using age groups: <1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+. Analysis uses the 2000 Standard Population as defined by NCHS (http://www.cdc.gov/nchs/data/statnt/statnt20.pdf).
--- Statistic not shown. Rate based on less than 25 cases for the year 2003.

Page last reviewed: August 15, 2006

▶ Methodology for Characterizing Trends

In order to obtain a consistent characterization of population trends in factors related to the prevention, early detection, or treatment of cancer, the joinpoint statistical methodology was used in this report. This methodology characterizes a trend using joined linear segments on a logarithmic scale; the point where two segments meet is called a "joinpoint." The methodology has previously proven useful in characterizing trends in cancer incidence and mortality rates (e.g., in the Annual Report to the nation on the Status of Cancer: 1975-2001; 200).

The joinpoint software (Joinpoint Version3.0) uses statistical criteria to determine the fewest number of segments necessary to characterize a trend, where the segments begin and end, and the annual percent change (APC) for each segment (a linear trend on a log scale implies a constant annual percent change). In addition, a 95 percent confidence interval around the APC was used to determine if the APC for each segment differed significantly from zero. Whenever possible, weighted regression lines (utilizing standard errors) were calculated using the joinpoint software. Using a log response variable, the weight (motivated by the delta method) equals the square of the response variable divided by the square of the standard error. If the standard errors were unavailable, an unweighted regression was used.

Using the results of these analyses, we characterize trends in this report with respect to both their public health importance and statistical significance. If a trend was:

- Changing less than 0.5 percent per year (-0.5 < APC < 0.5), and
  - the APC was not statistically significant, we characterized it as STABLE
  - the APC was statistically different from zero, we characterized it as MINIMALLY RISING or MINIMALLY FALLING

- Changing more than 0.5 percent per year but less than 1.5 percent per year, we characterized it as RISING or FALLING SLIGHTLY (-1.5 < APC < -0.5 or 0.5 < APC < 1.5)

- Changing more than 1.5 percent per year, we characterized it as RISING or FALLING (APC >-1.5 or APC< 1.5)

If the trend was rising or falling at 0.5 percent per year or more, the statistical significance (or lack of significance) of the APC was also noted. While these categorizations are somewhat arbitrary, they do provide a consistent method to characterize the trends across disparate measures. However, statistical significance in addition to the absolute value of change for incidence and mortality trends were used to ensure consistency with all major publications on national cancer trends.

To avoid statistical anomalies, segments had to contain at least three observed data points, and no segment could begin or end closer than three data points from the beginning or end of the data series. The maximum number of segments was limited to four (i.e., three joinpoints), since for most practical situations this has been shown to be sufficient, and the calculations become computer intensive when searching for all possible model fits with many segments. However, because we constrained the joinpoint models to those where no segment could begin or end closer than three data points from the beginning or end of the data series, if there were four data points or less, only one segment could be fit; from five to seven data points, up to two segments could be fit; and from eight to ten data points, up to three segments could be fit. To avoid some of these limitations, for two to five data points we connected the data points to determine the APC for each time period, and then employed a two-sample test using the standard errors derived from the survey to determine the statistical significance of the change across periods.

Age adjustment (to a standard population) for measures was done using the direct method of standardization. Whenever possible age adjustment for measures was done using the age adjustment groups specified for Healthy People 2010 age-adjusted measures (http://wonder.cdc.gov/data2010/aagroups.htm). The year 2000 standard population for specific age groups are available in Klein and Shoenborn (2001) For cancer incidence, 19 age groups were used with the 2000 standard population as specified in http://seer.cancer.gov/stdpopulations).

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▶ Survival Estimation Methods

In Figure L1 of this report, the most recent 5-year estimates of survival are for patients diagnosed in 1997. The estimates are slightly dated due to the lag time in cancer registry reporting of new cases and the time it takes to observe 5-year survival. Since complete follow-up is available only through 2001, the most recent estimates are based on data as follows:

Survival Time	Diagnosis Year
1 year	2001
2 years	2000
3 years	1999
4 years	1998
5 years	1997

Researchers at the National Cancer Institute (NCI) and elsewhere have been considering methods for extrapolating to obtain long-term survival estimates for cases diagnosed recently. Two such methods are the **period method** and the **modeled method**.

**Figure L1a-1. 5-year relative survival rates
All cancer sites combined: 1975-1997**
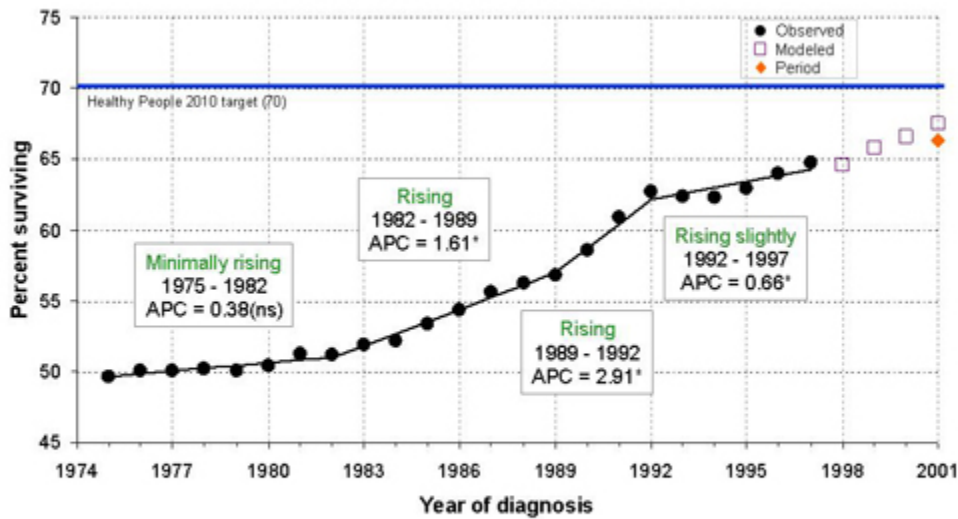
Healthy People 2010 target 3-15: 70%
Source: SEER Program, National Cancer Institute. Rates are from the SEER 9 areas (http://seer.cancer.gov/registries/terms.html).
Data are not age-adjusted.
Weighted regression lines (utilizing standard errors) are calculated using the Joinpoint Regression Program, Version 3.0. April 2005,
   National Cancer Institute. Regression line in graph is for observed data.
* The Annual Percent Change (APC) is statistically significant at the 0.05 level.
(ns) The APC is not statistically significant at the 0.05 level.

The **period method**, introduced by Brenner et al. (1) and slightly modified for use with Surveillance, Epidemiology, and End Results (SEER) data (2), considers only the patients' survival experience within the most recent calendar period (i.e., 2000-2001). For example, to estimate the 5-year survival in 2001, we use 0- to 1-year survival experience for cases diagnosed in 2001, 1- to 2-year survival experience for cases diagnosed in 2000, who survived at least 1 year, and so on up to 4- to 5- year survival experience for cases diagnosed in 1997, who survived at least 4 years. The period 5-year survival is then calculated by multiplying these interval survival probabilities. The period method was not developed to provide survival trend but to give the most up-to-date estimate of survival experience observed in the data. The period method estimate is plotted as a filled diamond in the figure above.

The **modeled method** (3-4) consists of fitting a trend line across diagnosis years to each of the five observed interval survival probabilities (e.g., the 0- to 1-year survival for cases diagnosed in 1997 to 2001, 1- to 2-year survival for cases diagnosed in 1997 to 2000, etc.). These trend lines are then projected to the year of interest. The final estimate for a particular diagnosis year is obtained by multiplying the known and projected interval survival probabilities together.

For example, to estimate the 5-year survival rate for those diagnosed in 2001 using available data, *known* 0- to 1-year survival rates are combined with 1- to 2-, 2- to 3-, 3- to 4-, and 4- to 5-year *projections* from the model. The advantage of this method is that if survival is improving over time, the 4- to 5-year estimate of survival used for the 2001 computation will more accurately reflect the improved trend compared to the 1997 estimate used in the period method. The 5-year modeled survival estimates are plotted as open squares in the figure above. Because these projections combine known survival probabilities with projections, they are not a simple extrapolation of the last segment estimated using joinpoint regression.

These methods have the potential to provide clinicians, patients, cancer control analysts, and policy makers improved estimates of the long-term prognoses of recently diagnosed patients. As researchers continue to refine survival estimation methods and examine their assumptions and predictive ability, we ask for your input. Please click here to provide feedback.

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