Trends

Place Of Death: U.S. Trends Since 1980

Fewer Americans died in the hospital in 1998 than in 1980, but some racial disparities raise troubling questions.

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ABSTRACT: Place of death is one indicator of the state of end-of-life care. We examine trends in national death certificate data on place of death from 1980 to 1998. During these years the percentage of Americans dying as hospital inpatients decreased from approximately 54 percent to 41 percent. About 310,000 fewer people died in the hospital in 1998 than if the proportion of inpatient deaths had not changed since 1980. For certain diseases the change was much greater. In 1980 whites and African Americans died in the hospital in equal proportions, but in 1998 whites died as inpatients less often than African Americans. These racial differences and their implications deserve further study.

During the past two decades end-of-life care has become an increasingly high-profile issue. In the 1980s Medicare introduced the hospice benefit, and numerous judicial rulings expanded patients’ right to terminate life-sustaining interventions. In the 1990s the United States Supreme Court rendered three decisions on end-of-life care; the Patient Self-Determination Act was enacted; major research projects to identify and overcome barriers to better end-of-life care were conducted; and initiatives were undertaken to expand hospice and educate physicians about end-of-life care. Other events not specifically directed at end-of-life care also might have altered such care. These include the introduction of capitation in Medicare, the expansion of Medicare’s postacute care benefit, the overall decline in the use of inpatient care, the expansion of managed care, and the aging of the population.

A key issue in end-of-life care is where people die. The location of death shows where the patient was receiving care at the very end of life and suggests what could be done to improve that care. If most people die in hospitals, then hospital policies and hospital staff training are particularly important. If more people die in nursing homes or skilled nursing facilities, these institutions’ ability to deal appropriately with dying becomes more important. If deaths occur in homes, the quality of home care becomes more pressing.

Also, many people in the end-of-life care community look upon an increase in home deaths favorably, partly because of evidence...
that a large majority of Americans prefer to die at home. Some of the most prominent efforts to improve end-of-life care, such as hospice, are meant to facilitate death at home or in homelike surroundings. Changes in the place of death could indicate whether these efforts have had any impact. This paper seeks to inform discussion of end-of-life care policy issues by examining trends in place of death in the context of changes in the health system.

Study Methods

The National Vital Statistics System (NVSS) has collected death certificate records from all fifty states since 1980. Death certificates provide information on place of death, as well as cause of death; region/state/county of death; and the age, sex, and race of the deceased. We have analyzed NVSS data for the years 1980–1998.

Prior to 1989, place-of-death category codes used in death certificates were as follows: (1) hospital—inpatient, (2) hospital—outpatient or emergency room, (3) hospital—dead on arrival, (4) hospital—patient status unknown, (5) hospital—patient status not on certificate, (6) other institutions, (7) dead on arrival—hospital name not given, (8) hospital and patient status not stated, and (9) all other reported entries. Because of incomplete coding practices before 1989, a large number of U.S. counties coded most or all of their in-hospital deaths as “hospital—patient status not on certificate,” failing to distinguish among inpatient, outpatient, dead on arrival, and emergency room deaths. To create reasonably comparable statistics from 1980 through 1998, we included only data from county-year combinations with fully distinct records of inpatient deaths. In the original data the total number of counties for 1980–1988 was 28,148, covering 18.5 million deaths. We have eliminated all counties with any reported “hospital—patient status not on certificate” deaths, leaving 22,689 counties (81 percent) and 12.7 million deaths (69 percent).

Place-of-death coding has been uniform throughout the United States since 1989. The “hospital—patient status not on certificate” code has been eliminated. In addition to the four well-defined hospital categories (1–4) listed above, nursing home and residential deaths have been identified as such, and all other deaths have been recorded either under a single “other” category or as “place of death unknown.” The sample for 1989–1998 includes all of the 22.5 million deaths for the period, adding to a total of 35.2 million observations for 1980–1998. In the results we present here, the “hospital—inpatient” category is used as the basis of analyses.

We studied trends in the proportion of inpatient deaths by age, sex, race, cause of death, and region of death across the time period. Coding for the detailed race of the deceased was uniform in the two subsample periods of 1980–1988 and 1989–1998, so we have grouped the racial information into three main categories: white, black, and other. Although post-1989 data have details on Hispanic origin, the Hispanic population has been included in the “white” category for consistency across years. Causes of death on the certificates are recorded with International Classification of Diseases, Eighth Revision (ICD-8, pre-1989) and ICD-9 (Ninth Revision, post-1989) codes. We have distinguished eight leading causes of death: chronic heart disease, acute myocardial infarction (AMI), cancer, chronic obstructive pulmonary disease (COPD), stroke, pneumonia and influenza, diabetes, and chronic liver disease. All other causes have been grouped as “other.” Regional analyses compared western, midwestern, southern, and eastern regions of the United States. Counties were also distinguished using the urban/rural continuum code developed by the U.S. Department of Agriculture’s Economic Research Service.

The only statistical tool in our analysis is testing for the significance of differences between proportions. Because of the number of observations, all differences in proportions reported in Exhibit 1 are statistically significant at $p < .001$. For finer subgroups reported in the text, the sizes of the samples are still large enough to guarantee that any difference in inpatient death proportions at least as great as 2 percent is statistically significant at $p < .05$. 

Study Results

The percentage of persons dying as inpatients held steady from 1980 to 1983. Since 1983 the rate of in-hospital deaths in the United States declined at a fairly constant rate, from a high of about 54 percent to a low of around 41 percent in 1998 (Exhibit 2). During the 1990s the decline was 8 percent—nearly 1 percent a year. Deaths occurring at home and in nursing homes correspondingly increased.

Between 1990 and 1998, home deaths rose from 17 percent to 22 percent, and nursing home deaths, from 16 percent to 22 percent. The remaining deaths occurred mainly in outpatient medical facilities (7 percent) and other unspecified locations (4 percent). Patients who were dead on arrival or with status not specified on the death certificate constituted about 3 percent of deaths recorded in the 1990s.

While the proportion of in-hospital deaths fell for each major cause of death, place of death has changed most for cancer (Exhibit 3). Between 1980 and 1998 the rate of inpatient deaths from cancer declined from 70 percent to 37 percent. The percentage of patients with diabetes and COPD who died in the hospital fell by more than 15 percent each (Exhibit 1), as deaths attributable to AMI dropped less
than 4 percent.

Cancer is also unusual in that data from the 1990s show that most of the shift out of the hospital has been toward private residences, which increased by 15 percent from 1989 to 1998 to account for 38 percent of all cancer deaths; in the same time period, cancer deaths in nursing homes rose just 4 percent, to 17 percent. For other diseases, declines in inpatient deaths were evenly divided between increases in home and nursing home deaths.

In 1980 there was almost no difference in rates of inpatient death between whites and African Americans (Exhibit 4). However, by 1998 whites died in the hospital much less frequently (40 percent) than African Americans did (48 percent). The proportion of in-hospital deaths declined for both races for every major cause of death, yet for each cause it declined more for whites.

During the 1980s and 1990s the change in in-hospital mortality was similar for both sexes. However, the comparison between sexes differed for African Americans and whites (Exhibit 4). African American and white women had especially different prospects of dying in the hospital. In 1998 white women died in the hospital 39 percent of the time, while African American women did so 50 percent of the time.

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**EXHIBIT 2**

Decline In Percentage Of Americans Dying As Inpatients, 1980–1998, And Percentage Of U.S. Home And Nursing Home Deaths During The 1990s


**EXHIBIT 3**

Decline In Percentage Of Americans Dying As Inpatients, By Cause Of Death, 1980–1998


Notes: AMI is acute myocardial infarction, COPD is chronic obstructive pulmonary disease.
With regard to age, the proportion of in-hospital deaths was highest for deceased people ages 65–74 years, 47 percent in 1998 (Exhibit 1). Nursing home deaths increase greatly with advanced age. In 1998, 24 percent of people ages 75–84, and 45 percent of those older than age 85, died in nursing homes. These relationships between age and place of death did not change much during the study period.

Rates of in-hospital death differed around the country. Inpatient death in 1998 was more likely in the Northeast and South and less likely in the West and Midwest (Exhibit 1). Analysis according to how urban a county was (as classified by the urban/rural continuum code) did not point to any trend variation over time. Inpatient deaths declined at roughly the same rate in metropolitan and nonmetropolitan counties.

**Discussion And Policy Implications**

During the last two decades of the twentieth century there was a noticeable change in the way Americans died. The hospital ceased to be the setting of death for most Americans. By 1998 more Americans died at home or in a nursing home (45 percent) than died as hospital inpatients (41 percent). Since more than 2.4 million Americans die each year, the substantial shift in the place of death since 1980 means that in 1998 approximately 310,000 people died outside the hospital who would have died in the hospital if the distribution had been the same as it was two decades earlier. Importantly, this shift in place of death occurred relatively steadily during the 1980s and 1990s. This suggests that no single event during that period triggered the change. Reductions in in-hospital deaths have been evolutionary, not revolutionary.

This shift out of the hospital has implications for ensuring that dying patients receive good end-of-life care. Moving outside the hospital setting does not ensure a good death. It could represent movement to a skilled nursing facility, where the environment and the issues for quality of dying might be similar to those of a hospital. Hospices, homes, and traditional nursing homes have their own potential problems. Thus, one should conclude not that end-of-life care has necessarily improved but rather that quality of care in places other than hospitals is becoming more important.

Death certificate records indicate that approximately 500,000 people die annually in nursing homes. Nursing home staff need adequate resources and training to fill their increasingly important role in end-of-life care. In addition, as hospices and home care agencies rapidly expand to meet the needs of the growing numbers of Americans dying in their own homes, quality of care must not be allowed to erode.8

**Racial differences.** The growing gap in in-hospital death rates between races was unanticipated. In 1980 the overall rates of inpa-

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**EXHIBIT 4**

*Rates Of Inpatient Death By Race And Sex, 1980–1998*

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tient death for whites and African Americans were identical; during the study period the rates for the two races diverged. These data are consistent with data showing that African Americans tend to receive more intensive and expensive care in the final year of life. These racial differences in place of death may be the result of differences in preferences, with African Americans more likely to choose life-prolonging procedures and less likely to complete advance care directives and agree to do-not-resuscitate (DNR) orders. However, evidence that terminally ill African Americans receive less care from family members and friends could mean that more African Americans depend on hospitals for final care, regardless of their preferences. It is also possible that African Americans and other population groups lack access to hospice and home care services in their region. Whether racial differences in care come from different preferences or disparities in access, or both, is an important question for future research.

Cancer. The proportion of in-hospital deaths has fallen farther for cancer than for any other disease. In 1998 only about a third of cancer patients died as inpatients, nearly reversing the ratio of two decades earlier. Furthermore, unlike for other major causes of death, the shift for cancer has been toward residences far more than toward nursing homes. These data, combined with data indicating that as much as a half of cancer patients receive hospice care at the end of life, suggest acceptance of hospice-directed home deaths among oncologists and oncology patients. It appears that special attention to end-of-life care for cancer has altered practices dramatically. One possible explanation for the relatively slight changes for other causes of death, such as COPD and heart failure, is that those impending death from these causes is less predictable. Without very reliable prognoses, it may be more difficult to stop life-prolonging treat-

**Medicare spending.** Care for the dying is very expensive, consuming roughly 27 percent of Medicare’s spending for the 5 percent of beneficiaries who die. It has long been hoped that such costs could be reduced by decreasing in-hospital deaths, but the percentage of Medicare spending during the last year of life has not fluctuated much even as in-hospital death has declined a great deal. The steady decline in hospital deaths, combined with data suggesting no significant change in the payments for individuals who die or the proportion of Medicare expenditures going to them, indicates that reducing out-of-hospital death does not save money at the end of life.

**Study limitations.** The principal limitation of this study is that the outcome measure is site of death, which is not necessarily the same place that the patient spent most of his or her last months. Death as a hospital inpatient does not rule out the possibility that a patient was dying at home up until the final twenty-four hours before death.

The other important limitation is in the quality of the data from the 1980s. Thirty-one percent of deceased people in that decade lived in counties where in-hospital death could not be distinguished from other facility-based death. Hence, unlike the complete 1990s data, the trend data for the 1980s are only an estimate. However, since the 1980s trend data describe just under 70 percent of U.S. deaths during the 1980s, they are probably an adequate representation.

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NOTES


