Home-sweet-home health care

Lower costs of home care versus hospital care, advancing technology, and expansion of medicare benefits are some of the reasons home health services is the fastest growing segment of the health services industry

Laura Freeman

The home is now the choice for certain types of health care. Although home health care is not a replacement for all hospital care, it has become an important setting for delivering preventive, diagnostic, therapeutic, rehabilitative, and long-term maintenance services.

The health care that patients receive in the privacy and comfort of their own homes breaks the past pattern of confining sick, handicapped, diseased, and mentally ill individuals to hospitals or institutions. Expansion of medicare benefits, lower costs for care at home relative to hospital care, and modern technology are among the reasons home health care has become the fastest growing segment of health care services, and the second fastest growing industry in the economy as of October 1994.

For example, cancer patients can now live at home and even return to work with the aid of computerized pumps that deliver medications at precise dose frequencies and intensities. Portable ventilators allow babies with respiration problems to scoot around the floors of their own homes. Heart patients are monitored and treated at home by hospital-based teams using fiber-optic telecommunications. Such modern technologies, the expansion of medicare benefits, and relatively low costs for at-home care have combined to make home health care the fastest growing segment of the health care industry and one of the fastest growing industries in the economy.

One of five jobs created in the nonfarm economy since January 1988 has been in the health services industry.[1] Within health services, the relatively small home health care industry was a major provider of jobs, growing 5 times faster than the average of all health industries. By October 1994, home health care accounted for 6 percent of total health services. But since 1988, it has gained a little more than half as many jobs as the hospital industry, which is seven times the size of home health care. This pattern of employment growth reflects the shift of patient care from hospitals to the home.

Because health services are always in demand, the health care industry has been known for its strength in bad times as well as good. For example, during the most recent employment recession, June 1990 through February 1992, employment in the health services industry grew 7.5 percent while employment in the total nonfarm economy fell 1.7 percent.[2]

Although this strong growth was widespread, certain segments of health services stand out. Since 1988, home health care has had the largest relative employment increase, 168 percent (or a rise of 345,000 additional jobs). In contrast, hospitals have had the smallest relative increase, 18 percent, but the largest number of additional jobs (nearly 580,000). (See table 1.)

Home health care currently is the fastest growing portion of health care. (See chart 1.) Home care employment has an annual growth rate of 16.4 percent during the 1988–93 period. This compares with 4.3 percent for total health services and 2.8 percent for hospitals. (See chart 2.)

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In addition, during the first 3 years of the recovery period following the most recent recession, home health care had the third largest increase of all industries (following "mortgage bankers and brokers" and "title insurance").[3]

At the same time, employment in the medical instruments and supplies industry increased 17 percent over the 1988–94 period, compared with a loss of 6 percent in total manufacturing.

Home health care profile

Services provided. Home health care services, as defined in the *Standard Industrial Classification Manual 1987*, consists of "establishments primarily engaged in providing skilled nursing or medical care in the home, under the supervision of a physician."[4] Traditionally, such services have been provided by family members in the home. But fewer homes now have someone to care for the elderly or sick, and the home health industry has filled the gap.

The services provided may be as fundamental as help with basic "activities of daily living." These activities are physical tasks related to personal care and include dressing, bathing, getting out of bed, and feeding oneself. The services also may be as complicated as caring for patients needing specialized care for AIDS or cancer chemotherapy. Home health personnel work days, evenings, or weekends, depending on the needs of the patient. The time with the patient may range from 1 hour a week to around-the-clock care.

Types of jobs. According to the Occupational Employment Statistics survey, home health aides,[5] accounting for 31 percent of the industry, are the most common providers of care to individuals at home. Various professional health providers make up 32 percent, of which 20 percent are registered nurses and 7 percent are licensed practical nurses. The other large group comprises personal and home care aides, who account for 13 percent of the industry's workers. Other specialized personnel, depending upon the need, may include physical therapists, occupational therapists, social workers, and speech pathologists.[6] (See table 2.)

In recent years, the occupational breakdown of the home health care industry has remained relatively stable, except for registered nurses and personal and home care aides, [7] and home health aides. Since 1990, the proportion of registered nurses has increased 2.5 percentage points and personal and home care aides has risen 4.2 percentage points; at the same time, the proportion of home health aides has declined by 6.3 percent.

These changes reflect a shift in the type of demand by home health care patients. More now than in the past, patients' care requires a more highly trained staff who can perform more complex procedures in a rapidly changing industry.

Changes in the industries. The home health care industry is expanding and being redefined by changes in employment trends and the occupational distribution in the hospital industry as it takes on responsibility for more complicated health problems. The increasing use of the prospective payment system for acute hospital care has "changed the nature of care provided to medicare beneficiaries during the hospital stay and in the post-discharge period," according to a 1993 University of Minnesota report. "The financial incentives inherent in a fixed payment system encourage hospitals to discharge patients as soon as medically possible and the services provided immediately following discharge have become an increasingly important component of patient care."[8]

The change in the delivery of hospital care has shifted demand to home health care facilities or other less costly out-patient settings. According to another report, "a hospital shifts the cost of care to a different part of the health care sector" by releasing a patient to a convalescent facility. "If a patient can be sent home to be cared for by family members . . . the cost shifts out of the health care sector to other parts of the economy."[9]

In addition, technological advances have allowed procedures that were once performed only on an inpatient basis to be shifted to outpatient care, with the availability of additional care from other health care facilities.[10] Less intensive nursing care following hospital discharge increasingly is provided by home health care workers. The expansion of medicare benefits that can be applied to home health care costs, the cost effectiveness of the industry compared with alterna-

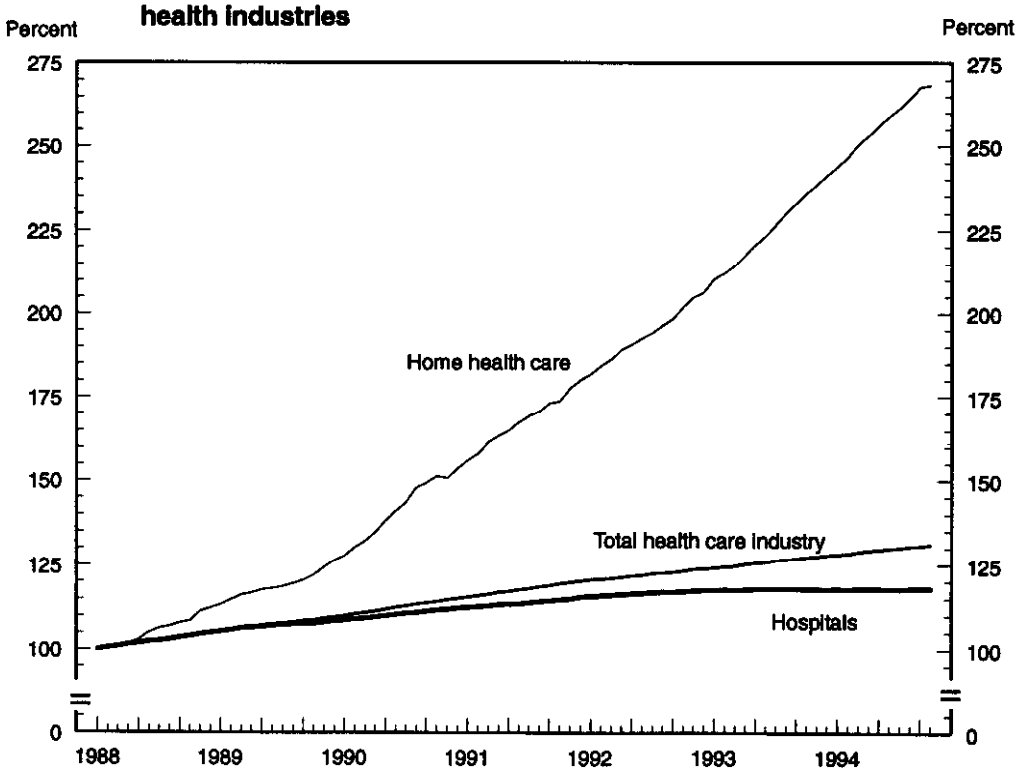
Table 1. **Employment change in health services, 1988 and 1994**

[In thousands]

Industry	Percent of health services employment		Employment change	
	January 1988	October 1994	Percent	Level
Total	100.0	100.0	31	2,163
Hospitals	46.3	41.6	18	576
Physicians	16.9	17.3	35	406
Nursing and personal care facilities	18.6	18.1	27	350
Home health care	3.0	6.0	168	345
Practitioners	3.1	4.4	88	187
Dental offices	6.9	6.6	25	121
Osteopaths and n.e.c.	3.3	3.7	48	109
Laboratories	2.0	2.3	45	64

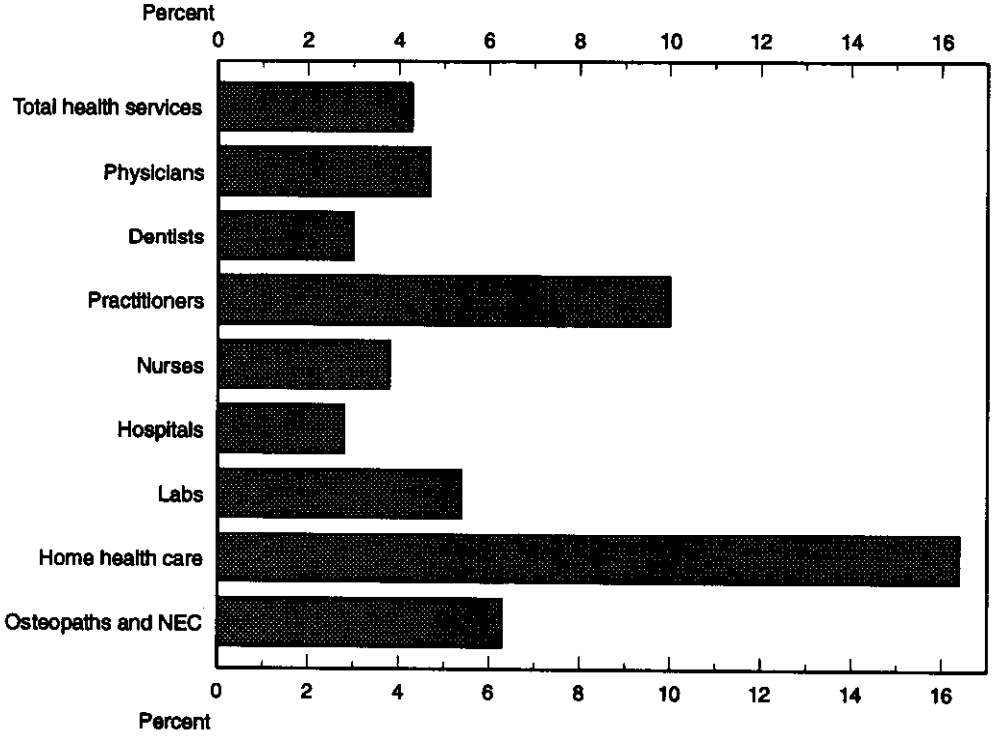
NOTE: Data are seasonally adjusted.
n.e.c. = not elsewhere classified.

Chart 1. **Employment growth, as a percent of 1988 levels, in selected health industries**



NOTE: January 1988 =100

Chart 2. **Average annual growth rates for health services, 1989–93**



N.E.C.: Not elsewhere classified

tive health care choices, technological advances, and increased public awareness have all contributed to the move toward home health care.

The impact of medicare

Recent expansion of portions of the medicare program that provide home health care benefits explains part of the employment growth in the home health care industry. Changes in the medicare program resulted from an August 1988 ruling in *Duggan* v. *Bowen* that broadened the scope of the program.[11] The ruling was in response to a lawsuit filed against the Health Care Financing Administration by 17 medicare patients denied home-care benefits, several organizations that provide home health care, the National Association for Home Care, and 14 members of Congress.

The decision stated that the Health Care Financing Administration had imposed significant restrictions in the 1980's on coverage of home health care, drastically changing previous requirements. The new policy denied reimbursement for home care that was provided for more than 4 days a week, no matter how little time was devoted to the daily care. It had improperly interpreted the Medicare Act's term, "part time or intermittent" as part time *and* intermittent. Patients needing an hour of care daily for 5 days were denied coverage, while those needing 27 hours of care over a 4-day period could receive benefits. In addition, a patient who needed care on 5 different days was not only denied the fifth day of care but also lost medicare coverage for the other 4 days.

The decision noted that the drafters of the Medicare Act had intended that the government pay for "part time or intermittent" care at home by a nurse or home health aide as long as such care was not full-time that might be better provided in an institution. The home-care program was designed to provide services at home for people who do not need to be hospitalized or confined to a nursing home. The intent of the program was to shift care to the less expensive home setting, where possible. However, because of the interpretation at the time, many patients were forced to receive care in an institutional setting, receive care at home paid entirely by the patient, or forego treatment.

The decision also certified the case as a class-action suit, requiring the government to reopen all medicare claims from patients whose benefits were denied because of the Health Care Financing Administration's policy shift. The class action was estimated to include hundreds of thousands of individuals. As a result of the decision, medicare now allows payment of part-time (fewer than 8 hours a day) or daily (7 day-a-week) home health services for as long as the patient requires such care.[12] Therefore, the benefit greatly expands the demand for home health care services.

Policy clarifications resulting from the court case expanded the scope of reimbursement for home care under medicare. A connection between this policy clarification, which became fully effective near the end of 1989, and the subsequently rapid growth of employment in the industry seems clear. (See chart 3). After growing 13 percent the previous year, employment in home health services grew 21 percent in 1990, the first full year in which the new guidelines were in effect. Following 1990, the gains in the industry averaged 16 percent annually.

The change in medicare benefits allowed more individuals to be covered by home health care services. Before the lawsuit, approximately 1.5 million enrollees received home health services from medicare-certified agencies. By the end of

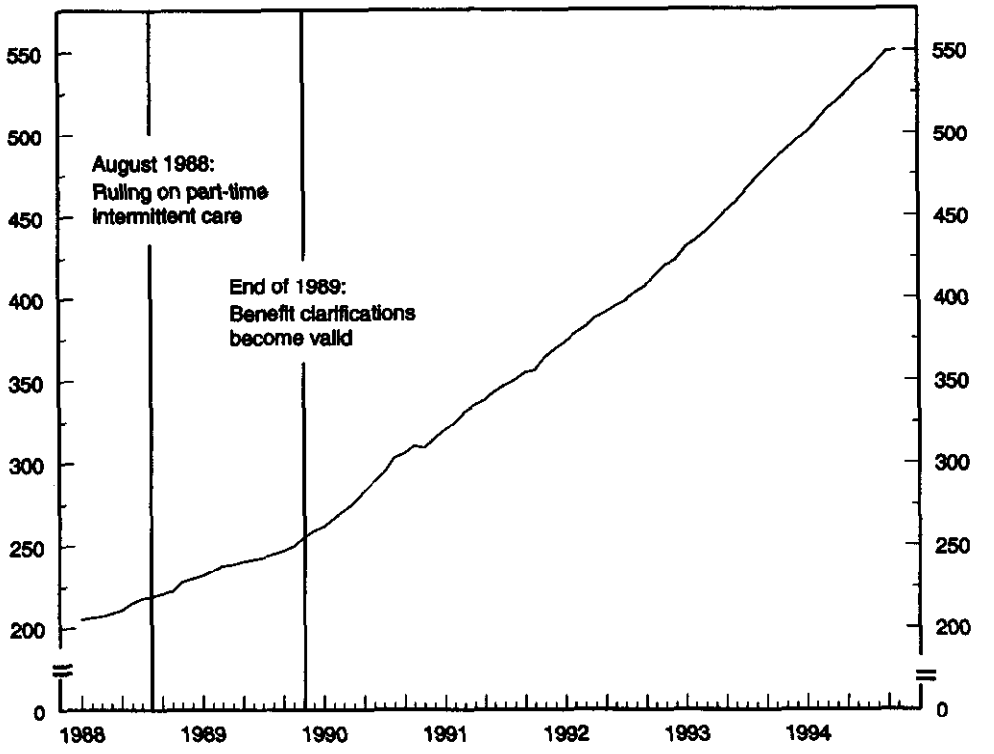
Table 2. **Home health care employment by selected occupations, 1990 and 1993**

[In percent]

Occupation	1990	1993
Social workers, medical and psychiatric	0.81	1.13
Health practitioners, technicians and technologists	29.50	32.23
Physicians and surgeons	.07	—
Other health diagnosing and treating practitioners	—	.25
Respiratory therapists	.13	.15
Occupational therapists	.55	.65
Physical therapists	1.54	1.69
Speech pathologists and audiologists	.46	.50
Recreational therapists	.03	—
All other therapists	.04	.06
Registered nurses	17.74	20.20
Licensed practical nurses	7.67	7.16
Emergency medical technicians	.14	.02
Physicians' assistants	.08	.21
Pharmacists	.08	.22
Dietitians and nutritionists	.07	.15
Medical and clinical laboratory technologists	—	.02
Medical and clinical laboratory technicians	.05	.03
Medical records technicians	.27	.44
Psychiatric technicians	.02	—
Radiological technicians	—	.05
Other health professionals, paraprofessionals/technicians	.56	.51
Health service and related	45.01	36.22
Medical assistants	.06	.08
Nursing aides, orderlies, and attendants	5.50	4.19
Home health aides	37.32	31.02
Psychiatric aides	.04	.03
Physical and corrective therapy assistants and aides	.20	.27
Occupational therapy assistants and aides	.03	.04
Pharmacy assistants	.02	.06
Other health services	1.84	.53
Personal and home care aides	8.39	12.60

NOTE: Dashes indicate data did not meet reliability or confidentiality standards.
SOURCE: Occupational Employment Statistics Survey, Bureau of Labor Statistics.

Chart 3. **Employment in home health care services, seasonally adjusted, 1988–94, in thousands**



1993, about 3.5 million received these benefits, an increase of more than 218 percent.[13] If those who are not certified under the medicare program are included, the number of home health agencies increased correspondingly with growing enrollment and demand.

In addition, the number of medicare certified home health agencies has increased by nearly 22 percent over the past 5 years; most of the increase occurred in 1993.[14] To become certified, home health care agencies are required to meet standards and criteria of care set by medicare under the auspices of the Health Care Financing Administration. As of 1993, nearly 7,000 medicare certified home health agencies and a little more than 6,000 noncertified agencies provided service.[15] Agencies have remained outside of medicare for various reasons; they may not provide skilled nursing care or choose to limit business to private-pay patients.

Cost effectiveness

The increase in the number of individuals covered by medicare for home health care has led to a marked expansion of the industry. Home care has become a major source of relatively affordable care as the health care system—the government, hospitals, and other providers—tries to control costs with a more efficient use of health care and long-term care.

Cost savings result from lower overhead expenses and flexible staffing practices. A home health care company does not need an extensive facility with 24-hour pharmacies, operating rooms, and medical equipment for various emergencies. Although a portion of home care is provided by family members, neighbors, or close friends, a changing American family structure and increasingly complex care being delivered at home has led to an increased delivery of home care by professionals. Cost savings result from replacing high-cost institutional care with professional care and personal care often provided by family or friends. For example, in an institutional setting, a registered nurse or doctor may visit all patients three times a day, while home care rounds are based on the needs of the patient and his or her family. The determining factors in the frequency of visits are not only the patient's

condition, but also the ability of the patient and family to learn how to provide care themselves, with the goal of self-sufficiency.

In addition to the frequency of visits, home-care services also are established individually according to the type of care needed. One need not pay for a doctor's visit or 24-hour care by a registered nurse when a home health aide is qualified to perform the service.

Salaries of the professions may vary widely. For example, the Bureau of Labor Statistics has estimated median full-time weekly earnings to be $1,019 for physicians, $687 for registered nurses, and $281 for nursing aides, orderlies, and attendants (a classification in which home health aides are included).[16] Also, because of the high proportion of aides, the average hourly earnings for workers in the home health care industry is more than $3 less than that of the hospital industry, $10.67 compared with $14, as reported by the Current Employment Statistics survey.

Several sources have cited cost savings patients receive with home care over hospital or other institutional care. Most acute care received from a hospital cannot be replaced with care in the home, although such care increasingly is being reevaluated as suitable for home care. Some examples of acute care delivered in the home are discussed below.

Pediatric AIDS. In July 1993, *The Washington Post* reported that a 2-1/2 year-old boy infected with the HIV virus was receiving home health care in place of hospital care. The child required a 24-hour nurse to administer oxygen, intravenous feedings, and 37 types of medication. By receiving home care, the cost was $531 a day, reduced from $2,263 a day for hospital care, a 76-percent savings.[17]

Respiratory care. An evaluation of home care costs versus those for alternative institutional care for children who require artificial breathing assistance showed substantial cost savings. The study specifically compared the average costs of institutional care versus home care for ventilator-dependent children and oxygen-dependent children with tracheotomies.[18] The findings for patients who depend on a ventilator showed an average annual savings per patient of $79,074–$109,836 for home care versus $188,909 for institutional care. The findings for children who depend on ventilators to supply oxygen showed an average annual savings per patient of $83,187–$63,650 for home care versus $146,836 for institutional care.[19] Home health care was found to save up to $300,000 per year with mean costs of only 50 percent of institutional costs for respiratory technology-dependent children.[20]

Hip fracture. Lewin/ICF, a consulting firm, released a health care study showing that the use of home medical equipment with inpatient treatment is more cost-effective than hospital treatment alone.[21] The analysis focused on patients who were hospitalized with a hip fracture, chronic obstructive pulmonary disease,[22] and amyotrophic lateral sclerosis,[23] or Lou Gehrig's disease, with pneumonia. A cost-benefit analysis was used to identify the costs and benefits of home health care compared to care in the hospital.

The study found that a combination of inpatient and home care is much more cost-effective than inpatient care alone. The research also determined that a combination of inpatient/home therapy with home medical equipment is not only the preferred treatment of patients, but also may save patients between $300 and $2,300 per incident. The study demonstrated that cutting inpatient days and substituting more home care days reduced costs by $2,300 in hip fracture cases, $520 in cases of obstructive pulmonary disease, and $300 in cases of amyotrophic lateral sclerosis.[24] The cost savings were partly the result of pressure on providers to reduce the length of inpatient hospital stay, and the development of home medical equipment and other support services that allow more patients to receive care at home. The study emphasized that full use of home health care and home medical equipment services can achieve significant cost savings and improve patient satisfaction.[25]

The cost effectiveness of the home health care industry has dramatically changed patient care. As patients are shifted from hospitals to less expensive outpatient settings such as the home, hospital employment growth, occupancy rates and patients' length of stay have slowed. In response, hospitals have begun to compensate by merging or expanding care to include home care and other outpatient services on some level.

Technological advances

In most situations, sending the patient home for care instead of using institutional care depends not only on reimbursement policy, but also on whether the patient can receive treatment at home equivalent to institutional care. Recent technological advances have made complex medical equipment more compatible with the home environment. Lab tests, often required when a complicated case is under treatment, are now available curbside from vans that perform lab work on site. This development adds to the availability of care at home.

Equipment that has been adapted especially for home care includes: blood glucose monitoring for the diabetic; computerized equipment for

the disabled; mini-intensive care units with ventilators and central venous lines (lines, needles, or tubes that are inserted into a large vein to maintain fluids such as an antibiotic or to replace blood or fluids in the body system); and mobile laboratories that can travel from home to home.

An ever-growing range of devices helps patients overcome impairments in hearing, speech, and vision. In addition, devices such as specialized telephones, computers, talking books, and captioned television improve communication, socialization, and recreation for the homebound.[26]

Home care also has helped reduce infant mortality with infant home monitors, known as apnea monitors, [7] that were designed for children who are at risk from sudden infant death syndrome. Current technology also permits AIDS patients to receive complex medical treatment at home.[28]

Nearly every method of hospital or other institutional treatment that can be made portable can be provided at home. One of the most rapidly growing areas of medical technology is the engineering and production of medical equipment tailored for use in the home. Employment in the medical instruments and supplies industry has increased by 17 percent since January 1988.

Home infusion therapy, the delivery of fluid to the body by an IV line, is a widely noted advance in technology. Since the early 1980's, home infusion therapy has made possible early hospital release of thousands of patients, allowing them to receive follow-up treatment at home. Such fluids may be, but are not limited to, antibiotics, pain medication, or replacement of body fluid.

Technological advances in the devices used to control the infusion have helped expand their use. The process was once limited to a system that operated on gravity. Infusion control now involves programmable electronic pumps that allow delivery of medication at wide ranges of dose frequencies and intensities. The therapy is administered by IV home care nurses in consultation with the pharmacist and the physician. The patient receives extensive training and must be suitable for this type of therapy.

The introduction of home infusion therapy has allowed in-home chemotherapy for cancer patients, specialized in-home therapy for post-transplant patients who have undergone bone, kidney, or heart transplants, antibiotic therapy, parenteral analgesics for pain management, intravenous administration of certain heart medications, in-home blood transfusions, and total parenteral therapy.[29]

Recent innovative, money-saving services—made possible by a new generation of hardware, software, and fiber-optic, digital cable networks—are attracting attention from hospitals, physicians, and clinics in urban and rural areas. State-of-the-art communications technology works more efficiently than current systems. Fiber-optic telecommunications systems, which has been talked about for years, is in place and used more commonly than is realized. These systems allow transmission of billions of bits of digitized computer data with great accuracy. The technology enhances home health care by enabling hospital staff and physicians to monitor patients in their homes via telephone lines.[30]

Increased public awareness

Public opinion of home health care and available services was surveyed in 1985 by the National Association for Home Care. It found that only 38 percent of the population could name a home health care service.[31] Since then, the public has become more aware of the home health care industry. Changes in the structure of families have contributed to this awareness. With more women in the work force—59 percent, up from 56 percent in 1988—fewer family members are at home to help sick or elderly patients who may need sophisticated care.[32] A more recent poll conducted by Louis Harris in 1992 found that Americans supported home care by a margin of 9 to 1 over various forms of institutional care.[33]

Use of home health care services is influenced by many factors besides knowing it is available. Key factors include the patient's health care needs, the type of reimbursement plan, and the physician's willingness to prescribe home care. Because home health care cannot be obtained without a physician's prescription, the physician, who makes specific recommendations and referrals, plays a major role in deciding whether to use home care services.

A 1991 study, "Physicians' Attitudes and Behaviors toward Home Health Care Services," addressed the importance of physicians' insights into the strengths and weaknesses of the home health care industry. Physicians were asked to rate their knowledge about home health care: 71 percent noted "some" knowledge; 21 percent were "very knowledgeable;" and only 7 percent admitted no knowledge of the industry. A majority of physicians seemed to be aware of the traditional home health services such as nursing (92 percent were aware of the service), home health aides (79 percent), physical therapy (74 percent), and medical social work (70 percent). However, more than half of physicians surveyed were unsure or unaware of laboratory/x-ray services and occupational, chemotherapy, and IV therapies delivered in the home.

Physicians also were asked to comment on whether they plan to use home health services in the future. Nearly 70 percent were likely to use such services, and 25 percent would not. The specialties of the second group are not easily adapted to home care. The findings showed that a physician's knowledge and awareness of the industry may be related to his or her specialty. Internists were the most likely to cite more services offered by home care agencies than were physicians in other specialties. Among physicians who had used home health services, internists and surgeons predominated. The survey and analysis concluded that "an overwhelming" 90 percent of the physician sample were favorable toward home health care services and programs, while 3 percent were unfavorable.[34]

Physician involvement has contributed to the growth of employment in the industry. As physicians become more involved with home care, they will push for more use of technological improvements and other forms of innovation and education. "Undergraduate and graduate medical education programs are developing home care curricula, and academic medicine is beginning to develop a research agenda, particularly in the area of clinical outcome measurements."[35] Nearly 82 percent of all accredited medical schools offered home health care in their 1992 curricula.[36]

Growth in the home health care industry is contingent not only on the knowledge of the public or patients, but also on the knowledge and approval among physicians. Without being recognized as appropriate, safe, and cost-effective, the industry would not exist. The strong growth of employment in the home health care field of nearly 17 percent annually can be attributed in part to an increase in awareness among the public and physicians.

What's ahead?

The expansion of medicare benefits brought about by policy changes in the late 1980's had a large and immediate impact on employment in the home health care industry. This trend will most likely continue in the absence of other policy changes. Improved cost-effectiveness, advancing technology, and enhanced public awareness also is expected to continue to strengthen the industry. Additional growth in home health care could accompany any changes included in health care reform, which may still be accomplished, although scaled back from the overhaul proposed in 1994. In addition, long-term future impact on home health care employment will stem from changing demographic patterns.

The need for personal assistance and health services, specifically home health care, increases with age. Among persons under age 65, only 2 percent needed assistance with everyday activities. At older ages, the proportion requiring assistance ranged from 9 percent of those aged 65 to 69 up to 45 percent for those aged 85 or older.[37]

Because health care benefits are provided to nearly all of the elderly population, the size of the medicare system is greatly affected by changes in demographics. "The increasing size of the old population, and their health situation, which clearly declines with increasing age, suggests that a larger number will seek long-term care as part of the continuum from independent living, to assisted living at home, to institutional care."[38]

Individuals aged 65 and older represent more than 31 million Americans, or 1 of 8. This ratio is 10 times larger than their representation in 1900 and is expected to more than double by 2030.[39] Over the next 10 years, the Bureau of the Census estimates that the proportion of elderly will remain virtually constant. Between 2010 and 2030, the baby boomers—those born between 1946 and 1964—will enter the ranks of the elderly. This development will expand the elderly population from 39.7 million in 2010 to 69.8 million in 2030, when more than 20 percent of the population will be 65 and older.[40] The population that is 85 and over is "expected to be the fastest-growing age group," doubling in size from 1991 to 2020, and increasing five-fold by the year 2050.[41]

The latest BLS projections anticipate a substantial increase in home health employment into the 21st century. Employment in the industry has been projected to increase by more than 500,000 jobs, or 128 percent, between 1992 and 2005.[42] This compares with an increase of only 30 percent in the hospital industry and 43 percent for total health services. The home health care industry has been and will continue to be a major contributor to health services employment growth. □

Footnotes

[1] Employment data are from the Current Employment Statistics survey and appear in *Employment, Hours, and Earnings, United States, 1909–1994*, Bulletin 2445, (Bureau of Labor Statistics, 1994). The home health care services (SIC 808) industry was initiated as a separate series in January 1988.

[2] For more information on the health services industry, see "Health services: the real jobs machine" by David R. H. Hiles, *Monthly Labor Review*, November 1992, pp. 3–16.

[3] Comparison is based on all private sector industries, defined at the three-digit level of detail in the Standard Industrial Classification system.

[4] Office of Management and Budget, *Standard Industrial Classification Manual 1987*, p. 389.

[5] Home health aides have been defined by the Occupational Employment Statistics survey as those who care for elderly, convalescent, or handicapped persons in the home of the patient. They perform duties for patients such as changing bed linens, preparing meals, assisting in and out of bed, bathing, dressing, and grooming, and administering oral medications under a doctor's orders or at the direction of a nurse.

[6] Occupational data are from the Occupational Employment Statistics survey, Bureau of Labor Statistics.

[7] Personal and home care aides have been defined by the Occupational Employment Statistics survey as those who perform a variety of tasks at places of residence. Their duties include keeping house and advising families with problems such as nutrition, cleanliness, and household utilities.

[8] *A Study of Post-Acute Care, A Final Report*, HCFA No. 17-C98891 (University of Minnesota, School of Public Health, Institute for Health Services Research and Policy, October 1993), p. i.

[9] Paul Wallich, "Are Hospitals Heading for Intensive Care?" *Scientific American*, April 1994, p. 118.

[10] Suzanne W. Letsch, Helen C. Lazenby, Katharine R. Levit and Cathy A. Cowan, "National Health Expenditure, 1991," *Health Care Financing Review*, December 22, 1992, p. 1.

[11] *Duggan* v. *Bowen*, U.S. District Court, Washington, 870383, Aug. 1, 1988.

[12] Unpublished document written by Jill L. White, director of policy analysis, National Association for Home Care, Washington, D.C., Mar. 11, 1994.

[13] "Basic Statistics About Home Care 1993," National Association for Home Care, Figure 7, p. 4.

[14] "Basic Statistics," Figure 2, p. 2.

[15] *Ibid.*, p. 2.

[16] Occupational weekly earnings data are from the Current Population Survey and were cited in *Employment and Earnings*, (Bureau of Labor Statistics, January 1994), Table 56, pp. 243 and 245. (These median full-time weekly earnings are limited to wage and salary workers only. For example, self-employed physicians are not included.)

[17] Amy Goldstein, "A Tragedy Tangled in Red Tape; Family Wins 5-Month Battle to Let Gravely Ill Child Die at Home," *The Washington Post*, July 17, 1993, p. A1.

[18] A tracheotomy is a surgical opening in the trachea or windpipe through the neck with the insertion of an indwelling tube to facilitate the passage of air for breathing.

[19] "Basic Statistics," p. 8.

[20] Alan I. Fields, Alan Rosenblatt, Murray M. Pollack and Joanne Kaufman, "Home Care Cost-Effectiveness for Respiratory Technology-Dependent Children," *American Journal of Diseases of Children*, July 1991, pp. 729–33.

[21] "New Health Care Study Shows Cost-Effectiveness of Home Health Care," *PR Newswire*, June 26, 1991.

[22] Chronic obstructive pulmonary disease is a functional category designating a chronic condition of persistent obstruction of bronchial air flow. Diseases usually associated with this condition are asthma, bronchitis, and pulmonary emphysema. The patient has difficulty expelling air out of the lungs. This condition is a chronic disease for which there is no cure. Physical activity is usually severely limited. The lungs and linings of the lungs are severely damaged, and usually infections are easily acquired.

[23] Amyotrophic lateral sclerosis is a motor disorder of the nervous system. Early signs and symptoms include weakness of the hands and arms, difficulty in talking and swallowing, and weakness of the legs. There is no known specific cure or treatment.

[24] Robert Rubin, "Economic Analysis of Home Medical Equipment," *Lewin/ICF*, Washington, D.C., May 29, 1991.

[25] "New Health Care Study Shows Cost-Effectiveness of Home Health Care," *PR Newswire*, June 26, 1991.

[26] "Home Care in the 1990's," *Journal of the American Medical Association*, Mar. 2, 1990, pp. 1241–44.

[27] Apnea monitors are devices equipped with audible and visual alarms. They are specifically used to monitor an infant's breathing and heart rate. The monitor sounds a warning in the event of cessation of breathing or if a baby's heart rate slows or speeds up. The unit also alerts parents in case of an operating or power failure. These are now used within the home setting for infants at risk of or with near-misses of Sudden Infant Death Syndrome. They also may be used for adults who suffer from sleep apnea. Apnea is defined as a temporary cessation of breathing.

[28] Information on home health medical equipment has been supplied by Anne E. Evans, Sales Representative, Homedco of Maryland, Baltimore, MD, January 1994.

[29] Total parenteral therapy is for patients who cannot take any food or liquids by mouth. Fluid that contains all of the electrolytes, minerals, and other nutrients needed to sustain life is delivered to the body . The fluids are usually caustic to veins and must be monitored to ensure that the electrolyte balance is maintained correctly.

[30] John Wolcott, "Prescriptions for Cost Efficiency?" *Puget Sound Business Journal*, July 15, 1991.

[31] M. Cetron, "The Public Opinion of Home Care: A Survey Report Executive Summary," *Caring*, 1985, Vol. 10, p. 13.

[32] Civilian labor force participation rates for women are from the Current Population Survey and appear monthly in *Employment and Earnings*, Bureau of Labor Statistics.

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