



# Statistical Notes

## Health Status Indicators for the Year 2000

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### Introduction

Collecting, analyzing, and using health data are essential components of public health. The Institute of Medicine's report on *The Future of Public Health* recognized the importance of assessment and surveillance activities at all levels of government (1). These assessment functions are enhanced when data collected at the State or local level can be compared with benchmarks, such as similar populations or national standards.

*Healthy People 2000: National Health Promotion and Disease Prevention Objectives for the Nation* defines goals and objectives for improving the health of Americans by the end of the century (2). The achievement of these objectives is dependent in part upon the availability of a statistical infrastructure to monitor progress and evaluate change. Therefore, *Healthy People 2000* contains a group

of surveillance and data systems objectives (priority area 22) that insure the development and enhancement of this infrastructure at the national, State, and local levels. Objective 22.1 specifically responds to the need for health status data that can be used by all levels of government. The objective is to

develop a set of health status indicators appropriate for Federal, State, and local health agencies and establish use of the set in at least 40 States.

The Centers for Disease Control (CDC) has recently achieved the first part of this objective through a consensus process, which identified 18 health status indicators. This paper describes the process, the indicators, and suggests some subsequent activities to assure the utility of the indicators.

### The process

CDC, as the Federal lead agency for priority area 22, is responsible for implementing a program to achieve Objective 22.1. CDC created an internal work group to develop a process that would lead to a consensus set of indicators. At the work group's recommendation, Dr. Manning Feinleib, Director, National

Center for Health Statistics (NCHS) convened a group of public health professionals (Committee 22.1) to identify a set of health status indicators for use at all levels of government.

Committee 22.1 first met in February 1991 in Hyattsville, Maryland. At its initial meeting, the committee adopted selection criteria and identified a list of over 50 potential indicators.

In April 1991, the draft list was presented to a group of 200 public health professionals representing State and local health departments, professional organizations, and the academic community at a workshop in Crystal City, Virginia. Committee 22.1 met again to revise the list based on input received at the workshop. The revised list was further reviewed within CDC and by the National Committee on Vital and Health Statistics. The list was circulated among committee members for final comment and was released by CDC in July 1991 (3).

### Characteristics and selection criteria

Early in its deliberations, Committee 22.1 adopted a group of desired characteristics and selection

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criteria for the indicators. The committee agreed that the set of health status indicators should:

- be a small number of measures (10 to 20),
- allow a broad measure of community health (be comprehensive),
- include general measures of community health (i.e., global measures to assess overall morbidity, mortality, and quality of life),
- include specific measures of community health (i.e., those specific problems whose public health importance warrant inclusion), and
- contain a subset that is consistent at the Federal, State, and local levels. (This subset was to be driven by the data that is available or easily obtainable locally. The minimal set may include specification of a minimum population size for which measurement is useful.)

In order to be included in the set, Committee 22.1 agreed that an indicator must:

- be readily and uniformly understandable and acceptable (that is, the meaning of an indicator should be easily explained and irrefutable),
- be measurable using available or obtainable data,
- imply specific interventions compelling action (The indicators should be so closely linked to public health status that changes from past patterns signal the need for response.), and
- be outcome oriented.

In addition, several issues were to be given priority in the selection of indicators. These included mortality, years of potential life lost (YPLL), severity, preventability of the condition, links to intervention activities, and quality of life (disability). Incidence, communicability, cost, hospitalization, relationship to the Year 2000 Objectives, and the perception of importance were also to be considered. The goal of this effort was to develop a small number of indicators. Thus, the measures should be limited to the specific conditions which rank high on these issues.

Committee members and representatives are as follows:

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Manning Feinleib, M.D., Dr.P.H.  
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*United States Conference of Local*  
*Health Officials*  
R. Biery, M.D.  
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San Antonio Health Department

## The indicators

The final set of Health Status Indicators includes 18 measures of health status outcome and/or factors that put individuals at increased risk of disease or premature mortality. *The position of indicator does not imply priority; all deaths are age-adjusted to the 1940 standard population.* They are:

- **Race and ethnicity-specific infant mortality as measured by the rate (per 1000 live births) of deaths among infants under one year of age.**

*Data source: National Vital Statistics System.* The infant mortality rate is a universally acceptable and understandable measure of the overall health

status of a community. Disparities in this measure among racial and ethnic groups are indicative of unmet public health need. Each community should measure infant mortality for its total population and for all of its significant racial and ethnic groups.

- **Motor vehicle crash deaths per 100,000 population.**

*Data source: National Vital Statistics System.* One of the largest causes of unintentional injury resulting in death, affecting all age groups, and for which there are effective preventive measures (for example, protective restraints, environmental and engineering changes, education, and traffic law enforcement).

- **Work-related injury deaths per 100,000 population.**

*Data source: National Vital Statistics System.* Occupational injuries are the cause of a large portion of deaths due to unintentional injuries. The demographics of the workplace encompass all segments of the population, including minorities and females.

- **Suicides per 100,000 population.**

*Data source: National Vital Statistics system.* Suicide is one of the leading causes of death for persons aged 16–65 years and a leading YPLL. It is preventable and is also an indirect measure of the mental health of a population.

- **Lung cancer deaths per 100,000 population.**

- **Female breast cancer deaths per 100,000 women.**

- **Cardiovascular disease deaths per 100,000 population.**

*Data source: National Vital Statistics System.*

These measures of chronic disease mortality reflect the influence of life style-related risks. Although these measures are not immediately responsive to changes in risk factor patterns, they are more readily available than direct measures.

- **Homicides per 100,000 population.**

*Data source: National Vital Statistics System.*

This is a measure of intentional violence in a community. It may reflect substance abuse and other social correlates of poor health behavior and risk exposures.

- **Total deaths per 100,000 population.**

*Data source: National Vital Statistics System.*

This is an understandable, comprehensive measure which can be compared among all geographic levels. It is related to other aggregate measures, such as YPLL and life expectancy.

- **Reported incidence (per 100,000 population) of acquired immunodeficiency syndrome.**

*Data source: CDC HIV/AIDS Surveillance System.*

This is a major public health problem with changing risk groups.

- **Reported incidence (per 100,000 population) of measles.**

*Data source: National Notifiable Disease Surveillance System.*

Measles is a public health priority as a severe condition and a sentinel measure for vaccine preventable diseases. Its presence in the community is an indicator of need for preventive services and/or problems with access to health care.

- **Reported incidence (per 100,000 population) of tuberculosis.**

*Data source: National Notifiable Disease Surveillance system.*

Tuberculosis incidence is changing rapidly as a result of changes in HIV infection rates, demographics, and immigration patterns. It is a high priority condition for public health intervention.

- **Reported incidence (per 100,000 population) of primary and secondary syphilis.**

*Data source: National Notifiable Disease Surveillance System.*

This is a sentinel measure for other sexually transmitted diseases.

- **Prevalence of low birth weight as measured by the percentage of**

**live born infants weighing under 2,500 grams at birth.**

*Data source: National Vital Statistics System.*

This measure is directly associated with birth outcomes and is an indicator of access problems and/or need for prenatal care services.

- **Births to adolescents (ages 10–17 years) as a percentage of total live births.**

*Data source: National Vital Statistics System.*

This measure is a marker for other social and behavioral risk factors and represents a group with barriers to health care. Although the rate of births per 100,000 girls aged 10–17 years would be a better measure, the lack of population estimates for many communities led the committee to recommend this surrogate.

- **Prenatal care as measured by the percentage of mothers delivering live infants who did not receive care during the first trimester of pregnancy.**

*Data source: National Vital Statistics System.*

Early entry into prenatal care permits early identification of risks and appropriate interventions. This measure is also an indicator of problems with access to care.

- **Childhood poverty, as measured by the proportion of children under 15 years of age living in families at or below the poverty level.**

*Data source: Census of Population, Detailed Population Characteristics, U.S. Department of Commerce, Bureau of the Census.*

This is an indicator of global risk factors which also has implications for access to preventive services.

- **Proportion of persons living in counties exceeding U.S. Environmental Protection Agency standards for air quality during the previous year.**

*Data source: National Air Quality and Emissions Trends Reports (Annual Reports from the Environmental Protection Agency).*

Air quality is one of society's most serious emerging environmental issues. It is also a surrogate for other environmental concerns.

In the process of developing these indicators, Committee 22.1 identified a number of measures of public health significance which could not be included in the final list because of insufficient data (figure 1). These include indicators of selected chronic diseases, access to medical care, environmental exposures, and behavioral risks. The committee recommends that, when possible, existing data collection systems be modified to accommodate these measures.

## Summary

These indicators should be thought of as an initial set. Committee 22.1 produced an important product within the constraints of available data. As public health priorities change and other data sets become available, the list will be modified through similar consensus processes.

Some outstanding technical issues require resolution. More work is needed in the development of technical definitions and formulas. Standardized data collection methods and the identification of optimal sources for population estimates must be considered. Analytic issues, including minimum sample sizes, multi-year analyses, and other small area concerns, must also be addressed. In the coming months CDC will implement processes to consider these issues.

In the aggregate, these indicators present a broad overview of a community's health. The data to monitor them should be readily available or obtainable for most communities. CDC encourages States and localities to adopt the indicators in public health practice and to consider them in the development of new or modified data systems.

**Figure 1.**  
**Priority Data Needs to Augment the Health Status Indicators**

[Position of the indicator does not imply priority]

Indicators of processes:

- Proportion of children 2 years of age who have been immunized with the basic series (as defined by the Immunization Practices Advisory Committee)
- Proportion of adults aged 65 and older who have been immunized for pneumococcal pneumonia and influenza
- Proportion of assessed rivers, lakes, and estuaries that support beneficial uses (fishing and swimming approved)
- Proportion of women receiving a Papanicolaou smear at an interval appropriate for their age
- Proportion of women receiving a mammogram at an interval appropriate for their age
- Proportion of the population uninsured for medical care
- Proportion of the population without a regular source of primary care (including dental services)

Indicators of risk factors (age-specific prevalence rates):

- Cigarette smoking
- Alcohol misuse
- Obesity
- Hypertension
- Hypercholesterolemia
- Confirmed abuse and neglect of children

Indicators of health status outcome:

- Percentage of children under 5 years of age who are tested and have blood lead levels exceeding 15 ug/dL
- Incidence of hepatitis B (per 100,000 population)
- Proportion of children aged 6–8 and 15 years with one or more decayed primary or permanent teeth

## References

1. Institute of Medicine. The future of public health. National Academy of Sciences. Washington National Academy Press. 1988.
2. Department of Health and Human Services. Healthy people 2000: National health promotion and disease prevention objectives for the nation. Washington: Public Health Service. U.S. Government Printing Office. 1991.
3. Centers for Disease Control. Consensus set of health status indicators for the general assessment of community health status, United States. MMWR 40(27): 449–51. 1991.

This report is the first in a series of Statistical Notes that will address technical issues related to assessing progress toward the Year 2000 Health Objectives. Future issues will be devoted to topics such as small area analytic methods, denominator data (population estimates), and quality adjusted life years. We invite your comments and suggestions. Please send comments to:

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