

Industry Guidebook: Healthcare



February 2009

**Produced for the WEIC Task Force of the Colorado Workforce Development Council by
Corporation for a Skilled Workforce**

Purpose of This Guidebook

This Healthcare Industry guidebook was developed as a resource for workforce practitioners and intermediaries, and their partners, as they design and implement sector initiatives in their regions. Sector strategies, or regionally targeted industry strategies as they are sometimes known, have become a well established and effective strategy to enhance the economic competitiveness of regions and states. The intent of this guidebook is to provide data, information, resources and trends about the industry sector at the national and state levels; so that public partners can gain a more in depth knowledge of the sector. It is not intended to be a comprehensive listing of all Colorado resources and organizations, but rather a starting point for more research at the state and regional level. Users are encouraged to spend time reviewing this guide and exploring the links to state level reports, industry web sites and other resources. The links are rich with data and industry information, and many change over time as sector trends and issues change. Successful intermediaries and sector public partners should strive to be as knowledgeable as possible about the target industry and its challenges so that they can more effectively communicate with their business partners and better understand the needs of the industry. This guidebook is intended to provide a strong foundation to start you on this journey of sector knowledge acquisition.

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Overview of Industry

Did You Know?

- Colorado has 12 percent fewer nurses than its population requires – double the national vacancy rate.¹
- With the average age of nurses in Colorado being 47 years, many will retire soon. The physical demands of nursing generally prevent individuals from working in the profession past their mid-50s. Today 17 percent of Colorado nurses do not expect to be practicing in five years.²
- In the last five years, more than 60 percent of Colorado's job growth came from health services. Even during the economic downturn of 2001-2003, health care served as the primary economic engine for the state.³
- Labor is the largest single operating cost item of hospitals in the U.S., often equal to more than 40% of revenue.
- The American Hospital Association estimates that the current shortage of 125,000 nurses in the U.S. could grow to 400,000 by 2010, and that annual personnel turnover in healthcare is more than 25%.
- Annual personnel turnover in nursing facilities can be as much as 100% for aides at some facilities. High turnover results in costly, nearly constant training of new workers.
- Across the nation almost 88,000 qualified applicants – one in three – were turned away from U.S. nursing programs in 2005-2006 largely due to the lack of prepared nursing faculty.
- To fill the workforce shortages in the healthcare industry, many organizations are recruiting doctors and nurses who are foreign nationals and sponsoring them for H-1B visas.
- The Colorado Trust convened a Health Professions Workforce Roundtable and has a \$9.9 million Health Professions Initiative.
- Healthcare workforce shortages in the U.S. are severe among both clinical and non-clinical workers, including nurses, therapists, radiology technicians, pharmacists, medical record personnel, housekeepers and food service personnel.

Colorado Healthcare Industry

The Colorado healthcare industry includes about 11,600 companies with combined annual revenue of \$18 billion. The largest healthcare sub-sectors include ambulatory services (valued at \$8 billion) and hospitals (\$7 billion). The industry contributes \$14 billion to the gross state product, representing 6% of Colorado's total gross state product. Annual state healthcare expenditures are around \$22 billion, representing 1.4% of the US total. About 17% of CO residents lack health insurance.⁴

Healthcare Reform

The new Colorado Public Health Reauthorization Act replaces a patchwork of public health systems to ensure that basic services are provided with consistent quality. The Act has a broad focus to include such issues as environmental health, obesity, and new diseases such as West Nile virus.

By the Numbers: Healthcare Employment in Colorado

There were 142,456 people employed in the health care industry in Colorado in 2007, an increase of 11% from 2003, 2% greater than the state's overall 9% employment growth rate.

Ambulatory Health Care Services

86,540 workers – 45% of healthcare employment in Colorado (3.9% of total employment)

Average weekly wage of \$1,023

Projected growth of 20% through 2016 (compared to 18% across all industries)

Hospitals

70481 workers - 36% of healthcare employment in Colorado (3.0% of total employment)

Average weekly wage of \$1,023

Projected growth of 20% through 2016 (compared to 18% across all industries)

Nursing and Residential Care Facilities

36404 workers - 19% of healthcare employment in Colorado (1.6% of total employment)

Average weekly wage of \$1,023

Projected growth of 24% through 2016 (compared to 18% across all industries)

US Healthcare Industry

The healthcare industry in the US produces annual health spending of about \$2 trillion. Goods and services are provided by manufacturers of drugs, medical devices, and other supplies, with combined annual revenue of \$300 billion, and by care providers (hospitals, clinics, doctors' offices, nursing homes) with combined annual revenue of \$1.5 trillion. Much of the cost is funded by private health insurers with annual spending of \$700 billion, and government health insurance programs like Medicare and Medicaid, with combined annual payments of \$1 trillion. The healthcare industry is highly fragmented.⁵

The US industry includes about 7,000 general hospitals; 15,000 nursing homes; 10,000 diagnostic laboratories; 30,000 outpatient clinics; 120,000 dentist offices; 200,000 doctor offices; 1,000 drug manufacturers; 5,000 medical equipment and supply manufacturers; and 3,000 private health insurers.⁶

For purposes of this guidebook, we will limit our discussion to health care providers and medical and imaging laboratories. This sub-group of the broader industry includes a wide variety of individuals, organizations, and institutions that may be public, private, for-profit and not-for-profit. Medical care professionals such as physicians, dentists, nurses, nurse practitioners, and physician assistants are at the center of the industry and provide medical care to patients. Hospitals, primary care clinics, emergency medicine clinics, pharmacies, and group and individual clinician offices all support the health care providers. The health care industry includes establishments ranging from small-town private practices of physicians who employ only one medical assistant to busy inner-city hospitals that provide thousands of diverse jobs.

According to the North American Industry Classification System (NAICS), there are 18 distinct industries within the supersector identified as health care and social assistance. The Bureau of Labor Statistics (BLS) has organized the health care businesses in this supersector into nine different segments. The segments are based on what type of services is being provided. The NAICS codes associated with these sectors are listed here. The nine segments in the health care industry are:

Hospitals

Hospitals provide complete medical care, ranging from diagnostic services, to surgery, to continuous nursing care. Some hospitals specialize in treatment of the mentally ill, cancer patients, or children. Hospital-based care may be on an inpatient (overnight) or outpatient basis. The mix of workers needed varies, depending on the size, geographic location, goals, philosophy, funding, organization, and management style of the institution. As hospitals work to improve efficiency, care continues to shift from an inpatient to outpatient basis whenever possible. Many hospitals have expanded into long-term and home health care services, providing a wide range of care for the communities they serve. (NAICS 6221, 6222, 6223)

The U.S. hospital industry includes about 6,500 hospitals with combined annual revenue of around \$575 billion. The hospital industry is highly fragmented: the top 50 organizations hold less than 30% of the market.⁷ The profitability of individual companies depends on efficient operations, since many hospitals offer similar services. Large companies have advantages in buying supplies, sharing best practices, and negotiating contracts with health insurers. Small hospitals can compete successfully by serving a limited geographical area or offering specialized services. Hospitals are labor-intensive; annual revenue per employee is close to \$100,000.⁸

Labor is the largest single operating cost item of hospitals, often equal to more than 40% of revenue. Nurses, aides, and technicians comprise the majority of the workforce. While hospitals may employ their own doctors, most doctors who use their facilities have independent practices and use the hospital under contract.⁹

Nursing and residential care facilities

Nursing care facilities provide inpatient nursing, rehabilitation, and health-related personal care to those

Job Spotlight: Nursing Aides

While there are numerous job openings for Nursing Aides (also known as nurse aides, nursing assistants, certified nursing assistants, geriatric aides, unlicensed assistive personnel, orderlies, or hospital attendants), the occupation is characterized by modest entry requirements, low pay, high physical and emotional demands, and limited advancement opportunities.

Nursing aides provide hands-on care and perform routine tasks under the supervision of nursing and medical staff. Nurse aides employed in nursing care facilities often are the principal caregivers, having far more contact with residents than do other members of the staff. Because some residents may stay in a nursing care facility for months or even years, aides develop ongoing relationships with them and interact with them in a positive, caring way.

Nurse aides who work in nursing care facilities must complete a minimum of 75 hours of state-approved training and pass a competency evaluation. Aides who complete the program are known as certified nurse assistants (CNAs) and are placed on the State registry of nurse aides.

Source: 2008-2009 Occupation Outlook Handbook, Bureau of Labor Statistics

who need continuous nursing care, but do not require hospital services. Nursing aides provide the vast majority of direct care. Other facilities, such as convalescent homes, help patients who need less assistance. Unlike nursing care facilities, nursing and medical care are not the main functions of establishments providing residential care. Residential care facilities provide around-the-clock social and personal care to children, the elderly, and others who have limited ability to care for themselves. Assisted-living facilities, alcohol and drug rehabilitation centers, group homes, and halfway houses are all considered residential care facilities. (NAICS 6231, 6232, 6233, 6239)

The nursing care industry includes about 35,000 companies that operate 70,000 facilities with combined annual revenue of \$130 billion. The nursing care industry is highly fragmented: only 13 of the 50 largest senior housing owners and operators manage portfolios of more than 100 properties.

Demand for nursing home services is driven by the aging population, which varies sharply from state to state. The US population 65 and older is expected to increase an average 25% between 2005 and 2015, but by much more in Utah (44%); Washington (43%); and Colorado (43%).¹⁰

The profitability of individual nursing facilities depends on efficient operations, as revenue per patient is largely controlled by the big government insurance programs, Medicare and Medicaid. Large companies have some economies of scale in administration and purchasing, but small operators can compete effectively by offering better service. The industry is highly labor-intensive; annual revenue per worker is less than \$45,000.¹¹

The average nursing care facility has 100 to 250 workers; the largest establishments may employ over 1,000. Adequate staffing is often a major problem, because of the labor-intensive nature of nursing care and the industry's low wages. Although supervisory jobs may be held by skilled nurses, most workers are aides with little special education or training. Nurses and aides typically receive lower pay than they would in an acute-care hospital. Wages are generally 20% less than for the average US worker.¹²

Annual personnel turnover can be high, as much as 100% for aides at some facilities. High turnover results in near constant training of new workers, which is costly. Nonprofit nursing homes tend to have higher staffing levels and lower turnover than for-profit.¹³

Offices of physicians

Physicians and surgeons practice privately or in groups of practitioners who have the same or different specialties. Many physicians and surgeons prefer to join group practices because they afford backup coverage, reduce overhead expenses, and facilitate consultation with peers. Physicians and surgeons are increasingly working as salaried employees of group medical practices, clinics, or integrated health systems. (NAICS 6211)

Offices of dentists

About one out of every five health care establishments is a dentist's office. Most employ only a few workers, who provide general or specialized dental care, including dental surgery and dental hygiene. (NAICS 6212)

Home health care services

Skilled nursing or medical care is sometimes provided in the home, under a physician's supervision. Home health care services are provided mainly to the elderly. The development of in-home medical technologies, substantial cost savings, and patients' preference for care in the home have helped change

this once-small segment of the industry into one of the fastest growing parts of the economy. (NAICS 6216)

Offices of other health practitioners

This segment of the industry includes the offices of chiropractors, optometrists, podiatrists, occupational and physical therapists, psychologists, audiologists, speech-language pathologists, dietitians, and other health practitioners. Demand for the services of this segment is related to the ability of patients to pay, either directly or through health insurance. Hospitals and nursing facilities may contract out for these services. This segment also includes the offices of practitioners of alternative medicine, such as acupuncturists, homeopaths, hypnotherapists, and naturopaths. (NAICS 6213)

Outpatient care centers

The diverse establishments in this group include kidney dialysis centers, outpatient mental health and substance abuse centers, health maintenance organization medical centers, and freestanding ambulatory surgical and emergency centers. (NAICS 6214)

Other ambulatory health care services

This relatively small industry segment includes ambulance and helicopter transport services, blood and organ banks, and other ambulatory health care services, such as pacemaker monitoring services and smoking cessation programs. (NAICS 6219)

Medical and diagnostic laboratories

Medical and diagnostic laboratories provide analytic or diagnostic services to the medical profession or directly to patients following a physician's prescription. Workers may analyze blood, take x-rays and computerized tomography scans, or perform other clinical tests. Medical and diagnostic laboratories provide the fewest number of jobs in the health care industry. (NAICS 6215)

What is Long-Term and Acute Care?

Unlike the previous categories, these terms do not describe a discrete industry sector, but rather a categorization of services.

The long-term care industry provides services to people who have functional limitations or chronic health conditions. Their needs include sub-acute, rehabilitative, medical, skilled nursing and supportive social services. Long-term care services are offered in a variety of settings, including nursing or assisted living facilities, respite care, adult day care, and home and community-based environments. These services include help with such basic activities of daily living as bathing, toileting, dressing, eating, and moving. Other less direct care services may include help with instrumental activities of daily living, including such household chores as shopping, administering medication and managing money.

The acute care industry involves assessing and treating sudden or unexpected injuries and illnesses. Acute care facilities, typically general or specialty hospitals, provide care for patients who have sustained life-threatening injuries or who have conditions that may lead to deteriorating health status.

Incentives and Policy Proposals – State and National

Colorado Policy Proposals

Governor Ritter's Nurse Workforce and Patient Care Task Force

The Nurse Workforce and Patient Care Task Force was established by Colorado's Governor Bill Ritter in March 2007 and charged with developing recommendations focused on three areas: nursing-sensitive quality measures, nursing education, and retaining experienced nurses in the workforce. The Task Force report was released in December 2007. The specific recommendations of the report are very informative, with many of the recommendations and policy and incentive proposals related to workforce development issues. More detail about this important Task Force is included later in the report. <http://www.cha.com/images/stories/legis/nursingreportfinal.pdf>

The Colorado Trust's Health Professions Workforce Roundtable and Health Professions Initiative

The Colorado Trust's Health Professions Workforce Roundtable convened stakeholders to make recommendations to bolster Colorado's inadequate supply of nurses, physicians and pharmacists. Several recommended strategies to achieve this goal have emerged from the Roundtable and through the Trust's \$9.9 million Health Professions Initiative. More detail about these important initiatives is included later in the report in the Colorado Resources section.

<http://www.thecoloradotrust.org/index.cfm?fuseAction=Grantmaking.details&initiativeId=320>

National Policy Proposals

American Hospital Association's Issues and Policy Proposals

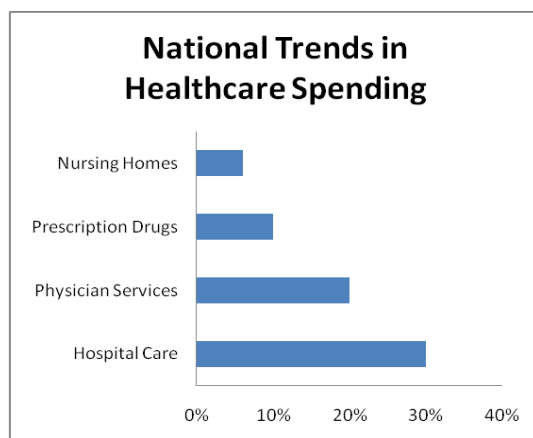
The AHA makes numerous recommendations related to issues such as affordability, excessive administrative demands, health information technology, workforce, cost containment, Medicaid/Medicare, demographics and increased demand. Recommendations related to workforce development and retention include:

- Make hospitals more attractive employers as a way to cope with caregiver shortages.
- Enhance partnerships between hospitals and the federal government to tackle workforce shortages – a complex problem that cannot be solved by hospitals alone.
- Continue coalition activities to advocate for the highest level of appropriations for nursing and allied health education programs, including the reauthorization of the *Nurse Reinvestment Act*.
- Oppose efforts that limit hospitals' flexibility to determine appropriate staffing patterns for health care workers.
- Support streamlining and improving the immigration process to allow qualified, internationally-educated nurses and allied health professionals to come to the United States.¹⁴

<http://www.aha.org/aha/issues/index.html>

Industry Trends and Challenges

Rising Costs, Razor Thin Margins and Affordability



The cost of healthcare has increased rapidly and will continue to rise into the future. About 30% of healthcare spending goes for hospital care, 20% for physician services, 10% for prescription drugs, and 6% for nursing homes. Analysts expect the total cost of healthcare to double from 2000 to 2010, growing at an average annual rate of 7-8% or even higher.¹⁵ Healthcare costs in 2004 were equal to 16% of the US GDP, and annual spending grew 7.9% to \$1.9 trillion, according to the Center for Medicare and Medicaid Services. Costs were up 9% for doctor services; 8.6% for hospital services; and 8.2% for prescription drugs.¹⁶ Increasingly, there will be intramural tensions as dollars grow tighter, technologies change how

things are done, and investors look for disruptive innovations that improve quality and efficiency. Physician-hospital tensions will increase. Employer health plan tensions will increase. The non-conventional provider movement (complementary and alternative medicine) will be pitted against the conventional. Off-shore resources will compete against high-cost domestics. Tension, anxiety, and turf battles for success will heat up, but so, too, will opportunities.¹⁷

Health care providers will continue to be challenged by razor-thin margins and limited access to capital in 2008, complicated by incidences of bad debt that are at an all-time high. A persistent lack of funding could limit providers' ability to invest in information technology enhancements to address revenue cycle challenges, regulatory issues, and calls for increased price and quality transparency. Providers will need to carefully monitor rising expenses, capital needs, and regulatory changes to support a stable financial outlook, particularly among not-for-profit hospitals.¹⁸

These rising costs are also requiring a focus on execution in the industry. Most executives in the health sciences industry are aware that their short-term risks in today's volatile environment are higher than they have been in several years. Costs will continue to increase, so health sciences organizations will need to focus on execution — operating efficiently, effectively, and strategically — to better position themselves to address long-term opportunities.¹⁹

Keeping health care affordable will involve every segment of the health care system — insurers, hospitals, business, physicians, nurses, employers, and individuals. As a hub of health care in a community, hospitals play a critical role in keeping costs down and are addressing the growing cost of health care in a variety of ways.²⁰

Health Information Technology and Electronic Medical Records

Research has shown that certain kinds of information technology (IT) — such as computerized physician order entry, computerized decision support systems, and bar-coding for medication administration — can limit errors and improve care. IT also can be a tool for improving efficiency. While hospitals have been pioneers in harnessing IT to improve patient care, quality and efficiency, the challenge now is to extend its use and integrate it into the routine care processes in all hospitals, big and small, in both rural and urban areas.²¹ As information technology is recognized as a vital part of hospital operations,

consuming a higher percentage of the organization's budget, IT management will become an integral part of the clinical management process and member of the management team.²²

Electronic medical records will become common place. Transportable "e-records" will help to support higher quality care, while protecting patient privacy and cutting costs. Cell phones will become the "key" and only communication device needed.²³

The federal "Health-e Information Technology Act of 2008," H.R. 6898, is intended to spur the adoption of standardized, interoperable health IT by providing incentive payments to physicians and hospitals. This legislation is expected to pass in the next session of Congress.²⁴

Consumerism and Globalization

As individuals begin to shoulder a larger share of the health care cost burden, they are becoming increasingly engaged in their health care decisions and purchases. Consumers are recognizing that there are differences in the performance of plans, providers, and therapeutic interventions — some are simply "better" than others. Concurrently, there are increasing numbers of useful consumer tools — particularly Internet-based information sources — for comparing treatment and provider options, prices, and quality. The consequences of consumerism for the health sciences market in 2008 and beyond are expected to be considerable. For example, price and quality transparency will move to the forefront of issues that providers must address.²⁵

Information technology can enable globalization of the healthcare economy. If medical services can be provided remotely, they will be. The phenomenon of medical tourism can grow as people facing higher deductible coverage or no coverage at all seek medical procedures at a lower cost.²⁶ Hospitals in Singapore, India, and Mexico are marketing routine medical procedures, elective surgery, and cancer treatment to American "tourists" who want to avoid the high cost of US healthcare. According to the India Tourism Department, medical tourism in India grows at a 25% annual rate and is expected to exceed \$2 billion by 2012.²⁷

Wellness and Prevention

Health experts agree that slowing the progression of chronic conditions (e.g., diabetes, obesity, coronary artery disease, chronic obstructive pulmonary disease, asthma) and making people responsible for taking charge of their health are essential to reduce future spending. The challenge for the health sciences industry is how to encourage prevention and chronic care management within a system that is trained and incentivized to deliver acute care.²⁸

Growing Importance of Government

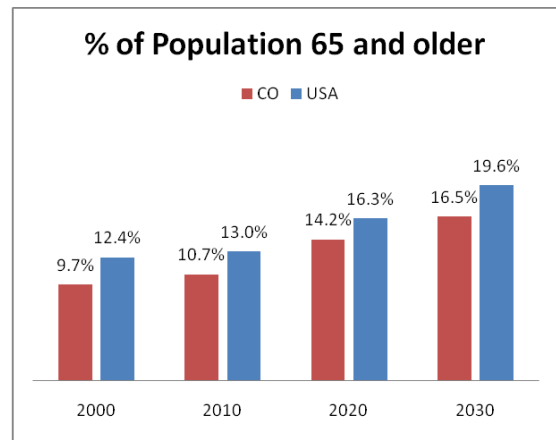
In 1970, the government, through programs like Medicare and Medicaid, footed 38% of the nation's healthcare bill; in 2004, it paid 46%. As the largest healthcare program in the country, Medicare has an outsized influence on medical practices through its detailed reimbursement schedules that are widely copied in the industry. New treatments, even if already approved by the FDA and the medical community, have a limited market if not approved for Medicare reimbursement.²⁹

Burdensome Administrative Demands

Numerous industry trend watchers identify burdensome administrative demands on health care providers as a critical challenge. In July 2008, the American Hospital Association published a Trendwatch policy paper entitled *Redundant, Inconsistent, and Excessive: Administrative Demands Overburden Hospitals*.³⁰ Some activities are purely administrative, such as those for claims processing, billing, data reporting, and complying with regulations at the national, state and local levels. Other administrative work is linked to patient care, such as admissions and discharge processes, clinical record keeping, utilization review and quality improvement programs. These administrative functions are essential to providing high quality care, but when they become redundant or excessive administrative tasks impose undue burden on health care organizations.³¹

Aging Population, Increasing Demand

National healthcare expenditures are expected to double over the next decade as the population ages. Americans 75 and over are the fastest-growing age category, and are expected to increase 33% over the next 10 years. The average age of hospital inpatients is now 53, compared to 41 in 1970. In 1970, 20% of all patients were 65 or older, a figure that has since doubled.³²



Talent Management

Existing shortages in nursing and primary care — and anticipated shortages of gerontologists and internists — will continue to exacerbate issues around health care access and quality. There are substantial gaps in how the industry structures compensation and performance-based payments to these professional populations, as well as gaps between how they are trained and what the market requires. As the health care industry looks for potential improvement areas, it will need to develop radical approaches around recruiting, retaining, and training its work force.³³

Workforce Issues

Colorado Workforce Issues

Changes in the Nature of the Nursing Shortage

The Colorado Department of Regulatory Agencies has described the changing nature of the nursing shortage in Colorado in its budget narrative. “Colorado is experiencing an increased demand for nursing services resulting in a nursing shortage. Compared to previous Colorado and national shortages, this shortage appears to be a new and different type, reflecting the need for experienced specialist nurses, particularly in the acute care setting. Hospitals are facing competition for qualified nurses from managed care, pharmaceutical and non-health-related companies. The shortage may impact staffing ratios and thus the quality and standard of nursing care provided.”³⁴

Nursing Education Issues

The **Nurse Workforce and Patient Care Task Force** established by Governor Ritter developed recommendations focused on three areas: nursing-sensitive quality measures, nursing education, and retaining experienced nurses in the workforce. The report, released in December 2007, made detailed recommendations in three areas related to nursing education:

- Increasing the availability of nursing faculty
- Ensuring that nurses stay in the state after graduating
- Providing scholarship assistance for nursing students³⁵

Nurse Retention

The **Governor’s Nurse Workforce and Patient Care Task Force** also identified direct care nurse retention as a critical issue for Colorado. Research has found that factors important to retention include having:

- Adequate resources and staffing
- Sufficient support staff
- Support from supervisors
- Empowerment and autonomy.

These are complex factors in the work environment. In order to better understand and improve them, the Task Force recommended a collaborative pilot study designed to provide reliable and practical information on how to ensure effective participation of direct care nurses in decision making, staff planning and other issues of importance to nursing. Due to the public importance of this pilot and the need for transparency, the Task Force indicated that the pilot should be directed by a planning committee that will ensure a high-quality process. They recommended that the General Assembly pass legislation requiring that the pilot be conducted under the direction of this planning committee.³⁶

National Workforce Issues

National Workforce Overview

Current workforce trends are challenging hospitals' mission to care for their patients and communities. Severe workforce shortages threaten hospitals' fundamental promise of operating at full capacity. Some hospitals have been forced to reduce the number of inpatient beds available, postpone or cancel elective surgeries, and instruct ambulances to bypass their overflowing emergency departments because they lack an adequate number and mix of personnel to care for patients. Shortages are severe among both clinical and non-clinical workers, including nurses, therapists, radiology technicians, pharmacists, medical record personnel, housekeepers and food service personnel. The demand for registered nurses (RNs) and other health care personnel will continue to rise with the growing health care needs of the 78 million "baby boomers" that will begin to retire in 2010. The Department of Health and Human Services estimates that by 2020, the nation will need 2.8 million nurses – 1 million more than the projected supply. The Department of Labor in 2006 ranked registered nurses as the occupation with the highest demand rate. In fact, hospitals reported 116,000 RN vacancies as of January 2007. In addition, the Bureau of Labor Statistics projects severe shortages for many allied health professions. Across the nation almost 88,000 qualified applicants – one in three – were turned away from U.S. nursing programs in 2005-2006 largely due to the lack of prepared nursing faculty. Without decisive intervention, these trends will have a serious impact on hospitals' ability to care for patients and communities.³⁷

Recruiting Foreign Workers

Critical shortages exist in various medical specialties. Nurses are in short supply everywhere and doctors are needed to serve rural areas. To fill the shortage, many organizations are recruiting foreign nationals and sponsoring them for H-1B visas. Additional inducements include paying for advanced study programs to help them qualify for boards and degrees.³⁸

Conducting Background Checks

Because of the high cost of medical and liability insurance, new healthcare recruits undergo extensive background

Job Spotlight: Radiology Technologists and Technicians

Radiologic technologists take x-rays and administer nonradioactive materials into patients' bloodstreams for diagnostic purposes.

Employment of radiologic technologists is expected to increase by about 15 percent from 2006 to 2016, faster than the average for all occupations. As the population grows and ages, there will be an increasing demand for diagnostic imaging. Although health care providers are enthusiastic about the clinical benefits of new technologies, the extent to which they are adopted depends largely on cost and reimbursement considerations. As technology advances many imaging modalities are becoming less expensive and their adoption is becoming more widespread, increasing demand for radiology technicians.

Although hospitals will remain the principal employer of radiologic technologists, a number of new jobs will be found in offices of physicians and diagnostic imaging centers. Health facilities such as these are expected to grow through 2016, because of the shift toward outpatient care, encouraged by third-party payers and made possible by technological advances that permit more procedures to be performed outside the hospital.

Source: 2008-2009 Occupation Outlook Handbook, Bureau of Labor Statistics

checks. These background checks include academic records, boards and certifications, malpractice claims, and criminal records. Of particular concern are identifying personnel who misrepresent their backgrounds and those who abuse drugs.³⁹

High Dependence on Skilled Personnel and High Turnover

Because of the highly technical nature of the services they provide, hospitals depend on skilled personnel, including doctors, nurses, technicians, and medical aides. While demand for healthcare workers is increasing, the available labor pool is inadequate, with a serious shortage in nursing. The American Hospital Association estimates that the current shortage of 125,000 nurses could grow to 400,000 by 2010. Annual personnel turnover in healthcare is more than 25%.⁴⁰

Adequate Staffing in Nursing Homes

Adequate staffing in nursing homes is a serious problem, worsened by a general lack of nurses nationwide. Annual turnover is high due to much lower pay than hospital nurses and difficult work. Some nursing homes are installing technical innovations to streamline paperwork and allow nursing staff to change their workload from administrative to caring and nurturing tasks.⁴¹

Resources

Colorado Resources

The Nurse Workforce and Patient Care Task Force was previously described in several sections of this report. The Task Force report is an excellent source of policy recommendations related to workforce development issues. <http://www.cha.com/images/stories/legis/nursingreportfinal.pdf>

The **Health Professions Workforce Roundtable, convened by the Colorado Trust**, brought together health care providers, educators and experts to make recommendations to bolster Colorado's inadequate supply of nurses, physicians and pharmacists. Several recommended strategies to achieve this goal have emerged from the Roundtable and through the Trust's \$9.9 million Health Professions initiative. Preliminary evaluation findings of this effort indicate that a combination of the following three components is needed to find a long-term solution to the shortage of health professionals:

1. Create awareness and readiness among students to generate interest in health careers
2. Support and expand training opportunities
3. Promote employer efforts and community partnerships to recruit and retain health professionals.

Additionally, participants of the Health Professions Workforce Roundtable – including representatives from state health agencies, community colleges and universities, hospitals, professional organizations, government agencies, health care providers, business leaders and students – strongly recommended that a comprehensive, statewide policy agenda is necessary to address the shortage.

The Trust has committed an additional \$5.7 million in funding over three years to develop and implement strategies tied to these recommendations. Under this funding, Roundtable participants are working to create a public policy framework that will address key health professions workforce issues and systems improvements.

Colorado Trust's Health Professions Initiative

<http://www.thecoloradotrust.org/index.cfm?fuseAction=Grantmaking.details&initiativeld=320>

Solving Colorado's Health Professions Shortage - Initial Lessons Learned from the Health Professions Initiative Evaluation (2007)

<http://www.thecoloradotrust.org/index.cfm?fuseAction=Publications.FeaturedDetail&publicationID=343>

The Work, Education and Lifelong Learning Simulation (WELLS) Center is a one of a kind training facility in Colorado which offers a complete array of state-of-the-art patient simulation tools for building clinical knowledge. The WELLS Center has been very successful over the past three years in creating a sought after interdisciplinary approach to simulation training, using clinical experts from many health care professions to develop state of the art training scenarios. Their process of training includes in-depth anatomy review, immersion into "real life" mannequin case scenario practice, and impactful debriefing sessions that guide the student to further learning opportunities. In addition to the expertise of WELLS Center staff, the other distinguishing factor that sets it apart from other simulation centers locally, nationally and internationally is the incorporation of the VH Dissector™ in the training scenarios.

The VH Dissector (VHD)™ is an interactive computer program that provides a real human cadaver for virtual dissection and interaction. The VHD is integrated into a first of its kind training environment by linking the virtual anatomical environment it provides to the clinical scenarios provided by human patient simulators. This unique environment allows the healthcare professional to not only learn how to respond to a specific situation; but to understand the underlying concepts that contribute to the decision making process.

Services offered at the WELLS Center:

- High-fidelity, computer-driven mannequins that can simulate virtually any type of clinical experience – from emergency room scenarios to surgery, from heart attacks to births, to allergic reactions, and much more
- Faculty development workshops
- Onsite and offsite simulation training
- Customized simulation curriculum
- Specialty and advanced course work including a *Critical Care Nursing Course* and a *Perioperative Nursing Course* (July 09).
- Consulting services for colleges, universities and healthcare agencies who are interested in developing simulation training and development
- Use of the VHD for specialty and advanced simulation courses.

Housed in the Bioscience East building at the Colorado Science and Technology Park at Fitzsimons campus, the WELLS Center represents a unique collaboration among healthcare educators, healthcare businesses, healthcare providers and healthcare policymakers. <http://www.wellssimulationcenter.org>

The Colorado Center for Nursing Excellence (The Center) is dedicated to ensuring that Colorado has adequate numbers of highly-qualified nurses. According to the Center web site, Colorado has 12 percent fewer nurses than its population requires – double the national vacancy rate. The web site is rich in data, studies and reports.

The Center brings together educational institutions, hospitals, government agencies, foundations and the business community to investigate the sources of the shortfall, develop strategies to address it and secure funding to implement those plans. With an emphasis on collaboration and innovation, the Center leads the way toward developing Colorado’s nursing workforce of the future.

The Center’s research has examined important facets of the nursing shortage in Colorado, such as:

- The readiness of recent nursing graduates to meet current practice demands
- The critical shortage of qualified faculty at all our nursing schools
- The importance of broad-based coordination to develop effective solutions

Center Initiatives include the following:

Faculty Development Initiative: This two-year, \$1million effort funded by the Colorado Department of Labor and Employment and coordinated by the Center, trains practicing nurses to become “clinical scholars” who can provide classroom instruction and oversee clinical rotation.

Colorado Consortium for Nursing Leadership Development: Building on the learning from the previous Colorado Consortium for Nurse Retention program(see below), this new project initiated in 2007 aims to foster front-line nurse leadership. Giving charge nurses and other front-line leaders the tools to manage effectively will increase job satisfaction among staff nurses, improve staff retention

and contribute to high-quality care. Over the course of the three-year project, 12 rural and urban sites, covering both acute and long-term care facilities, will participate.

Colorado Consortium for Nurse Retention: Because many nurses leave the profession due to dissatisfaction, the Center seeks to develop programs to increase nursing job satisfaction and retention by teaching leadership and problem-solving skills. This five-year project replicates one Denver hospital's model of collaborative process improvement and nurse empowerment.

www.coloradonursingcenter.org

Associations and Association Related Web Resources

Colorado Hospital Association represents all types of hospitals throughout Colorado: private and government-operated, metropolitan and rural, investor-owned and not-for-profit. Their members care for more than 471,000 people in general, academic, specialty and rehabilitation hospitals. More than 8 million outpatient visits - including surgeries, home health care and emergency room visits - were recorded. More than 55,000 people are employed (full-time equivalents) with a combined payroll and benefits of more than \$3.3 billion. http://www.cha.com/index.php?option=com_frontpage&Itemid=1

The Colorado Health Care Association represents 90% of Colorado's nursing homes and many assisted living care facilities. The active membership is organized into six districts covering the State of Colorado. CHCA and each of its active facility members are members of the American Health Care Association (AHCA) and National Center for Assisted Living (NCAL), a national organization representing more than 11,000 long-term care facilities dedicated to improving health care for the convalescent and chronically ill. <http://www.cohca.org/>

CHCA sponsors two scholarship programs for long term care professionals: *The Long Term Care Career Enhancement Scholarship* and the *Long Term Care Culinary Professionals Scholarship*. <http://www.cohca.org/productsServices/productsScholarships.aspx>

The **Colorado Foundation for Medical Care (CFMC)** is Colorado's health care quality improvement organization. CFMC works collaboratively with government programs, health providers, and managed care companies to improve the quality of health care. <http://www.cfmc.org/>

The **continuing education program from CFMC** provides fast, efficient, and affordable services to the health care education community. CFMC is ISO 9001 certified and works diligently to meet every requirement, using strict standards to excel as a provider and to offer further opportunities for success. From automated processes to outcomes measurement, the CFMC Continuing Education Program works closely with the health care industry throughout the planning, implementation, and evaluation of training activities. <http://www.yourcesource.com/>

The **Colorado Board of Nursing** is the governmental regulatory body responsible for protecting the health and safety of the public from the unauthorized, unqualified, and improper application of services by individuals in the practice of nursing. Amongst other responsibilities, the Board regulates nursing education programs that lead to initial RN or LPN licensure, LPT licensure, and nurse aide education programs. <http://www.dora.state.co.us/Nursing/index.htm>

The **Colorado Nurses Association** is a professional organization of registered nurses in Colorado. It is a constituent of the American Nurses Association. The primary purpose of this association is to provide direction and a voice for the profession of nursing and nurses as leaders in health care. The Colorado

Nurses Association is accredited as an approver of nursing continuing education by the American Nurses Credentialing Center's Commission on Accreditation. <http://www.nurses-co.org/default.asp?PageID=10002235>

Colorado Nurses Foundation has a standard application used by three organizations that support nursing scholarships – Colorado Nurses Foundation (CNF), Friends of Nursing (FON), and Alpha Kappa Chapter-at-Large, Sigma Theta Tau (STTI). <http://www.coloradonursesfoundation.org/>

The mission of the **Colorado Organization of Nurse Leaders (CONL)** is to unify, support and mentor Colorado nursing leaders in order to optimize nursing influence in all health care environments. The organization is divided into six districts which have directors. <http://www.coloradonurseleaders.org/>

The **Colorado Association of Healthcare Executives (CAHE)** is a not-for-profit membership organization established for the purpose of providing Colorado-based healthcare executives with an opportunity for professional growth and development through educational programs and professional collegiality. CAHE is an official state chapter of the American College of Healthcare Executives. <http://cahe.ache.org/>

National Resources

Deloitte LLP's web resources for the Healthcare Provider Industry include reports, conference proceedings, research, web casts, etc. http://www.deloitte.com/dtt/section_node/0,1042,sid%253D2219,00.html

Associations and Association Related Web Resources

The American Hospital Association (AHA) is the national organization that represents and serves all types of hospitals, health care networks, and their patients and communities. Close to 5,000 hospitals, health care systems, networks, other providers of care and 37,000 individual members come together to form the AHA. Through their representation and advocacy activities, AHA ensures that members' perspectives and needs are heard and addressed in national health policy development, legislative and regulatory debates, and judicial matters. Founded in 1898, the AHA provides education for health care leaders and is a source of information on health care issues and trends. http://www.aha.org/aha_app/index.jsp

An excellent AHA source of case examples, tools, reports and other practical resources focused on workforce issues for hospitals and health systems. http://www.healthcareworkforce.org/healthcareworkforce_app/index.jsp

The **American Health Care Association (AHCA)** is a non-profit federation of affiliated state health organizations, together representing more than 10,000 non-profit and for-profit assisted living, nursing facility, developmentally-disabled and sub acute care providers that care for more than 1.5 million elderly and disabled individuals nationally. <http://www.ahcancal.org/Pages/Default.aspx>

AHCA survey data and research on staffing and workforce http://www.ahcancal.org/research_data/staffing/Pages/default.aspx

AHCA Workforce Resources, including task force reports and strategies for improving nursing staff retention. http://www.ahcancal.org/facility_operations/workforce/Pages/default.aspx

The American Society for Healthcare Human Resources Administration (ASHHRA) of the American Hospital Association (AHA) is the nation's only membership organization exclusively dedicated to meeting the professional needs of human resources leaders in healthcare. Founded in 1964, ASHHRA represents more than 3,100 human resources professionals across the nation.

http://www.ashhra.org/ashhra_app/index.jsp

The **American Organization of Nurse Executives (AONE)** is the national organization of nurses who design, facilitate, and manage care. With more than 6,000 members, AONE is the voice of nursing leadership in health care. Since 1967, the organization has provided leadership, professional development, advocacy and research to advance nursing practice and patient care, promote nursing leadership excellence and shape public policy for health care. AONE is a subsidiary of the American Hospital Association. <http://www.aone.org/aone/about/home.html>

The **American College of Healthcare Executives** is a membership organization that assists members to attain the tools, guidance and support they need to gain an edge in the healthcare field. Membership services focus on marketability, relationships, knowledge and leadership. <http://www.ache.org/>

The National Council of State Boards of Nursing (NCSBN), composed of Member Boards, provides leadership to advance regulatory excellence for public protection. Specifically, it provides access to current information pertaining to nursing related issues and NCLEX information, such as passing rates and computerized adaptive testing methodology, online publications, news releases, and the *Issues and Insight: Newsletter on Nurse Aides and Assistive Personnel*. www.ncsbn.org

Resources that Identify Trends and Issues in the Healthcare Industry

Health and Hospital Trends – American Hospital Association <http://www.aha.org/aha/research-and-trends/index.html>

Industry Issues – American Hospital Association. Numerous issues such as affordability, excessive administrative demands, health information technology, workforce, cost containment, Medicaid/Medicare, demographics and increased demand, are discussed in detail, including AHA policy recommendations. <http://www.aha.org/aha/issues/index.html>

Top Ten Trends in Healthcare Management: 2010 – Applied Management Systems

<http://www.aboutams.com/docs/AMSTop10.pdf>

5 Healthcare Trends to Watch – Dr. Bill Crouse, worldwide health director for the Microsoft Corporation, 2006.

<http://www.microsoft.com/industry/healthcare/providers/businessvalue/housecalls/5trends.mspx>

25 Health Care Trends

http://findarticles.com/p/articles/mi_m0843/is_1_29/ai_96500894/pg_1?tag=artBody;col1

Data and Research Resources

The Colorado Center for Nursing Excellence. Web site includes studies, reports and data on nursing, including a February 2007 Supply and Demand Report.

<http://www.coloradonursingcenter.org/Data/index.htm>

Colorado's Nursing Workforce 2007 *Supply and Demand Trends*

http://www.coloradonursingcenter.org/Downloads/PDF/CCNE_Legislative_0107.pdf

Agency for Healthcare Research and Quality News and announcements on the healthcare industry, research, funding opportunities, quality assessments, and clinical consumer health data.

<http://www.ahrq.gov>

National Center for Health Statistics (NCHS) Surveys and data collection systems, health initiatives, research and development, publications and information products, news releases, and FEDSTATS.

<http://www.cdc.gov/nchs/>

Endnotes

- ¹ Colorado Center for Nursing Excellence www.coloradonursingcenter.org
- ² Colorado Center for Nursing Excellence www.coloradonursingcenter.org
- ³ Colorado's Nursing Workforce 2007 Supply and Demand Trends, Colorado Center for Nursing Excellence http://www.coloradonursingcenter.org/Downloads/PDF/CCNE_Legislative_0107.pdf
- ⁴ First Research – Colorado State Profile - 3rd Quarter 2008
- ⁵ First Research – Industry Profile (IP) <http://access.firstresearch.com/default.aspx>
- ⁶ First Research - IP
- ⁷ First Research - IP
- ⁸ First Research - IP
- ⁹ First Research - IP
- ¹⁰ First Research - IP
- ¹¹ First Research - IP
- ¹² First Research - IP
- ¹³ First Research - IP
- ¹⁴ American Hospital Association <http://www.aha.org/aha/content/2008/pdf/08-issue-workforce.pdf>
- ¹⁵ First Research - IP
- ¹⁶ First Research - IP
- ¹⁷ Deloitte 2008 Health Care Industry Outlook http://www.deloitte.com/dtt/cda/doc/content/us_2008CrossIndustryOutlookhealth.pdf
- ¹⁸ Deloitte
- ¹⁹ Deloitte
- ²⁰ American Hospital Association - <http://www.aha.org/aha/issues/Affordability/index.html>
- ²¹ American Hospital Association - http://www.aha.org/aha_app/issues/HIT/index.jsp
- ²² Applied Management Systems, Inc. (AMS) - <http://www.aboutams.com/docs/AMSTop10.pdf>
- ²³ AMS
- ²⁴ AHANews.com http://www.ahanews.com/ahanews_app/jsp/display.jsp?dcrpath=AHANEWS/AHANewsArticle/data/AHA_News_080929_Key_lawmakers&domain=AHANEWS
- ²⁵ Deloitte
- ²⁶ Dr. Mike Crouse, Microsoft Healthcare <http://www.microsoft.com/industry/healthcare/providers/businessvalue/housecalls/5trends.mspx>
- ²⁷ First Research - IP
- ²⁸ Deloitte
- ²⁹ First Research - IP
- ³⁰ American Hospital Association - <http://www.aha.org/aha/trendwatch/2008/twjuly2008admburden.pdf>
- ³¹ AHA Trendwatch
- ³² First Research - IP
- ³³ Deloitte
- ³⁴ CO Department of Regulatory Agencies http://www.dora.state.co.us/registrations/DOR_budget_request.pdf
(page 4)]
- ³⁵ Nursing in Colorado: Measuring Quality and Supporting Patient Safety- A report to the Governor's Nurse Workforce and Patient Care Task Force <http://www.cha.com/images/stories/legis/nursingreportfinal.pdf>
- ³⁶ Nurse Workforce and Patient Care Task Force, Colorado
- ³⁷ AHA <http://www.aha.org/aha/content/2008/pdf/08-issue-workforce.pdf>
- ³⁸ First Research
- ³⁹ First Research
- ⁴⁰ First Research
- ⁴¹ First Research