

The Health Care Workforce Shortage: An Analysis of the Scope and Impact on Northern Virginia



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Background and Objectives

The Northern Virginia Health Care Workforce Alliance is a coalition of business, academic, and community leaders. Its mission is to:

Establish a long-term, business-driven, sustainable strategy to address the health care workforce shortage in Northern Virginia.

The Alliance engaged PricewaterhouseCoopers to perform an objective, in-depth study of the issues and analyze the scope and impact of the health care workforce shortage on Northern Virginia in the future. Twenty-four specific job titles were studied.

The objectives of the study are to :

- ◆ identify the current and future Northern Virginia health care workforce needs
- ◆ identify the current and future gaps in the health care workforce and the driving forces leading to these gaps
- ◆ identify training and education, recruitment, and retention best practices within Northern Virginia and from other regions of the country.

The Alliance intends to use the findings of this study to:

- ◆ specifically identify the region's critical health care workforce shortages
- ◆ examine changing demographics
- ◆ launch a public awareness campaign
- ◆ define and promote a comprehensive regional strategy
- ◆ convene a regional health care workforce group to develop and promote a Northern Virginia commitment to action

An Executive Summary is available under separate cover.

Section 1: Northern Virginia and Its Health Care Workforce Needs

High-Quality Health Care Services are Critical to Region's Quality of Life

Access to convenient quality health care is vital to a region's economic future. Residents want to live in areas that have high-quality health care services just as they want employment opportunities and premiere school districts. Proximity to health care services is important, especially in cases of emergency. The area's large population gains are likely dependent on access to quality health care services.

Northern Virginia and its Health Care Workforce Needs

“People who come to Fairfax County expect a high-quality lifestyle. Companies that move into Fairfax County expect certain standards for their employees, and that includes everything from top-ranked schools premier cultural and leisure opportunities to access to great health care.”

***– Gerald Gordon, president and CEO
of the Fairfax County Economic
Development Authority***

This Study Analyzes the Health Care Workforce Needs of Northern Virginia

The Northern Virginia geographic region for this study included the following four counties and five cities. Two million people live in this region.

Counties and Cities Represented in Study

Arlington County

Prince William County

City of Falls Church

Fairfax County

City of Alexandria

City of Manassas

Loudoun County

City of Fairfax

City of Manassas Park



Source: Northern Virginia Regional Commission Website

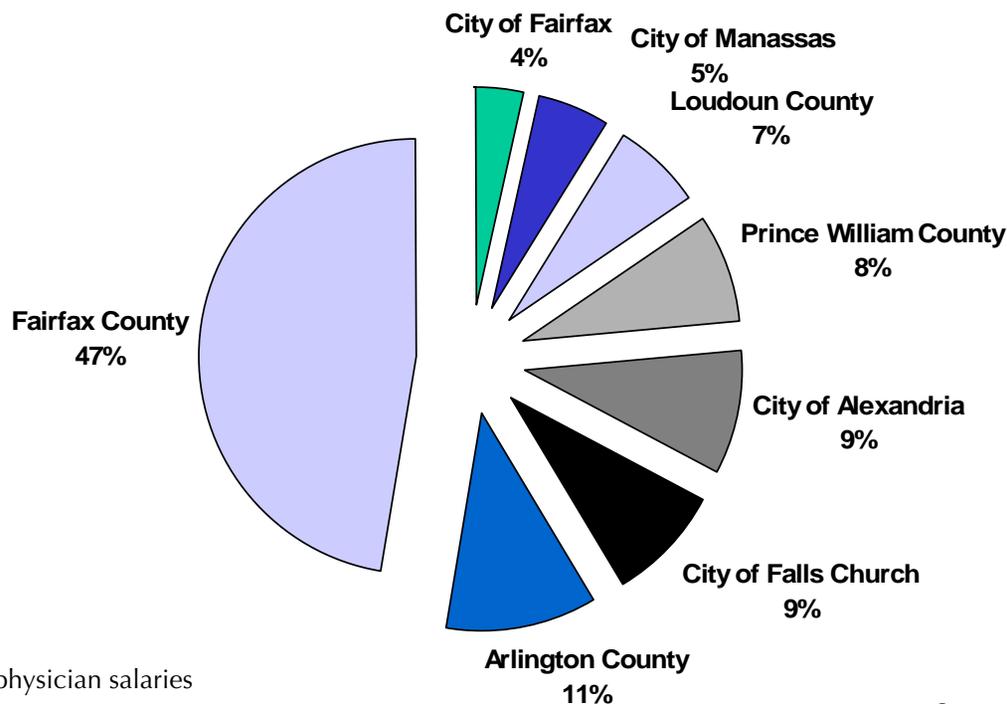
The study attempts to forecast the future health care workforce needs of Northern Virginia for 2010 and 2020. By looking this far into the future, the study tries to accommodate the cyclical nature of hiring trends. It assumes no major shifts in health policy, reimbursement or technology that would significantly alter health care demand and/or delivery.

Northern Virginia and its Health Care Workforce Needs

The Health Care Industry Makes Up 7% of Area's Workforce

The growing economy of Northern Virginia employs over 1.3 million people and generates nearly \$45.5 billion in annual wages ¹. Health care services are a large and expanding component of Northern Virginia's economy. In 2001, the health care industry represented about 7% of the total workforce and 6% of the total amount of annual wages in Northern Virginia ². Four of Northern Virginia's health care employers also are among the largest health care employers in the Metro DC region.

Representation of Total Health Care Workers within each Northern Virginia Locality



¹ Inclusive of physician salaries

² Health care industry totals are representative of NAICS 62 (Healthcare & Social Assistance)

Source: Census Bureau 2001 County Business Patterns

Northern Virginia and its Health Care Workforce Needs

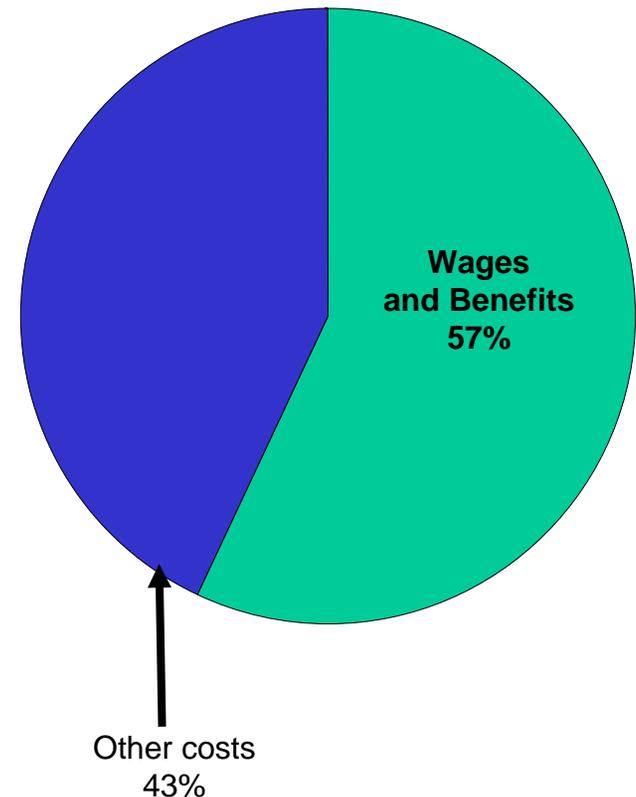
High-Quality Health Care Needs a Workforce of Trained Medical Professionals

Northern Virginia and its Health Care Workforce Needs

Health care services are a critical need of any region. They must be available 24 hours a day, seven days a week. In many regions of the country, these services are not always available because of personnel shortages. These shortages may mean patients must wait longer for services or be directed to health care providers that are geographically distant. In some cases, lack of access results in patients not getting the care they need.

A large percentage of any health care provider's budget is spent on salaries and benefits. As depicted in the chart at right, 57% of a hospital's costs are in wages and benefits. The other 43% is in other costs, such as pharmaceuticals, supplies, fuel, and technology.

Percentage of Hospital Costs by Spending Type



**Based on CMS Medicare Hospital Market Basket Index weights.*

Source: Centers for Medicare and Medicaid Services (CMS), Office of the Actuary: Data from the National Health Statistics Group; Federal Register, Medicare Program: Changes to the Hospital Inpatient Prospective Payment Systems and FY2003 Rates, 67(148), August 1, 2002.

The Health Care Needs of Northern Virginia Will Expand in the Future

Northern Virginia and its Health Care Workforce Needs

Healthcare services are critical to the on-going growth and attractiveness of any region. They must provide access 24 hours a day, seven days a week. Several factors determine the current and future levels of the region's demand for health care services. This demand translates into the need for an available and trained healthcare workforce.

The factors include:

- **Population growth** – Northern Virginia has 2 million people and is estimated to grow 33% by 2020 or an additional 670,000 people. Communities need to add health care services in anticipation of growth, just as it would add transportation, utilities and schools. Northern Virginia's strong growth will require increasing numbers of health care workers.
- **Aging** – The elderly use far more medical services. While Northern Virginia's population isn't aging as fast as some other areas of the country, the region is expected to increase in the over 65 age groups.
- **Insurance coverage** – Individuals who have health insurance generally use more health care services than those who are uninsured. Northern Virginians have higher percentages of health insurance coverage than the national average.

These factors are discussed further on the following pages.

Northern Virginia is Expected to Grow over 33% by 2020 - Twice National Rate

Northern Virginia has an estimated 2 million people and is expected to grow by 33.5% by 2020. Loudoun County, which is estimated to almost double by 2020, was the fastest growing county in the nation in 2003. Fairfax County, the study area's largest county, is expected to grow by nearly 250,000 people by 2020. Overall, the combined study area is expected to grow at a compounded annual rate of 1.8% -- two times the national rate. This growth demands more health care services.

Northern Virginia Population Growth Estimates

	2004	2010	2020	Estimated Growth (2004-2020)	Growth in % (2004-2020)
Arlington County	197,858	214,177	244,421	46,562	23.5%
Fairfax County	1,013,924	1,113,851	1,273,924	246,293	24.0%
Loudoun County	217,056	283,799	416,247	190,716	84.6%
Prince William County	326,480	368,031	449,362	122,882	37.6%
City of Alexandria	139,725	153,889	180,757	41,032	29.4%
City of Fairfax	22,862	23,050	23,367	505	2.2%
City of Falls Church	11,288	12,197	13,877	2,589	22.9%
City of Manassas	38,156	43,230	53,232	15,077	39.5%
City of Manassas Park	12,476	14,378	18,215	5,738	46.0%
Combined Northern Virginia	2,002,008	2,226,602	2,673,401	671,393	33.5%
US					16.5%

Source: April 1, 2000 Census, July 1, 2001 Estimate, July 1, 2002 Estimate and Provisional 2003 based on Census figures as provided by the Weldon Cooper Center, University of Virginia, February 2, 2004. Projections developed by calculating the compound annual growth rate between the estimated 2002 and projected 2007 population by ethnicity data provided by Solucient. Using the July 1, 2002 estimate data as a base year 2003 through 2020 were projected by applying the compound annual growth rate to calculate the growth estimate.

Northern Virginia and its Health Care Workforce Needs

An Aging Population Will Increase Health Care Demand

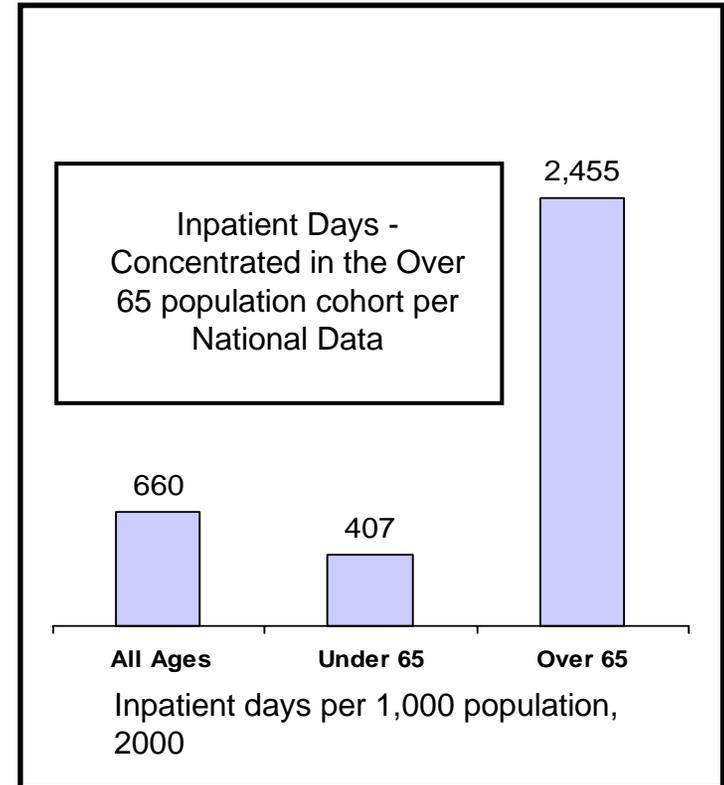
Two additional factors are expected to increase the need for health care workers in Northern Virginia. The population is aging and insurance coverage among Northern Virginians is higher than the national average. Both of these factors lead to higher use of health care services.

Northern Virginia and its Health Care Workforce Needs

- The Northern Virginia population is aging. Individuals over age 65 use six times more inpatient days than those under age 65, according to national figures. (See chart) The Census Bureau projects that the over-65 population in Northern Virginia will increase by more than 8% between years 2002 and 2007. This trend is anticipated to continue in future years, however, projections of this growth were not available. This growth translates into an increased need for health care services.
- Care for the aging is already straining some services. In Fairfax County, waiting lists are long for the elderly in need of health care and social services. “Whatever shortages we have today are going to be catastrophic in 10 years,” said one County Administrator.

Sources: US Census Bureau, 2000; National Hospital Indicators Survey, 2003, CMS; Indicators of Healthy Communities 2003—Northern Virginia Region, The Henry J. Kaiser Family Foundation (2002 data); Health Affairs, Feb. 12, 2003

Inpatient Days by Age Cohort

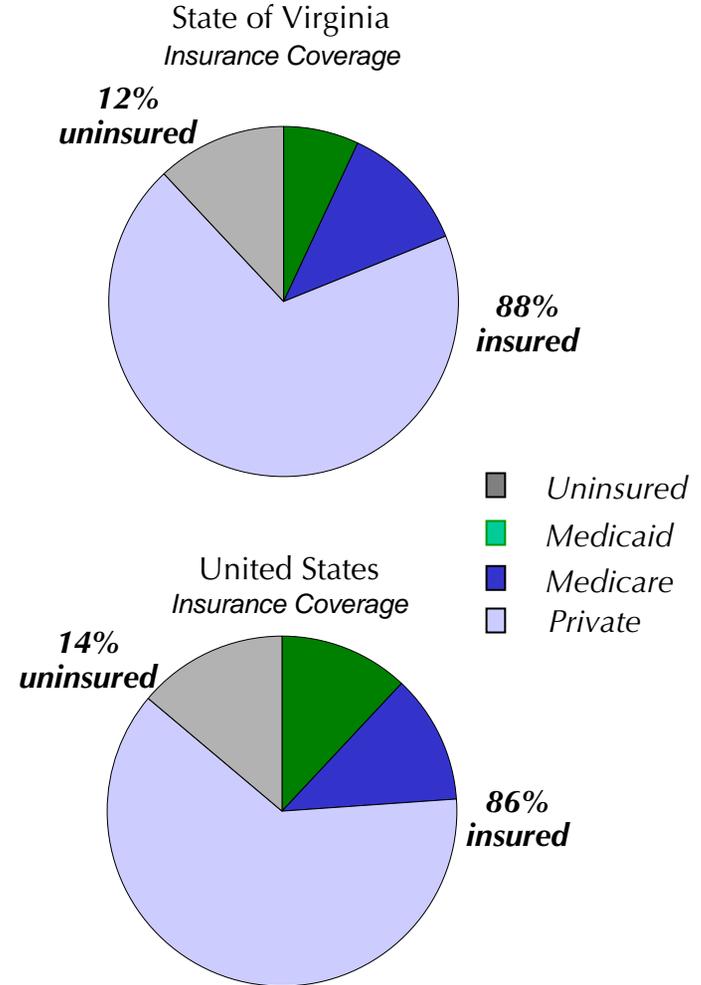
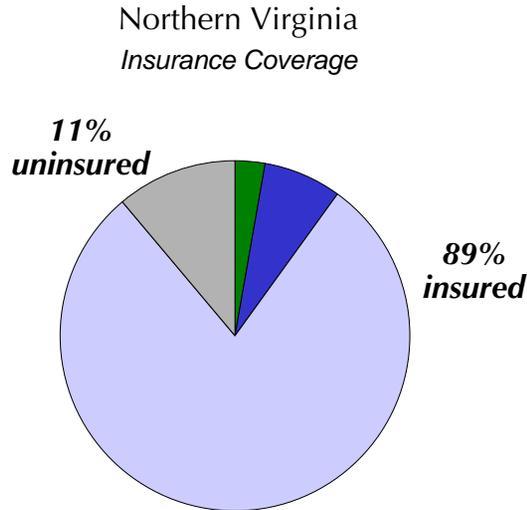


Insurance Coverage is Good, Which Increases Demand for Medical Services

Northern Virginia and its Health Care Workforce Needs

Insurance Coverage Comparisons

In Northern Virginia, 89% of the population is insured. This compares to 86% of the population nationally. Individuals with health insurance use more services. According to one study, the uninsured use about 50% less health care services than those with insurance.



Sources: Indicators of Healthy Communities 2003—Northern Virginia Region, Solucient, The Henry J. Kaiser Family Foundation (2002 data).

Nearly Half of Health Care Employers Surveyed Expanded Their Staffs Last Year

Northern Virginia and its Health Care Workforce Needs

Nearly half of the organizations surveyed for this study said they had increased their workforce in the past 12 months. An equal percentage said their workforce had stayed the same. Six percent of the organizations said they had decreased the size of their workforce in the past 12 months.

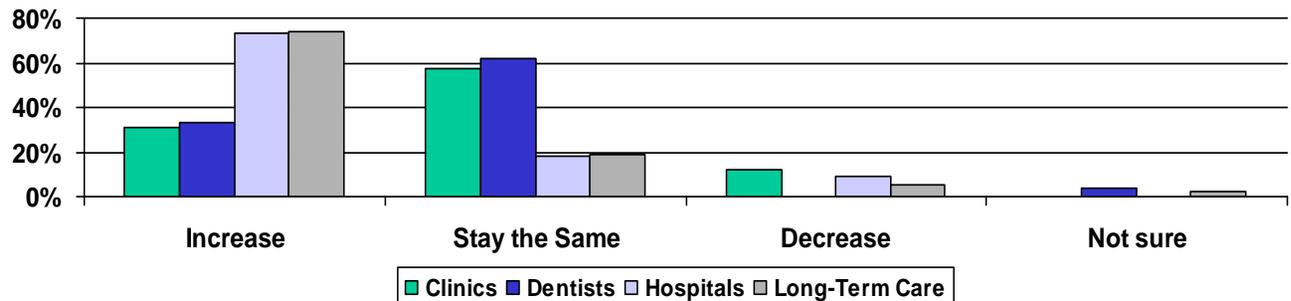
There were clear differences among the sectors surveyed. Higher percentages of hospitals and long-term care providers said that their workforce had increased. Long-term care providers includes nursing homes, assisted living facilities, and adult day care.

Of those employers surveyed, the percentage by sector that said its workforce had increased in the past year is:

- Hospitals -- 73%
- Long-term care – 74%
- Dentists – 33%
- Clinics– 31%

A limited number of health care employers said their workforce had decreased in the past year.

Change in Size of the Workforce
Last 12 Months



Source: PwC Analysis of Northern Virginia Health Care Workforce Survey

Northern Virginia Hospitals Are Adding Capacity

Hospitals and other health care organizations in Northern Virginia are planning about \$850 million in new projects over the next several years. The largest expansions are by area hospitals. As hospitals add capacity, they hire more nurses, technicians and other personnel to staff these expansions. The largest planned expansion projects are listed in the following chart. These projects are in various phases of the approval and construction process.

Health Care Recent and Planned Expansions in Northern Virginia

	City	Project Type	Estimated Cost (in millions)	Completion Date
HCA Broadlands Medical Center ¹	Ashburn	New medical center and medical office building	\$ 200	TBD est.
Inova Fairfax Hospital ¹	Falls Church	Heart Hospital and Vascular Institute Emergency Dept expansion New parking garage Addition of 4 th MRI	\$ 178	2004-2005
Virginia Hospital Center ¹	Arlington	New and expanded hospital facility	\$ 167	2004
Prince William Hospital ²	Manassas	Expansion	\$ 80	N/A
Inova Fair Oaks Hospital ^{1,5}	Fairfax	Addition of acute care beds	\$ 78	N/A
Potomac Hospital ³	Woodbridge	New building	\$ 75	2006
Inova Alexandria Hospital ⁴	Alexandria	Renovation/Expansion	\$ 60	2006
Loudoun Hospital Center ^{3,5}	Leesburg	Addition of med/surg and psychiatric beds; Cardiac catheterization lab	\$ 14	2006

Sources: ¹ Respective organization's website, ² The Washington Times, ³ The Washington Post, ⁴ Health Systems Agency of Northern Virginia, ⁵ Virginia's Center for Quality Health Care Service

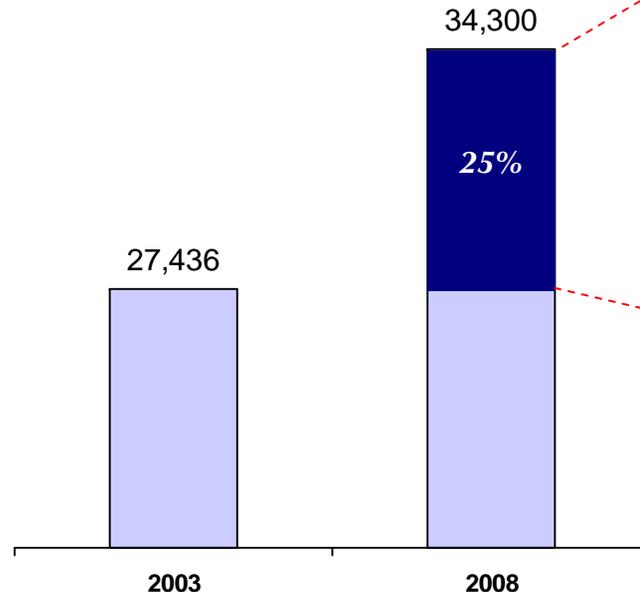
Northern Virginia and its Health Care Workforce Needs

Large Amount of Growth Will Be in Outpatient Settings

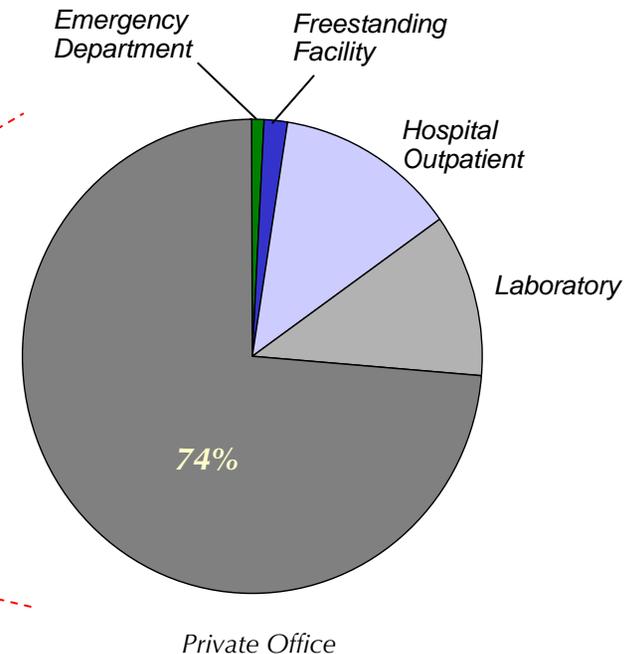
Outpatient growth for the Northern Virginia area is expected to be about 4.5% annually over the five year period 2003 to 2008 based on available data. This trend is expected to continue past 2008. The significant outpatient growth will occur within a number of different settings. The outpatient growth will primarily be in the private office setting which will steer volumes away from acute care hospital outpatient programs. The increased dispersion is estimated to put additional pressure on the labor force as profit motives often decrease efficiencies and increase competition for workers.

Northern Virginia and its Health Care Workforce Needs

Outpatient Growth in Northern Virginia
Outpatient Procedures in Thousands (2003-2008)



Percentage of Outpatient Growth by Service Site
Outpatient Procedures in Thousands (2003 to est 2008)



Source: Solucient.

Northern Virginia is Well-Suited to Be a Leading Innovator for Health Care Workforce Solutions

Northern Virginia and its Health Care Workforce Needs

Northern Virginia is positioned to be a leading innovator for health care workforce solutions, both regionally and nationally. It is already experiencing an acute shortage in many of its professional and occupational health care employment categories. As a result, many health care providers are actively engaged in innovative techniques to create a strong viable workforce. These techniques are described in the Best Practices Section and Appendix B of this report.

Northern Virginia's demographics, however, pose specific challenges and solutions. The demographic characteristics of the people who live in Northern Virginia include:

- Highly educated
- High levels of employment
- High salaries (comparatively)
- Ethnically diverse
- Large percent of foreign born
- Growing focus on life sciences
- Large information technology focus

With a low unemployment rate, health care employers face significant challenges in competing for workers with other industries and each other.

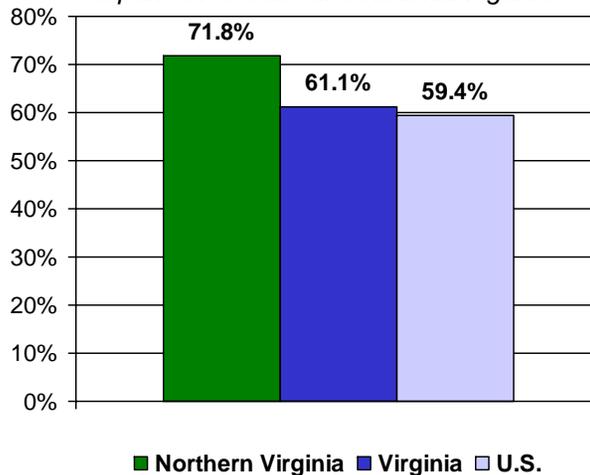
Northern Virginia's Population is Highly Educated

Northern Virginians are educationally well suited to meet the growing health care employment demands. Over 71% of the 25 year old and over population has received at least a high-school diploma and over 22% has received at least a post-graduate degree. As shown, the state and national statistics for these educational levels are considerably lower. The advanced education attained by the population makes them better qualified to fulfill the skilled health care employment demands. However, the penetration of highly skilled occupations in the market heightens competition.

Northern Virginia and its Health Care Workforce Needs

Population 25+ with At Least a High School Diploma

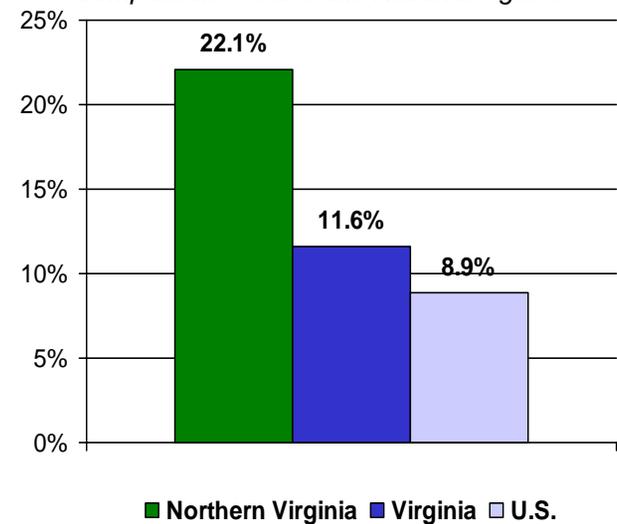
Comparison to State and National Figures



Source: U.S. Census Bureau 2000

Population 25+ with At Least a Post-Graduate Degree

Comparison to State and National Figures



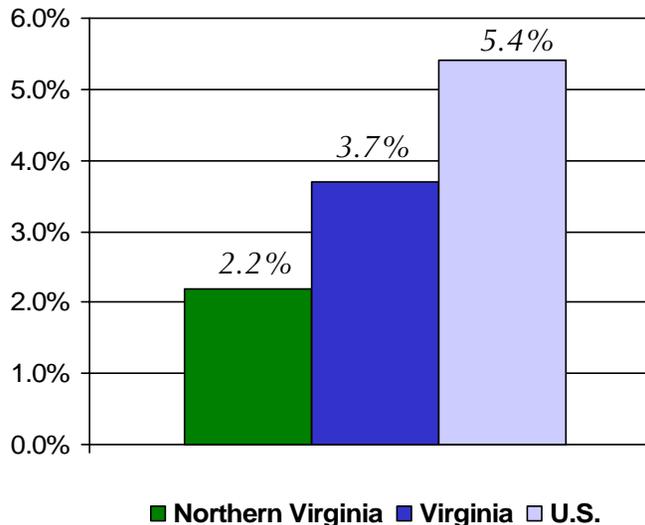
Overall, A Large Pool of Available Workers Exists, but the Labor Market is Tight

While a large pool of workers reside in the area, nearly all of them are employed. The unemployment rate in Northern Virginia is far lower than that of the rest of the state or the rest of the nation. At 2.2%, Northern Virginia's unemployment rate is less than half of the national average. As the economy strengthens, the labor market is expected to remain tight and competition for workers will increase. (The high employment rate, however, is attractive to people from other regions of the country.)

Northern Virginia and its Health Care Workforce Needs

Unemployment Rate Comparison

Comparison to State and National Figures



Source: Virginia Employment Commission Data as of August 2004

Health Care Salaries in Skilled Categories are Above the Average

In the Metropolitan DC Area, health care practitioner and technical occupations exceed the average hourly salary, being about 39 percent higher. Health care support occupations, i.e., non-professional as defined by the Bureau of Labor Statistics, are about 45 percent lower than the average DC Area hourly salary. Hourly salaries in the D.C. area, in general, average 27% higher compared to the United States overall. Health care occupations have less of a differential. This may indicate that other industries in the D.C. area are more competitive with the national market than the health care industry.

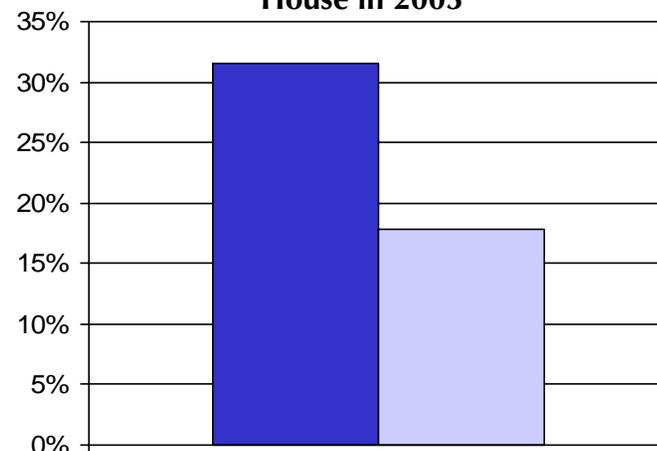
The pay differential is further challenged by the high cost of living in Northern Virginia. Owning a home takes more than 30% of the median family's income compared to about 18% in the U.S. on average. This likely makes recruiting health care workers to the area difficult, especially in the support occupations.

**Average Hourly Salary
Comparison of D.C. Area and National Data**

	D.C. Area	U.S.	% Higher than U.S.
All Occupations	\$22.05	\$17.41	26.7%
Healthcare Practitioners and Technical Occupations	\$30.63	\$26.62	15.1%
Healthcare Support Occupations	\$12.23	\$10.94	11.8%

Source: Bureau of Labor Statistics, *Occupational Employment and Wage Statistics*, May 2003 and U.S. Census Bureau 2000; Note: The D.C. Area includes all counties included in the study area as well as surrounding counties within VA, WV, and MD.

% of Median Family Income Required to Purchase the Median Single-Family House in 2003



■ Northern Virginia* □ U.S.

Source: Center for Housing Research, Virginia Polytechnic Institute and State University, Blacksburg, Va., June 2004

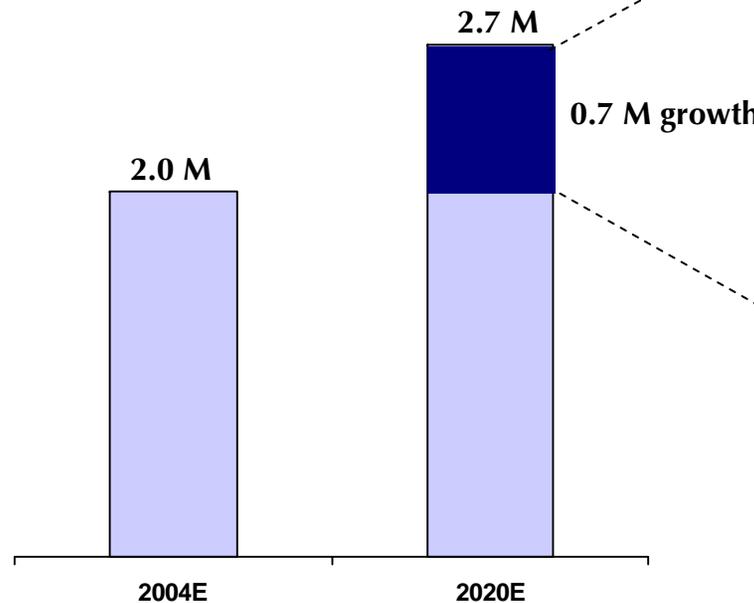
Northern Virginia and its Health Care Workforce Needs

Northern Virginia's Population Growth is Ethnically Diverse

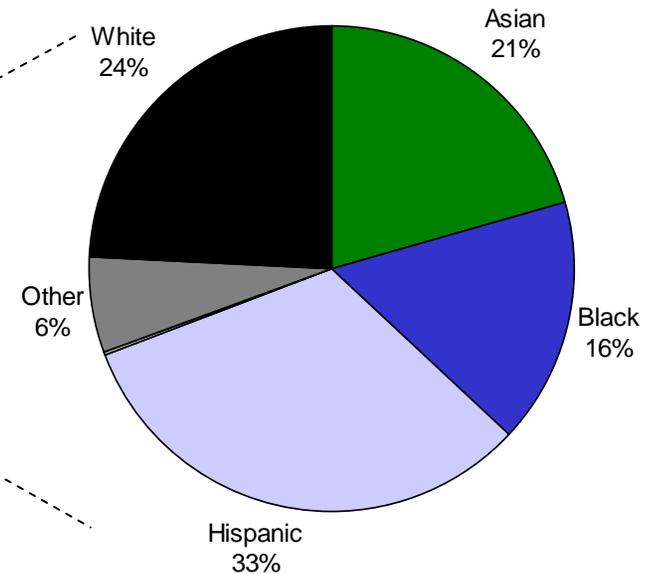
Northern Virginia's population is ethnically diverse. The population growth in the area is particularly diverse. English as a second language, the inability to transfer skills, degrees from other countries and other cultural barriers raise both recruitment challenges and opportunities. The issues around these challenges and opportunities were surfaced in several interviews.

Northern Virginia and its Health Care Workforce Needs

Population Growth in Northern Virginia
(2004 (E)stimated -2020 E)



Percentage of Population Growth by Ethnic Categories
(2004 (E)stimated -2020 E)



Source: Solucient. Estimates are based on Solucient's estimates of 2002 and 2007 population estimated forward using a constant average annual growth rate applied by ethnicity cohort.

Northern Virginia's Population has a large First-Generation Percentage

Northern Virginia's population is about 21% foreign-born based on the available US Census Bureau data from 2000 extrapolated to 2004. As discussed, this provides both a challenge and an opportunity. Many of these people are actively looking for employment and advancing opportunity. At the same time, particular challenges relating to language, cultural issues and health care expectations exist.

Northern Virginia and its Health Care Workforce Needs

% Foreign-born Population by County – 2004 Estimates

	Total Population	Foreign-born Population	% of Population Foreign-born
Arlington County	197,858	55,005	27.8
Fairfax County	1,013,924	248,411	24.5
Loudoun County	217,056	24,527	11.3
Prince William County	326,480	37,545	11.5
City of Alexandria	139,725	35,490	25.4
City of Fairfax	22,862	5,807	25.4
City of Falls Church	11,288	1,817	16.1
City of Manassas	38,156	5,418	14.2
City of Manassas Park	12,476	1,871	15.0
Combined Northern Virginia	2,002,008	415,892	20.8

Source: U.S. Census Bureau

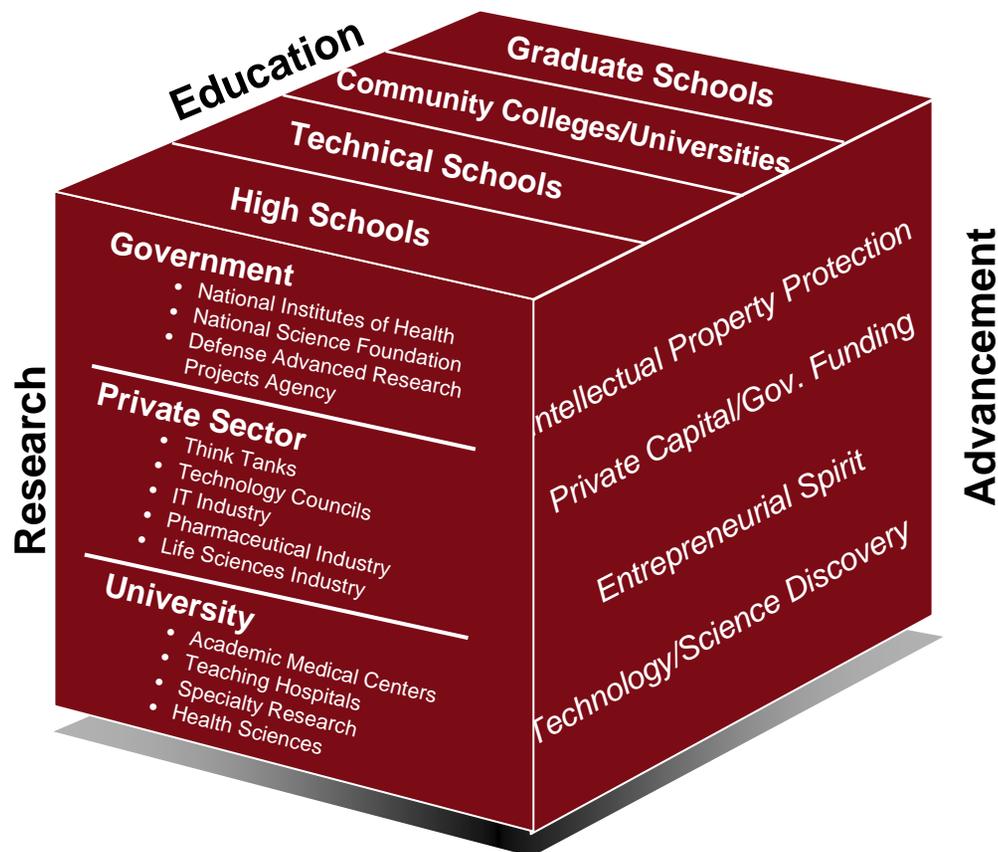
No. Virginia: The Medical and Health Care Information Technology Incubator

Northern Virginia and its Health Care Workforce Needs

Northern Virginia's future health care workforce needs will be driven by cutting edge research and discovery in the life sciences such as bioinformatics, genomics, and advanced imaging technology. New projects such as the President's focus on "Revolutionizing Health Care Through Technology" and the \$500 million Howard Hughes Medical Institute will create the need for highly skilled and qualified researchers, scientists, medical professionals, and health information managers. In addition, the spin-offs and synergistic institutions and companies created as a result of these efforts will require a wide variety of new workers – from physician researchers to technicians. These projects may compete directly or indirectly for some of the skilled workers currently providing direct patient care.

"The greater DC Metro Area and Northern Virginia are poised to be the world's primary center of biotechnology. The region sits at a crossroads between world class education and research with a foundation of drivers to advance discovery and the implementation of new technologies."

-- President - Large Northern Virginia Medical Technology Foundation



Section 2: Current Gaps in Northern Virginia's Health Care Workforce

This Study Examines the Most Critical Needs in the Health Care Workforce

Current Gaps in Northern Virginia's Health Care Workforce

The health care workforce comprises numerous types of occupations. Physicians, nurses and pharmacists are among the best known and recognized careers outside of the industry. Less well known are surgical technologists, biomedical engineers, and health information technicians. For this study, 24 occupational titles were chosen to be reviewed.

These occupations were chosen using three criteria:

- Critical to providing health care services
- Shortages already developing
- Skills that will still be needed 10 to 15 years into the future

In some cases, occupations were grouped. For example, the category for registered nurses includes advanced practice nurses, such as, certified nurse anesthetists, nurse practitioners and nurse midwives.

The occupations surveyed for this study are listed in the chart in alphabetical order.

Occupations Studied

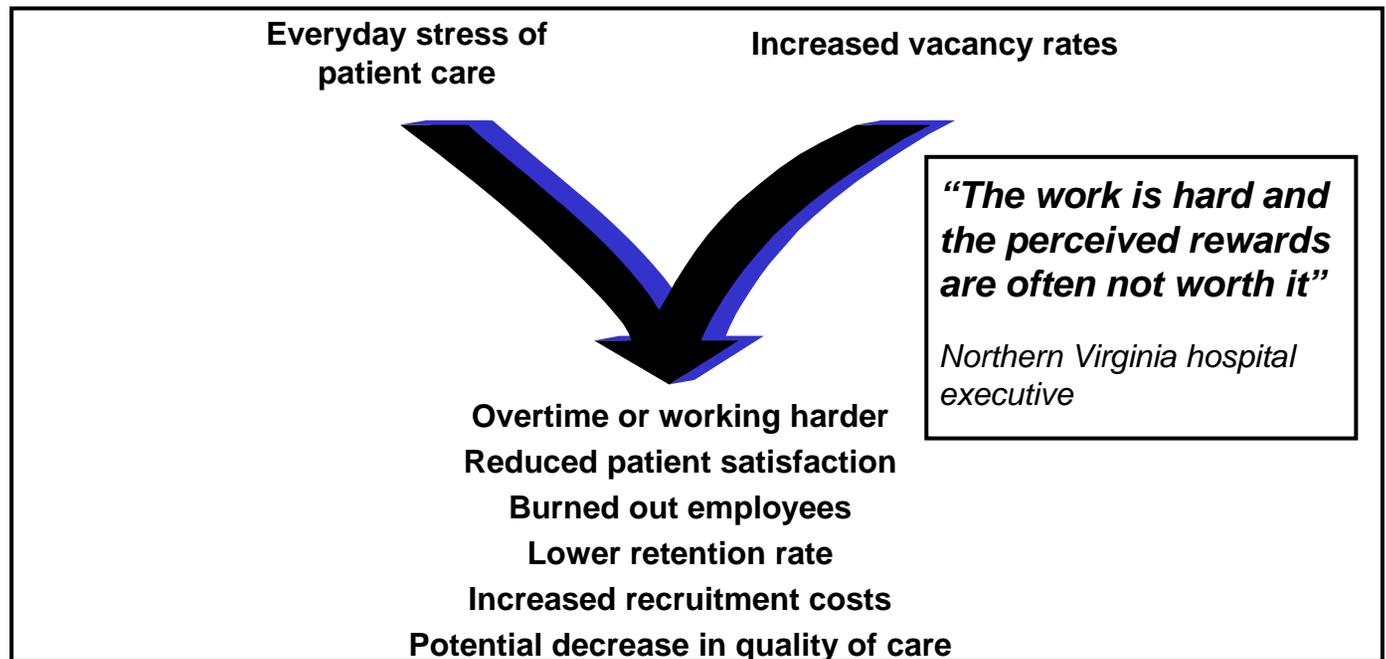
CT Scanning Technologist
Dental Assistant
Dental Hygienist
Emergency Medical Technician/Paramedic
Home Health Aide
Licensed Practical Nurse
MRI Technologist
Medical and Clinical Lab Technician
Medical and Clinical Lab Technologist
Medical and Nurse Manager
Medical Records and Health Info Technician
Nursing Aide, Orderly, Certified Nurse Assistant, Attendant
Occupational Therapist
Pharmacist
Pharmacy Technician
Phlebotomist
Physical Therapist Assistant
Physical Therapist
Radiologic Technologist and Technician
Registered Nurse (including CRNA, Nurse Practitioner, and Nurse Midwife)
Respiratory Therapist
Speech Language Pathologist
Surgical Technologist
Surgical Technician

Vacancy Rates Exacerbate Stress on Health Care Professionals

Current Gaps in Northern Virginia's Health Care Workforce

High vacancy rates take a severe toll on both the employee and the facility. Direct patient care is a stressful and physically demanding profession. In general, health care providers, especially hospitals, cannot shut their doors when they don't have adequate staff.

Typically, health care facilities require existing staff to work overtime, which takes its toll on those staff members, or use agency employees, which has a detrimental affect on the operating margin and the internal staff. In interviews with Northern Virginia health care employers, overtime was currently the most common solution used for staffing shortages. Attention to staffing issues and enhanced retention programs has allowed the providers to reduce agency labor. Turnover rates in health care facilities are high. The turnover rate in Virginia overall for nurses is 29% and for LPNs is 30%, according to the Virginia Hospital and Health Association. When turnover is high, especially for highly skilled professions, market rates and resultant costs increase as employers compete for the same employee.



Vacancy Rates Increase Health Care Costs

Current Gaps in Northern Virginia's Health Care Workforce

Hospitals and other health care providers report that vacancies take their toll on the facilities and patients. Common outcomes of staff vacancies are:

- Increased costs caused by:
 - overtime
 - salary \$ to compete for employees
 - training
 - lost productivity
 - use of agency labor
 - recruitment including sign-on bonus
 - market increases for current staff
 - decreased patient satisfaction
- Impact on quality of care as documented in increasing numbers of research studies
- Overcrowded facilities, e.g., emergency departments - making patients wait longer
- Diverted ambulances
- Waiting lists for procedures and/ or care
- Reduced number of beds available
- Increased length of stay
- Delayed or canceled surgeries

An estimate of the average direct turnover cost for an RN is \$29,265 according to The Advisory Board Company – 2004. Indirect costs, such as lost productivity, would increase this significantly.

Largest Number of Vacancies Today Are in Nursing

Current Gaps in Northern Virginia's Health Care Workforce

PricewaterhouseCoopers conducted and analyzed a survey of Northern Virginia health care employers to estimate the size of the workforce and shortage in these critical categories. Information about the survey methodology is in the Appendix C.

There are an estimated 2,800 budgeted vacancies in the 24 occupations studied, based on the survey results. Of the total number of vacancies, two-thirds are in the field of nursing, e.g., nurse managers, registered nurses, licensed practical nurses or nursing aides. The nursing shortage is supported by numerous studies across the country and within the Commonwealth of Virginia.

The next largest number of vacancies is in medical records and health information technicians with a total of 172 vacancies. A total of 155 vacancies exist for the imaging field which includes radiologic techs, CT techs and MRI techs.

According to the survey, the five occupations that registered the largest number of budgeted vacancies were:

- Registered nurses – **1,038 vacancies**
- Licensed practical nurses – **390 vacancies**
- Nursing aides, orderlies, certified nurse assistants, and attendants – **323 vacancies**
- Medical records and health information technicians – **172 vacancies**
- Physical therapists – **119 vacancies**

According to the survey, the five occupations that registered the largest percentage of budgeted vacancies were:

- Speech language pathologists – **27.4%**
- Physical therapist assistants – **26.3%**
- Licensed practice nurses – **26.0%**
- Physical therapists – **17.2%**
- Occupational therapists – **16.1%**

Significant Vacancy Rates Exist in the Occupations Surveyed – Nurses Have Highest Vacancies

Current Gaps in Northern Virginia's Health Care Workforce

Significant vacancy rates exist in the professions surveyed. Thirteen of the 24 job titles surveyed had a vacancy rate over 10%. A vacancy rate of 10% or more is difficult to manage as health care facilities often need to staff facilities 24 hours a day, 7 days a week, perform “hands-on” patient care, operate within state specified nurse to patient ratios, and work with difficult patients in life-and-death situations. The chart below orders the job titles by number of vacancies. The majority of the high vacancy positions are highly skilled, requiring advanced education and/or licensure/certification and making them difficult to readily replace. The average vacancy rate among all of the occupations surveyed is 10.5%.

**Employment , Vacancies and Vacancy Rates by Occupation
(Sorted by High to Low Vacancies)**

Occupation Title	Employment Estimate (FTEs)	Budgeted Vacancy Estimate	Vacancy Rate (%)
Registered Nurses (including CRNAs, Nurse Practitioners, and Nurse Midwives)	9,082	1,038	10.3%
Licensed Practical Nurses	1,111	390	26.0%
Nursing Aides, Orderlies, Certified Nurse Assistants, Attendants	3,245	323	9.1%
Medical Records and Health Info Technicians	1,337	172	11.4%
Physical Therapists	573	119	17.2%
Radiologic Technologists and Technicians	723	109	13.1%
Physical Therapist Assistant	255	91	26.3%
Medical and Nurse Managers	1,054	76	6.7%
Occupational Therapists	350	67	16.1%
Speech Language Pathologists	122	46	27.4%
Home Health Aides	1,080	40	3.6%
Respiratory Therapists	233	39	14.3%
Medical and Clinical Lab Technicians	228	32	12.3%

Source: PwC Analysis of Northern Virginia Health Care Workforce Survey; * Does not include retail pharmacy positions.

Surgical and Pharmacy Technicians and Phlebotomists Report Fewest Vacancies

Current Gaps in Northern Virginia's Health Care Workforce

Providers report growing shortages among imaging professionals, which includes radiologic technicians, MRI technologists and CT technologists. The survey found a shortage of 12% in those occupations. Surgical technicians had the lowest vacancy rate of all positions reviewed. Despite being represented in responses from both hospitals and medical clinics and outpatient facilities, no vacancies were identified.

**Employment , Vacancies and Vacancy Rates by Occupation
(Sorted by High to Low Vacancies)
(Continued)**

Occupation Title	Employment Estimate (FTEs)	Budgeted Vacancy Estimate	Vacancy Rate (%)
Medical and Clinical Lab Technologist	397	30	7.0%
Dental Hygienists	750	30	3.8%
Pharmacists*	139	24	14.7%
CT Scanning Technologist	237	24	9.2%
MRI Technologists	172	22	11.4%
Surgical Technologists	134	21	13.5%
Dental Assistant	1,110	20	1.8%
Emergency Medical Technician/Paramedic	864	19	2.2%
Pharmacy Technicians*	149	16	9.7%
Phlebotomist	156	15	8.8%
Surgical Technician	33	0	0.0%
Grand Total	23,534	2,763	10.5%

Source: PwC Analysis of Northern Virginia Health Care Workforce Survey

*Does not include analysis of retail pharmacy positions.

Speech Language Pathologists

Current Gaps in Northern Virginia's Health Care Workforce

Shortages of Speech Language Pathologists (SLPs) have been most highly publicized as in the public school systems where about half of these professionals are employed. However, the shortage also has impacted health care providers, most specifically, outpatient clinics, hospitals and long-term care facilities.

A report issued by the American Speech-Language-Hearing Association indicated that between 2000 and 2010, this profession was estimated to be the 25th fastest growing occupation (out of 700) and the 11th fastest health care occupation (out of 68). ¹

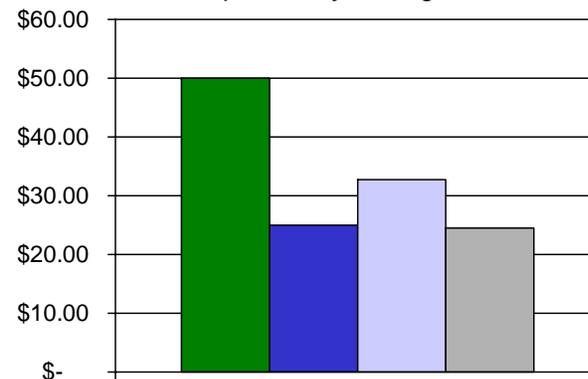
The Northern Virginia SLP shortage is most acute within outpatient clinics, which reported a 51% vacancy rate. Given that the outpatient clinics are one of the lower paying health care employers, according to the survey results, SLPs may have sought out other employers.

Speech Language Pathologist Vacancy Rates
Comparison by Setting

Setting	Vacancy Rate (%)
Medical Clinic/Outpatient	50.6
Long-Term Care	36.4
Hospital	27.0
Other	0

Source: PwC Analysis of Northern Virginia Workforce Survey; 1 American Speech-Language-Hearing Association (ASHA), *Supply and Demand for Speech-Language Pathologists Resource List*, October 2003.

Speech Language Pathologists Median Hourly Salary
Comparison by Setting



■ Other
■ Medical Clinic/Outpatient
■ Hospital
■ Long-Term Care

Source: PwC Analysis of Northern Virginia Workforce Survey

Physical Therapist Assistants

Current Gaps in Northern Virginia's Health Care Workforce

Increasing physical therapy treatment for the elderly and an expanded role in sports medicine/rehabilitation are increasing demand for physical therapists and physical therapist assistants. The shortage of licensed physical therapists and continued emphasis on cost control has pushed responsibilities and increased workloads for physical therapist assistants.

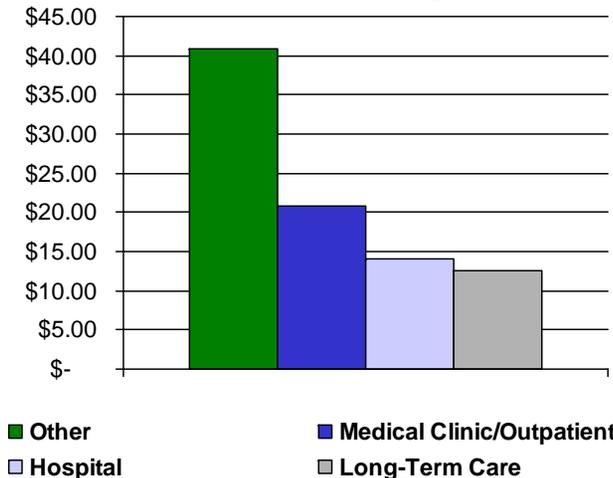
Although the employment of physical therapist assistants is expected to grow much faster than the average of all occupations through 2012, the Bureau of Labor Statistics reports that changes to government reimbursement could pose a short-term negative hiring impact. However, the rate of increasing demand is expected to temper this effect over the long-term.¹

Physical Therapist Assistant Vacancy Rates
Comparison by Setting

Setting	Vacancy Rate (%)
Other	38.7
Long-Term Care	33.3
Medical Clinic/Outpatient	17.0
Hospital	7.4

Source: PwC Analysis of Northern Virginia Workforce Survey; 1 Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2004-05 Edition*, Physical Therapist Assistants and Aides

Physical Therapist Assistant Median Hourly Salary
Comparison by Setting



Licensed Practical Nurses

Current Gaps in Northern Virginia's Health Care Workforce

The licensed practical nurse (LPN) shortage is driven by both the increase in demand for services and the decrease in people entering the occupation. Future shortages will be impacted by the fact that the number of women ages 25 to 54, the traditional nursing demographic, is expected to remain relatively unchanged.¹

The Bureau of Labor Statistics estimates that the number of LPN positions available through 2012 will increase at an average rate while experiencing a shift in employment sites. LPN positions are expected to follow the transition of inpatient procedures to outpatient facilities. The majority of growth is estimated to occur in the long-term care and home health settings.²

LPN Vacancy Rates

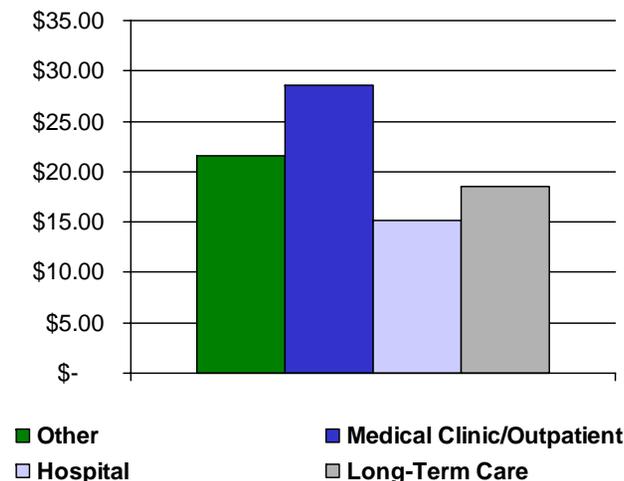
Comparison by Setting

Setting	Vacancy Rate (%)
Other	38.1
Medical Clinic/Outpatient	14.1
Long-Term Care	10.6
Hospital	7.1

Source: PwC Analysis of Northern Virginia Workforce Survey; 1 United States General Accounting Office, *Recruitment and Retention of Nurses and Nurse Aides Is a Growing Concern*, May 2001. 2 Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2004-05 Edition*, Licensed Practical and Licensed Vocational Nurses

LPN Median Hourly Salary

Comparison by Setting



Physical Therapist

Current Gaps in Northern Virginia's Health Care Workforce

A 1997 report commissioned by the American Physical Therapy Association reported that an equilibrium between the supply and demand of physical therapists would be reached by 1998.¹ However, because of advances in trauma medicine and expanded scopes of therapy care, demand has continued to outstrip supply.

Although the employment of physical therapists is expected to grow much faster than the average of all occupations through 2012, the Bureau of Labor Statistics reports that changes to government reimbursement may temper that growth in the short-term.²

Medical Clinic/Outpatient facilities employ the greatest number of physical therapists in the Northern Virginia area. These sites also report the highest vacancy rate.

Physical Therapist Vacancy Rates

Comparison by Setting

Setting	Vacancy Rate (%)
Medical Clinic/Outpatient	17.6
Hospital	13.9
Other	10.3
Long-Term Care	9.1

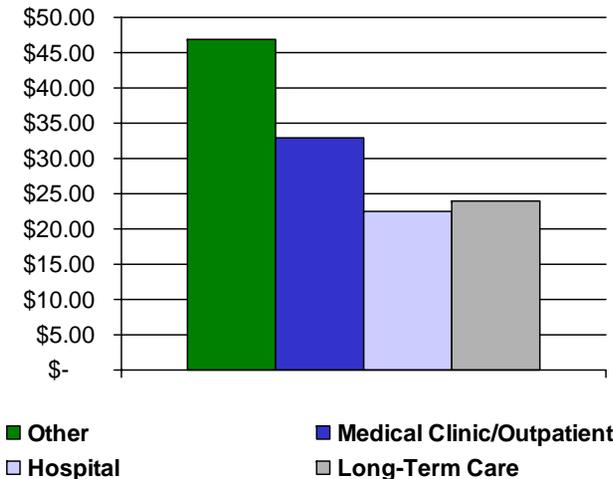
Source: PwC Analysis of Northern Virginia Workforce Survey

1 American Physical Therapy Association Student Assembly website, www.aptastudent.org

2 Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2004-05 Edition*, Physical Therapists

Physical Therapist Median Hourly Salary

Comparison by Setting



Expanded responsibilities and higher drug spending combined with declining pharmacy school applications have driven the shortage of pharmacists. This shortage could further deteriorate with increased demand related to the new Medicare Prescription Drug Benefit. A move by employers and educators to increase the educational requirements from a Bachelor of Science in pharmacy to the Doctor of Pharmacy is another factor affecting the shortage. According to the National Association of Boards of Pharmacy, "The (pharmacy) manpower shortage is a long-term problem for which there is no single solution."¹

Demand for pharmacists is estimated to continue to outpace supply over the short-term. Factors that may limit this growth include managed care's influence on pharmaceutical spending, increases in automation, and increased use of pharmacy technicians and aides. However, competition for pharmacists will increase as they are employed by home care and managed care companies.²

Pharmacists Vacancy Rates

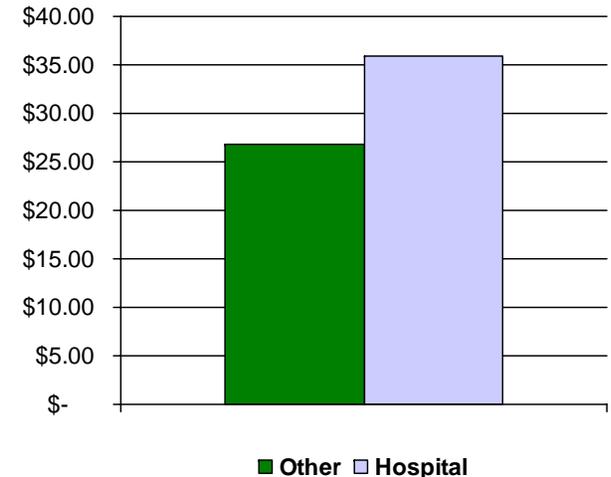
Comparison by Setting

Setting	Vacancy Rate (%)
Other	33.3
Hospital	10.4

¹ Bureau of Health Professions, *The Pharmacist Workforce; A Study of the Supply and Demand for Pharmacists*, December 2000. ² Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2004-05 Edition*, Pharmacists. The analysis does not include employment of pharmacists in retail facilities.

Pharmacists Median Hourly Salary

Comparison by Setting



Radiologic Technologists and Technicians

Current Gaps in Northern Virginia's Health Care Workforce

The demand for radiologic technologists and technicians is driven by the exploding growth of imaging technologies. The Bureau of Labor Statistics reports that demand derived from the benefits of these new technologies may be tempered by hospitals and managed care organizations concerned with the growing costs of these procedures. However, according to American Society of Radiologic Technologists, the national shortfall may be as much as 30% by 2010. Reasons contributing to the estimated shortfall are similar to nursing and include increased demand, aging workforce, and shortage of educators.

Hospitals report the highest vacancy rate for radiologic technologists and technicians. Large clinics also report significant shortages. These higher vacancy rates are likely the result of the more lucrative salary packages offered by some outpatient providers and temporary placement agencies and the regular daily hours.

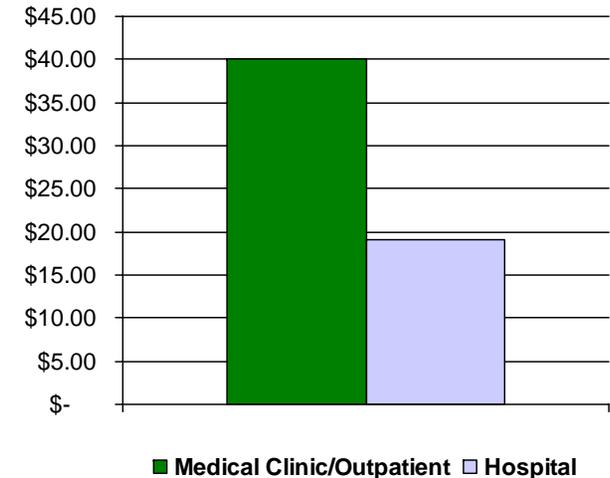
Radiologic Technologists and Technicians Vacancy Rates

Comparison by Setting

Setting	Vacancy Rate (%)
Hospital	20.2
Medical Clinic/Outpatient	10.9

Radiologic Technologists and Technicians Median Hourly Salary

Comparison by Setting



Source: PwC Analysis of Northern Virginia Workforce Survey

Medical Records and Health Information Technicians

Current Gaps in Northern Virginia's Health Care Workforce

Increased demand for medical records technicians will be fueled by rising health care demand, increased scrutiny of medical documentation and continued emphasis on the electronic medical record. While this growth will be primarily distributed among physician offices/clinics, hospitals, and long-term care facilities, third-party payers and government regulators are expected to add to the demand.

Vacancies for medical records technicians are evenly distributed among the providers surveyed despite the higher wages reportedly offered by outpatient and other facilities. Issues with quality of the available medical records staff surfaced repeatedly in the interviews.

Medical Records and Health Information Technicians Vacancy Rates

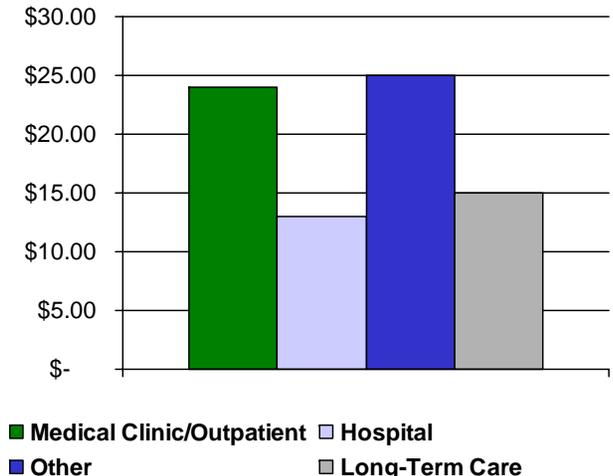
Comparison by Setting

Setting	Vacancy Rate (%)
Other	14.3
Medical Clinic/Outpatient	11.0
Long-Term Care	12.9
Hospital	9.6

Source: PwC Analysis of Northern Virginia Workforce Survey

Medical Records and Health Information Technicians Median Hourly Salary

Comparison by Setting



Registered Nurses

Current Gaps in Northern Virginia's Health Care Workforce

Registered nurses have experienced a well-publicized shortage for the past several years. The potential passage of minimum nurse staffing ratios may drive the shortage even higher should it not be addressed with supply side solutions. Adding to the problem is the increased acuity of the average patient requiring more and more specialization among nurses and the expansion of health care delivery settings.¹ The overall vacancy rate of 10.3% equates to 1,038 vacant positions – the largest number of vacancies in any occupation studied. These vacancies represent 37.6% of all the vacancies identified. This shortage is further supported in the findings from numerous national and regional studies.

The Bureau of Labor Statistics reports that registered nurses will grow faster than the average of all occupations and given its current size, this growth will result in a tremendous amount of new employment opportunities.²

Long-term care facilities and hospitals are experiencing the largest shortages of registered nurses in Northern Virginia per the survey results.

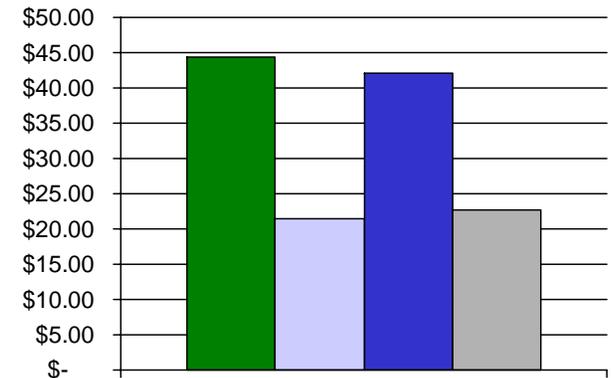
Registered Nurses Vacancy Rates
Comparison by Setting

Setting	Vacancy Rate (%)
Long-Term Care	14.4
Hospital	10.7
Other	10.1
Medical Clinic/Outpatient	9.5

¹ U.S. General Accounting Office, *Nursing Workforce: Recruitment and Retention of Nurses and Nurse Aides is a Growing Concern*, May 2001.

² Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2004-05 Edition*, Registered Nurses

Registered Nurses Median Hourly Salary
Comparison by Setting



■ Medical Clinic/Outpatient □ Hospital
■ Other □ Long-Term Care

Source: PwC Analysis of Northern Virginia Workforce Survey

Nursing Aides, Orderlies, Certified Nurse Assistants, and Attendants

Current Gaps in Northern Virginia's Health Care Workforce

Northern Virginia is not alone in dealing with a severe shortage of paraprofessional nurses. In a 1999 survey of states, 42 of the 48 respondents indicated that nurse aide recruitment and retention was a significant workforce issue.¹ Driving the high turnover, which often exceeds 100%, are poor wages and benefits, lack of career ladders and difficult working conditions. Although no providers are immune, in Northern Virginia the problem is most acute among medical clinics and outpatient centers. Here, vacancy rates exceed 13%.

With salaries rarely exceeding \$15 per hour, the health care industry must compete with other industries that offer comparable wages, upward mobility, better hours and less stress.

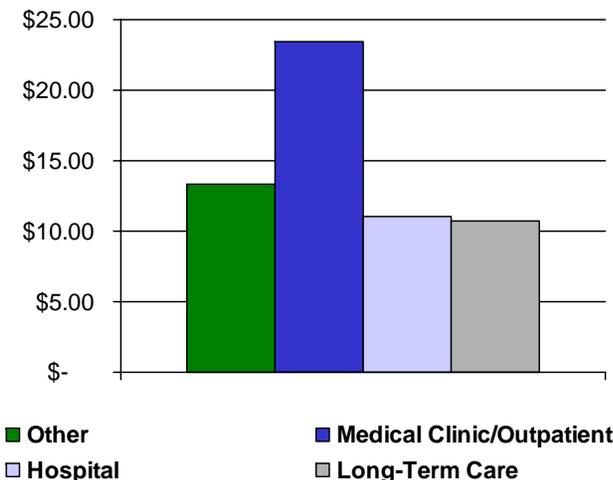
Nursing Aides, Orderlies, Certified Nurse Assistants and Attendants Vacancy Rates

Comparison by Setting

Setting	Vacancy Rate (%)
Medical Clinic/Outpatient	13.3
Other	9.3
Long-Term Care	7.9
Hospital	6.6

Nursing Aides, Orderlies, Certified Nurse Assistants and Attendants Median Hourly Salary

Comparison by Setting



Source: PwC Analysis of Northern Virginia Workforce Survey; 1 North Carolina Division of Facility Services, *Comparing State Efforts to Address to Recruitment and Retention of Nurse Aide and Other Paraprofessional Aide Workers*, (Raleigh, N.C.: Sept. 1999) 2 United States General Accounting Office, *Recruitment and Retention of Nurses and Nurse Aides Is a Growing Concern*, May 2001.

Vacancy by Settings

Current Gaps in Northern Virginia's Health Care Workforce

The medical clinics/outpatient industry in Northern Virginia is reportedly experiencing the greatest shortage of workers followed by other entities, hospitals, and long-term care. Medical clinic/outpatients' 12% vacancy rate is chiefly driven by shortages in speech language pathologists (over 50%) and occupational therapists (over 30%). Comparatively, the medical clinic/outpatient industry offers relatively good entry level wages.

Despite offering comparatively good wages, the home health setting reports the second highest vacancy rate. An extensive shortage (over 38%) of physical therapist assistants and licensed practical nurses contributed significantly to workforce shortages within the industry.

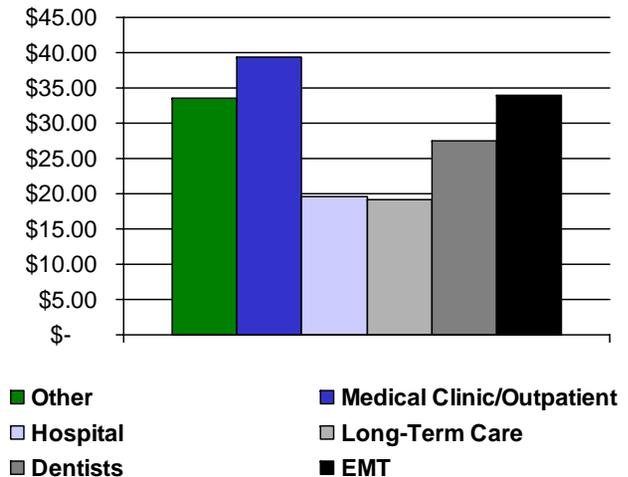
Hospitals and long-term care facilities reported comparatively moderate shortages – primarily driven by shortages in allied health professionals. Increasing competition from outpatient providers and wide disparities in wage rates/working conditions will likely continue to impact workforce equilibrium in the short-term.

Vacancy Rates – All Positions
Comparison by Setting

Setting	Vacancy Rate (%)
Medical Clinics/Outpatient	12.4
Other	11.3
Hospitals	10.5
Long-Term Care	9.6
Dentists	2.7
EMT	1.0

Source: PwC Analysis of Northern Virginia Workforce Survey

Median Hourly Salary – All Positions
Comparison by Setting

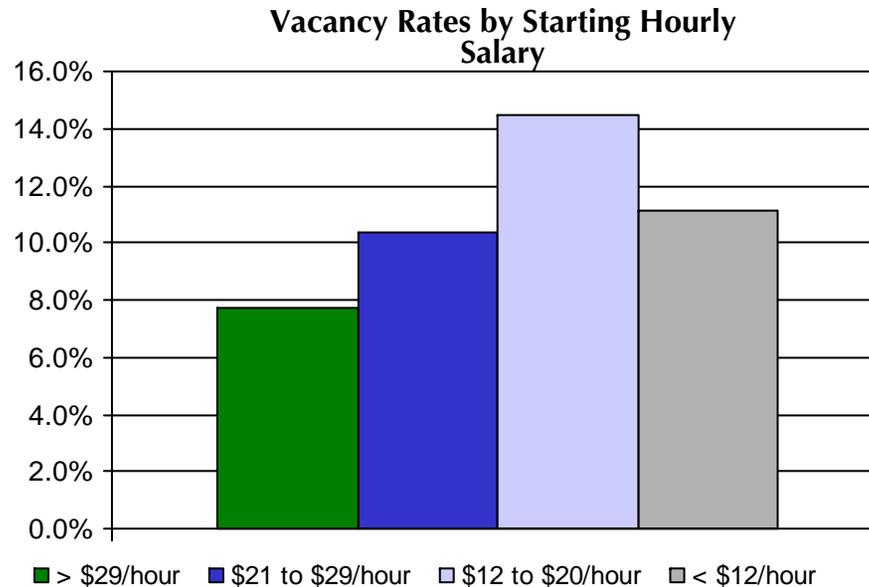


More Vacancies in the \$12- to \$20-per Hour Occupations

Current Gaps in Northern Virginia's Health Care Workforce

Occupations falling within the \$12 to \$20 per hour starting wage range reported the most acute shortages. Positions within this salary range were typically allied health assistants including LPNs, physical therapist assistants, dental assistants, lab technicians and other positions. These typically involve some post-high school education and certification but not a bachelor's degree. Shortages within these fields are driven by both the specialized nature of the work and intense competition among inpatient facilities and the growing outpatient facilities.

The lowest wage cohort reported the second highest vacancy rate. These positions, which include home health and nurses aides, typically require less training. The highest starting hourly wage cohort reported the lowest overall vacancy rate at 7.7%. Among the highly skilled careers in this cohort were physical therapists and pharmacists.



Source: PwC Analysis of Northern Virginia Workforce Survey

Starting Health Care Hourly Wages Vary Significantly Based on Occupation

Current Gaps in Northern Virginia's Health Care Workforce

The survey collected starting salaries for each of the occupations studied. Home health aides have the lowest starting hourly wage within an average of \$9.72. Speech language pathologists, nurse managers, pharmacists and lab techs received the highest hourly wage – between \$30 and \$35. These numbers may appear to be lower than other salary surveys that are based on average salaries for a particular occupation.



Source: PwC Analysis of Northern Virginia Workforce Survey

Section 3: Northern Virginia's Future Health Care Workforce Needs

Highest Future Demand for Workers Will Be in Nursing

Northern Virginia's Future Health Care Workforce Needs

PricewaterhouseCoopers conducted an analysis based on information from the Northern Virginia survey and Bureau of Labor Statistics (BLS) employment growth estimates to determine the overall growth and demand in each of the occupational categories. Results of the analysis indicate that the majority of employment growth will involve nursing professionals and paraprofessionals.

Of the 24 targeted occupations in this survey, the categories with the highest expected demand in 2020 are:

- Registered nurses and medical and nurse managers – 17,200 FTEs
- Nursing aides, orderlies, certified nurse aides, and attendants – 5,400 FTEs
- Medical records and health information technicians – 2,500 FTEs
- Dental assistants – 1,900 FTEs

The estimates of total workers assume current rates of graduation for these occupations and current rates of turnover. For example, as other studies show, the number of nursing graduates in Virginia has remained relatively static in recent years. Significant drops in graduation rates will clearly exacerbate the shortage while additional nursing programs and increases in class size could close the gap.

Similarly, erosion of the current workforce could accelerate the estimated shortages. Retirement rates that are higher than replacement rates for key occupations are projected for nurses and radiologic technologists. In addition, when workers are burned out, they often leave health care, creating a need for new graduates. On the other hand, strong programs help employers retain their workers. For example, magnet nursing programs at hospitals, such as Inova Fairfax Hospital, have been shown to decrease turnover rates, and thus decrease the need to recruit and train additional nurses.

Future Demand for Health Care Occupations is High

The current and estimated demand for health care occupations in Northern Virginia is shown in the following chart. The nursing profession is expected to experience the highest demand in actual numbers – with the demand for RNs, nurse aides, medical and nurse managers, and LPNs estimated to grow from 16,300 to over 24,500 by 2020. High demand is also estimated in the dental industry with dental assistants and hygienists estimated to grow almost 70% by 2020.

Current and Estimated Demand by Health Care Occupation Through 2020

Occupation	Current Employment	Current Shortage	Current Demand	Demand 2010	Demand 2020	Estimated Shortage 2010	Estimated Shortage 2020
Registered nurses (includes CRNAs, nurse practitioners and nurse midwives)	9,082	1,038	10,120	12,056	15,432	2,974	6,350
Nursing aides, orderlies, certified nurse assistants, attendants	3,245	323	3,568	4,251	5,441	1,006	2,196
Medical records and health info technicians	1,337	172	1,509	1,872	2,547	535	1,210
Dental assistants	1,110	20	1,130	1,402	1,906	292	796
Medical and nurse managers	1,054	76	1,130	1,345	1,722	291	668
Home health aides	1,080	40	1,120	1,334	1,708	254	628
Dental hygienists	750	30	780	967	1,316	217	566
Emergency medical technician and paramedic	864	19	883	1,052	1,347	188	483
Radiologic technologists and technicians	723	109	832	991	1,268	268	545
Licensed practical nurses	1,111	390	1,501	1,669	1,919	558	808

Note: "Estimated Shortage" calculation assumes no change related to increased retirements, etc.

Northern Virginia's Future Health Care Workforce Needs

Future Demand for Health Care Occupations is High

Northern Virginia's Future Health Care Workforce Needs

Current and Estimated Needs by Health Care Occupation Through 2020 (continued)

Position	Current Employment	Current Shortage	Current Demand	Demand 2010	Demand 2020	Estimated Shortage 2010	Estimated Shortage 2020
Physical therapists	573	119	692	825	1,056	252	483
Physical therapist assistants	255	91	346	430	584	175	329
Occupational therapists	350	67	417	496	635	146	285
Respiratory therapists	233	39	272	324	415	91	182
CT Scanning technologist	237	24	261	312	399	75	162
Medical and clinical lab technologists	397	30	427	474	545	77	148
MRI technologist	172	22	194	232	296	60	124
Speech language pathologists	122	46	168	200	256	78	134
Pharmacy technicians	149	16	165	196	251	47	102
Pharmacists	139	24	163	194	249	55	110
Surgical technologists	134	21	155	184	236	50	102
Medical and clinical lab technicians	228	32	260	289	332	61	104
Phlebotomists	156	15	171	190	218	34	62
Surgical technician	33	-	33	40	51	7	18
Grand Total	23,534	2,763	26,297	31,325	40,129	7,791	16,595

Note: "Estimated Shortage" calculation assumes no change related to increased retirements, etc.

Supply of New Graduates is Not Keeping Up with Demand

Northern Virginia's Future Health Care Workforce Needs

Northern Virginia health care employers depend on graduates from area colleges and universities to fill current employment gaps and supply future needs. The chart on the following page shows the number of vacancies and number of graduates in Virginia for 13 reported health care occupations. The number of graduates was reported by the State Council of Higher Education of Virginia (SCHEV.)

We estimated the supply of graduates in Northern Virginia using two methods. First, the number of graduates in Northern Virginia looks at the graduates from schools located in Northern Virginia. Second, the allocated method assumes that Northern Virginia would receive its share of graduates from the state's schools. To calculate that share, the number of graduates was multiplied by 27%, which is Northern Virginia's share of the state's population. Obviously, the number of graduates who actually take positions in Northern Virginia is affected by many factors, for example, immigration trends, quality of life, cost of living, salaries, and career opportunities.

A growing concern is that the number of graduates in some fields is decreasing while the demand is increasing. The SCHEV data shows that for some occupations the number of new graduates has actually increased in the last few years.

Using graduation numbers is a proxy for meeting future demand, however, it has its limitations. For example, the number of nursing graduates could lead one to believe that in two to three years, the health care employers in Northern Virginia could close the gap on nursing vacancies. As significant are compounding variables such as: retirement age, sheer increases in demand, decreasing length of stay in the profession, upward mobility, the decision not to work, etc. These factors have been identified in numerous studies conducted within Virginia, in other states and nationally.

For example, a study by the American Organization of Nurse Executives put the annual turnover rate for registered nurses in all settings at 21%. In addition, a study by the American Health Care Association, a national nursing home trade association, put the annual turnover rate for nursing home nurse managers at 50%, registered nurses and licensed practical nurses at 48% and certified nurse assistants at 71%.

Source: Results of the 2002 AHCA Survey of Nursing Staff Vacancy and Turnover in Nursing Homes; American Organization of Nurse Executives, Acute Care Hospital Survey of RN Vacancy and Turnover Rates, January 2002.

Supply of New Graduates is Not Keeping Up with Demand

Northern Virginia's Future Health Care Workforce Needs

Method 1 Number of Graduates in 2003 in Northern Virginia for Selected Occupations Sorted by Number of Budgeted Vacancies

Health Care Occupations	Current Vacancy Rate	# of Budgeted Vacancies	# of Graduates in 2003 in No. VA
Registered nurse	10.3%	1,038	440
Medical records/info tech	11.4%	172	8
Physical therapist	17.2%	119	63
Radiologic techs	13.1%	109	25
Physical therapist assistant	26.3%	91	14
Nursing administration	6.7%	76	18
Occupational therapist	16.0%	67	20
Speech language pathologist	27.4%	46	-
Medical Lab Technician	12.3%	32	6
Dental hygienist	3.8%	30	18
Pharmacist	14.6%	24	94
EMT/paramedic	2.1%	19	13
Surgical tech	0.0%	-	9

Source: Five-year graduation rates from the State Council of Higher Education of Virginia, 1999-2003; PwC analysis of Northern Virginia Health Care Workforce Survey. Number of grads in Northern Virginia is from SCHEV and includes the following schools: George Mason Univ., Marymount Univ., Northern Virginia Community College and Shenandoah Univ. – which has a Leesburg Campus.

Note: Number of physical therapist assistant graduates in 2003 changed NVCC records. Number low due to high dropout rate caused by September 11, 2001 economic situation.

Supply of New Graduates is Not Keeping Up with Demand

Northern Virginia's Future Health Care Workforce Needs

Method 2
Number of Graduates in 2003 in Northern Virginia Based on Allocation Method for Selected Occupations Sorted by Number of Budgeted Vacancies

Health Care Occupations	Current Vacancy Rate	# of Budgeted Vacancies	% of 2003 VA Graduates Allocated to No.VA Based on Population %
Registered nurse	10.3%	1,038	658
Medical records/info tech	11.4%	172	4
Physical therapist	17.2%	119	38
Radiologic techs	13.1%	109	38
Physical therapist assistant	26.3%	91	7
Nursing administration	6.7%	76	5
Occupational therapist	16.0%	67	15
Speech language pathologist	27.4%	46	28
Medical Lab Technician	12.3%	32	29
Dental hygienist	3.8%	30	33
Pharmacist	14.6%	24	59
EMT/paramedic	2.1%	19	14
Surgical tech	0.0%	-	8

Source: Five-year graduation rates from the State Council of Higher Education of Virginia, 1999-2003; PwC analysis of Northern Virginia Health Care Workforce Survey. Number of grads in Northern Virginia is from SCHEV and includes the following schools: George Mason Univ., Marymount Univ., Northern Virginia Community College and Shenandoah Univ. – which has a Leesburg Campus. Percent of graduates allocated to Northern Virginia is based on the number of graduates in the State allocated by population percentage.

Note: Number of physical therapist assistant graduates in 2003 changed NVCC records. Number low due to high dropout rate caused by September 11, 2001 economic situation.

Supply of New RNs from Neighboring Counties in Maryland and DC is Less

Northern Virginia's Future Health Care Workforce Needs

Northern Virginia is a large part of the Metropolitan District of Columbia (DC) area. PwC looked at the number of RNs graduating in the other part of the metro region, i.e., DC and Montgomery and Prince George's Counties in Maryland to assess the supply of RNs in the Metro region as compared to Northern Virginia. We used RNs as a surrogate for comparison due to data limitations. The following shows the number of graduates in Montgomery and Prince George's Counties and DC.

Number of RN Graduates in 2003 in Neighboring Counties in Maryland and DC

Educational Institution	RN Graduates in 2003 Academic Year
Montgomery College	95
Prince George's Community College	88
Columbia Union College	17
Total for Local Maryland Counties	200
Georgetown University	50
Howard University	28
Catholic University	33
University of DC	50
Total for DC *	161
Grand Total for Local Maryland and DC	361

Source: Telephone interviews with the Dept of Nursing for each Maryland school and DC Department of Health Board of Nursing
* - Numbers reflect graduates who sat for exam.

Supply of New RNs from Neighboring Counties in Maryland and DC is Less

Northern Virginia's Future Health Care Workforce Needs

The number of RN graduates per capita for Northern Virginia as it compares to Montgomery and Prince George's Counties and DC is shown below. Given these numbers, Northern Virginia has little opportunity to attract RNs from other localities. This shortfall is further supported in "Maryland's Top 25 Demand Health Care Occupations Projected Demand and Reported Supply Provided by Maryland Higher Educational Institutions." As indicated in this report, the Maryland 2000-2010 Occupational Projections forecast the greatest projected employment, employment growth and total openings for registered nurses.

Comparison of RN Graduates in Northern Virginia to Remaining Part of Metro DC

Area	Population (millions)	No. of RN Graduates	RN Graduates/Population
No. VA	2.0	440	220
Montgomery & Prince George's Counties and DC (1)	2.3	361	157

(1) Population estimate from US Census 2003 data

Nurses are Estimated to Have Increased Shortage

Northern Virginia's Future Health Care Workforce Needs

Northern Virginia has an estimated shortage of 1,038 registered nurses, based on the survey results. There are no indications that this vacancy rate will improve in the near future. As discussed previously, vacancies result from increases in demand, departures from the field and retirements. Departures from the field result from issues such as burn-out, lack of career opportunities, and wages that don't keep pace with inflation. These factors are expected to continue, at least in the near future.

When combined with a constant or decreasing number of nursing graduates, the shortage will worsen. Assuming the estimated demand and the current vacancy rate, new graduates will be primarily offset by retirements, as shown below. This scenario assumes each nurse works an average of 30 years and therefore 1 in 30 nurses retires each year, and that Northern Virginia captures all of the 440 nurse graduates it currently is educating. As shown, by the year 2020, the vacancy rate will be 4,429 nurses or an increase from 10.3% in 2004 to 28.7%.

Nursing Supply Shortage Considering Retirement and Graduate Assumptions

Adjusted RN Shortage	2004	2010	2020
Estimated Shortage	1,038	2,974	6,350
Cumulative Retirements (2004 to 2010 and 2010 to 2020)		1,818	3,301
Cumulative Graduates (2004 to 2010 and 2010 to 2020)		2,640	4,400
Adjusted Shortage	1,038	2,152	4,429

Retirements are estimated as 1 in 30 of the workforce each year and graduates are current number of nurse graduates in Northern Virginia in 2003.

Retirement Rate Increases Will Contribute to Higher Shortages

Northern Virginia's Future Health Care Workforce Needs

The average age of registered nurses in Virginia is over 45, according to the Virginia Hospital and Healthcare Association. The increasing age of the registered nurses is a concern because it is anticipated that a greater than average number of registered nurses will be retiring over the next several years. The physically demanding nature of the nursing occupation contributes to the need to retire or change careers.

The estimated shortages previously identified in this report do not include an expected increase in retirements or departure from the field of nursing. However, increased retirements will likely be the case and are documented in numerous statewide and national studies. The table below shows the effect of an increasing retirement rate of the RN shortage. It considers an estimated retirement increase of 1 percent. Therefore, it shows a scenario of an additional 6% of the current RNs retiring by 2010 and an additional 10% retiring by 2020. .

Similar retirement effects are anticipated in other health care occupations, such as imaging – radiologic technicians.

Registered Nurse Shortage Assuming Increasing Retirement Rates

Adjusted RN Shortage	2004	2010	2020
Estimated Shortage	1,038	2,974	6,350
Cumulative Retirements (2004 to 2010 and 2010 to 2020)		2,412	4,401
Cumulative Graduates (2004 to 2010 and 2010 to 2020)		2,640	4,400
Adjusted Shortage	1,038	2,746	6,351

Retirements are increased by 1% of the labor force each year.

Source: Where We Stand: Projected Nurse Demand and Supply in Virginia, 2000-2020, Virginia Hospital and Healthcare Association, April 2004

Gaps Will Be Exacerbated by Lower Supply

Northern Virginia's Future Health Care Workforce Needs

The occupations listed below are ones in which the supply of graduates is declining or remaining stable. These occupations are most at risk, when comparing number of graduates - the demand will increase while supply declines or remains stable.

Occupations with High Demand and Low Supply

Occupation	Current Vacancy Rate	Expected Increase Demand (2004-2010)	Future Demand Scenario
Registered nurses	10%	51%	More than 1,000 vacancies currently; retirements expected to widen the gap; shortages could lead to more burn-out and raise current vacancies rates.
Nursing administration	7%	51%	
Occupational therapist	16%	51%	Large vacancy rate combined with drop in graduates could affect access to therapy.
Physical therapist	17%	51%	
Physical therapist asst.	26%	65%	
Dental hygienist	4%	64%	Trend toward more hygienists per dentist leads to more demand for these positions.
Medical records/info tech	11%	64%	Coders and other IT professionals currently in short supply. As hospitals and clinics move to electronic medical records, need for coders may slow, but demand for other IT professionals will increase.

Source: PwC Analysis of State Council of Higher Education of Virginia data

Vacancies Could Increase by 2020 Without Intervention

Northern Virginia's Future Health Care Workforce Needs

The current vacancy rates could become worse if the current supply of graduates does not increase. The following illustrates the growth in the vacancy rate for select occupations. Currently, about one in 10 registered nurse positions is vacant. That is estimated to increase to one in four by 2010 and one in 2.5 by 2020 without interventions.

Anticipated Growth in Vacancy Rates for Select Occupations

	2004 Vacancy Rate	2010 Estimated Vacancy Rate	2020 Estimated Vacancy Rate
RNs	10.3%	25%	41%
LPNs	26%	33%	42%
Radiologic, CT, MRI techs	12%	26%	42%
Medical records and info techs	11.4%	29%	47%
Medical and nurse managers	6.7%	22%	39%

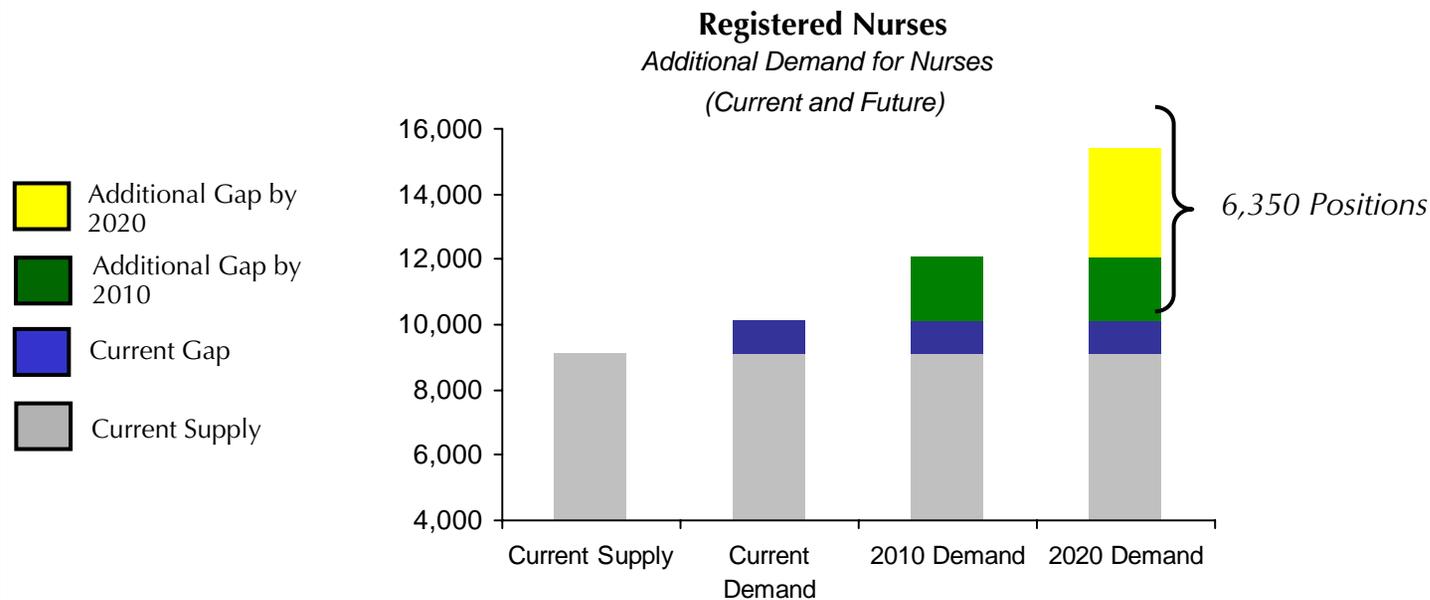
Demand for Nurses Will Double by 2020

Northern Virginia's Future Health Care Workforce Needs

Nationally, more new jobs will be created for RNs than any other occupation. This is evident in Northern Virginia where more than 6,300 new RNs will need to be added to the workforce to meet the 2020 estimated demand.

Northern Virginia reported a current 10% shortage of registered nurses or just over 1,000 open positions. In addition to eliminating this shortage, Northern Virginia will need to add over 1,900 RNs by 2010 and nearly 3,400 RNs by 2020 to keep up with demand.

This will be further affected by a higher than normal retirement rate. Retirement rates are anticipated to exceed the normal replacement rates for RNs. A Virginia Hospital and Health Care Association study forecasts a need for an additional 10,000 nurses in Northern Virginia by 2020 due to an aging nurse workforce, most of whom are currently in their mid-40s. This statewide shortage will increase competition for nurses. It is not anticipated that surrounding states will have the supply to resolve Virginia's shortage based on other studies.



Demand for Nursing Aides Will Rise Dramatically

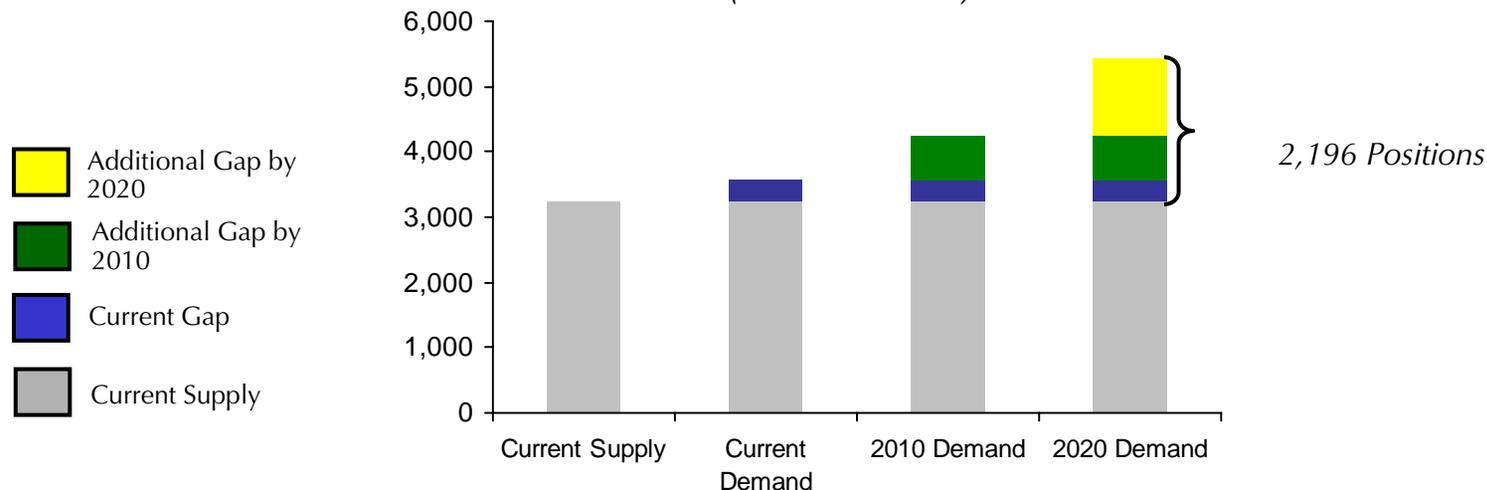
Northern Virginia's Future Health Care Workforce Needs

Demand for nursing aides is also estimated to increase dramatically in the long-term. Advances in health care and inpatient hospital cost pressures will continue to drive long-term care, home health care and outpatient utilization and thus the need for more nursing aides. This growth will severely exacerbate what is already reported as a critical shortage in Northern Virginia.

Overall, the Northern Virginia area reported a 9.1% current shortage of nursing aides or just over 320 open positions. In addition to eliminating the shortage, Northern Virginia will need to add over 680 nursing aides by 2010 and another 1,190 nursing aides by 2020 in order to keep up with anticipated demand and population growth.

Nursing Aides, Orderlies, Certified Nurse Assistants, Attendants

*Additional Demand for Workers
(Current and Future)*

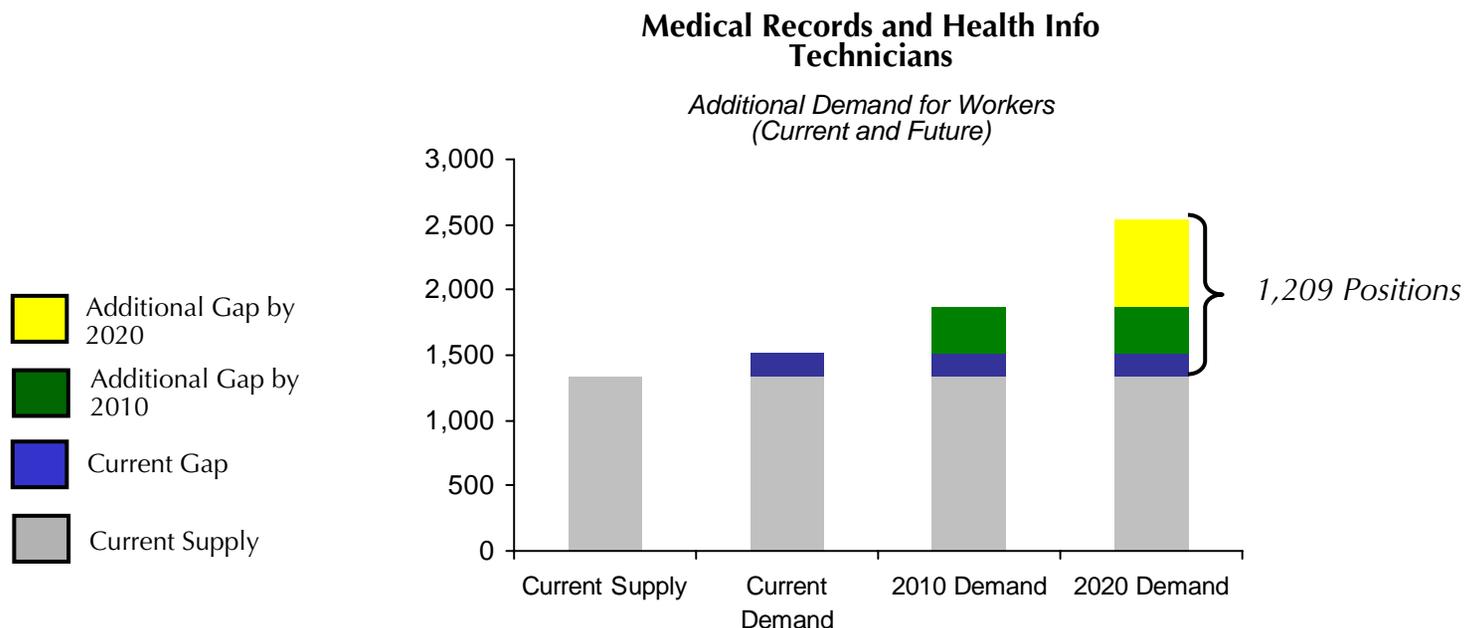


More Medical Records/IT Technicians Will Be Needed

Northern Virginia's Future Health Care Workforce Needs

Overall, the Northern Virginia area reported an 11% shortage of medical records technicians or 172 open positions. In addition to eliminating the shortage, Northern Virginia will need to add over 363 technicians by 2010 and another 675 by 2020 to keep up with anticipated demand and population growth.

Northern Virginia Community College graduated an average of seven medical records technicians each year between 1999 and 2003. Given this graduation rate the college is on pace to deliver an additional 49 technicians to the workforce by 2010, 314 below market demand estimates.

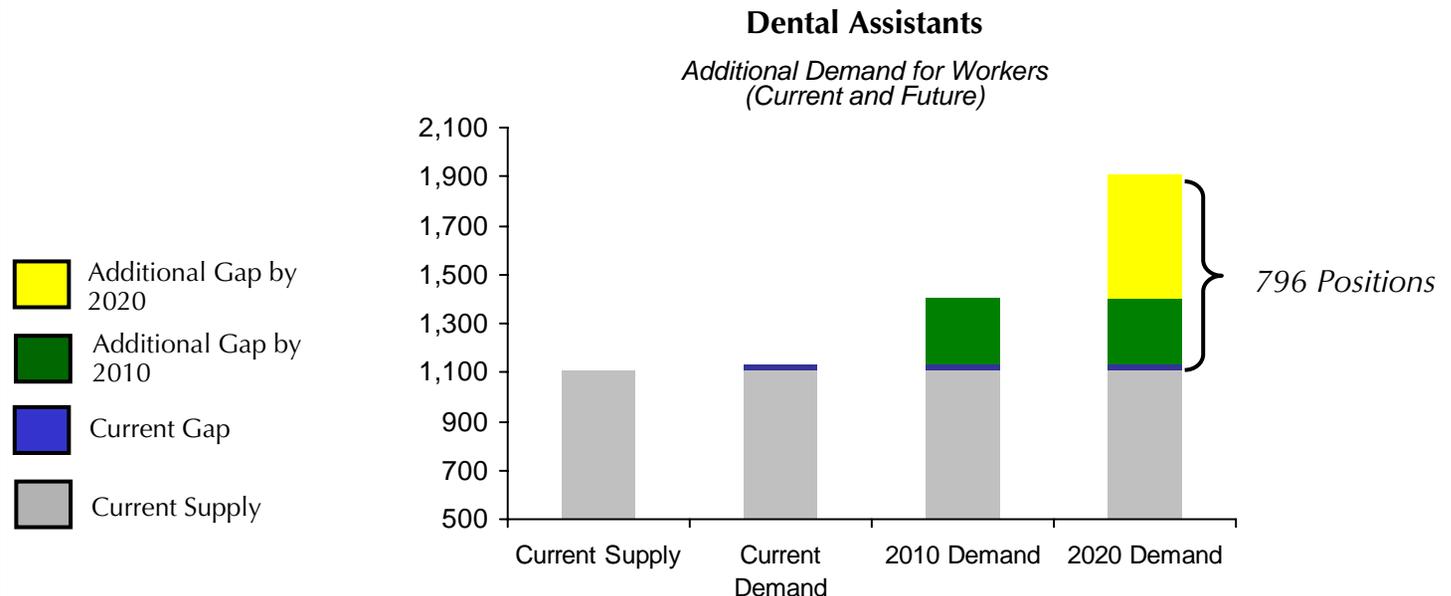


Demand for Dental Assistants to Follow National Rate

Northern Virginia's Future Health Care Workforce Needs

The Bureau of Labor Statistics reports that the dental assistant occupation is expected to be one of the fastest growing occupations over the next few years. Dentists are increasingly leveraging with dental assistants to perform routine procedures and population increases are fueling an increase in the number of procedures.

Overall, the Northern Virginia area reported a minimal shortage of dental assistants (1.8%) or just over 20 positions. In addition to eliminating the shortage, Northern Virginia will need to add 272 assistants by 2010 and another 506 by 2020 in order to keep up with anticipated demand and population growth.



More Medical and Nurse Managers Needed by 2020

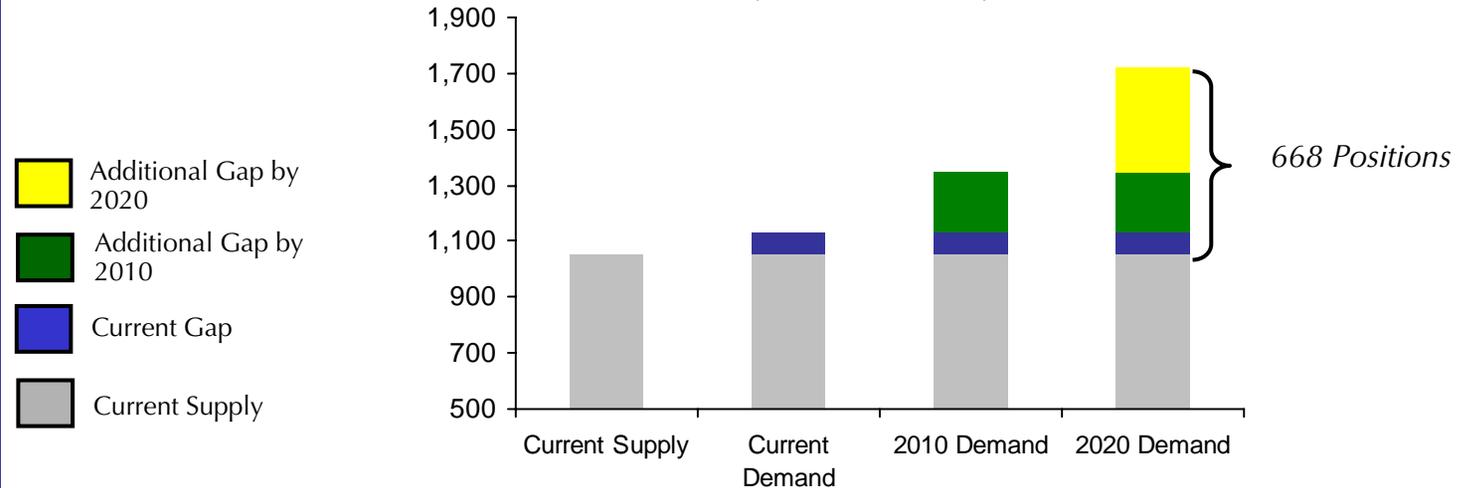
Northern Virginia's Future Health Care Workforce Needs

Demand for medical and nurse managers will continue to grow as the overall demand for health care continues to increase. The complexity and diversification of the industry will require more management caliber individuals with higher levels of experience and education. High quality nurse managers and leaders have been identified as a key component to retaining patient care nurses.

Overall the Northern Virginia area reported a 6.7 % vacancy rate among medical and nurse managers, or 76 positions. In addition to eliminating the shortage, Northern Virginia will need to add 216 managers by 2010 and another 377 by 2020 in order to keep up with anticipated demand and population growth.

Medical and Nurse Managers

*Additional Demand for Workers
(Current and Future)*



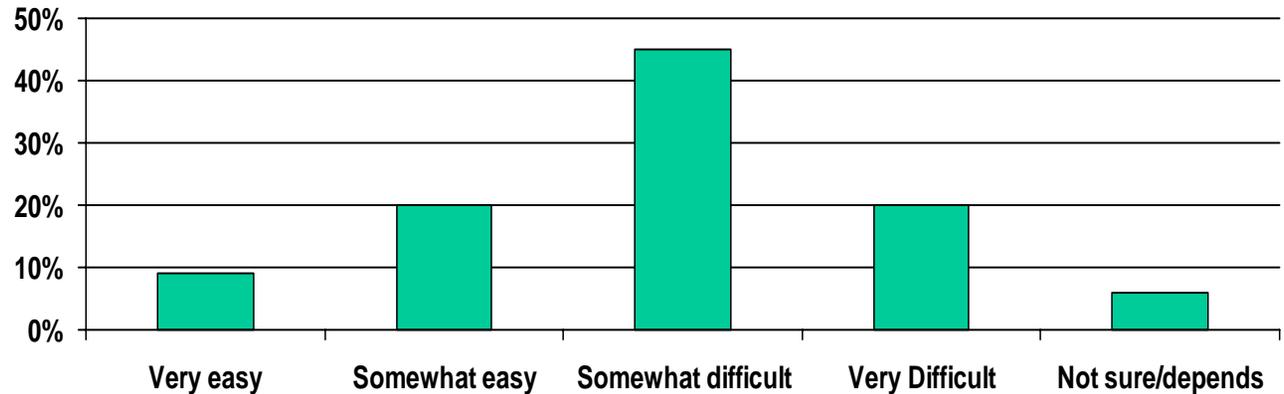
Most Health Care Employers Say It Is Difficult to Recruit Workers

Northern Virginia's Future Health Care Workforce Needs

Judging by current experience, recruiting health care workers in Northern Virginia in the future will be difficult. About 65% of the Northern Virginia Workforce Survey respondents characterized recruitment as somewhat difficult or very difficult. 6% said they weren't sure or it depends on the type of job being filled.

Only 29% of respondents to the survey respondents said that recruitment was very easy or somewhat easy. Recruitment also varies among the different health care segments. None of the 11 hospitals surveyed said it was easy or even somewhat easy to recruit health care personnel. Long-term care providers voiced their difficulty as well. Only 13% of the long-term care providers said it was easy or somewhat easy to recruit workers.

Ease of Recruiting Health Care Personnel



Employers Say Recruiting Problems Have Long-Term Implications

Northern Virginia's Future Health Care Workforce Needs

- Some Northern Virginia health care providers said the difficulty in recruiting workers has lessened somewhat from a few years ago when the economy was expanding rapidly. In recent years as unemployment has increased, more workers have gone into health care professions. They view health care as a non-cyclical industry in which they can have steady, long-term employment. While some health care occupations are relatively high-paying, they carry trade-offs that make them less desirable than jobs in other industries. Health care employers must have staff that can work nights and weekends. The jobs are often stressful and physically demanding – including lifting patients.
- Hospitals are the largest employers of health care professionals and they tend to be not-for-profit businesses that don't offer the stock options and perks of commercial businesses. In times of economic recession, however, these trade-offs are more palatable to workers seeking steady employment.
- Despite this influx of workers, shortages persist. As the economy picks up, these shortages could be exacerbated as students select other industries that don't carry the inherent challenges of health care professions.
- "We do not hire new graduates because they lack the experience and maturity needed for this special kind of work. We will consider new graduates who are older. Colleges and training programs cannot provide the kind of experience and maturity needed for this kind of work." – Hospice employer

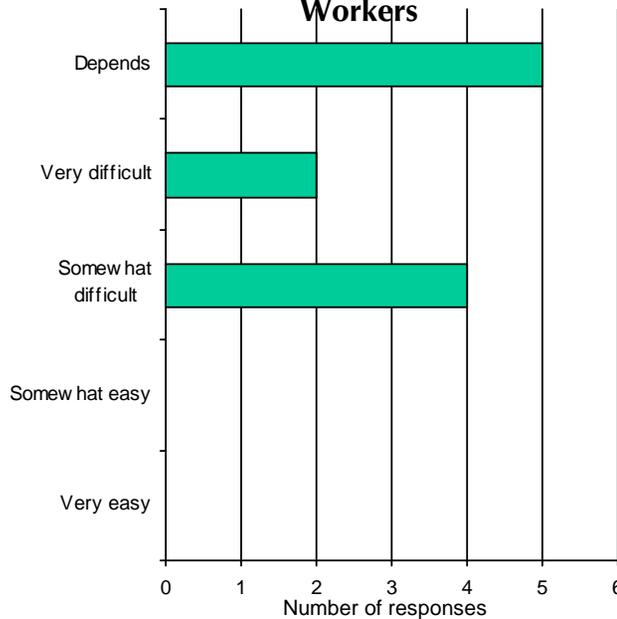
Hospitals Expect Biggest Future Difficulties in Hiring Staff

Northern Virginia's Future Health Care Workforce Needs

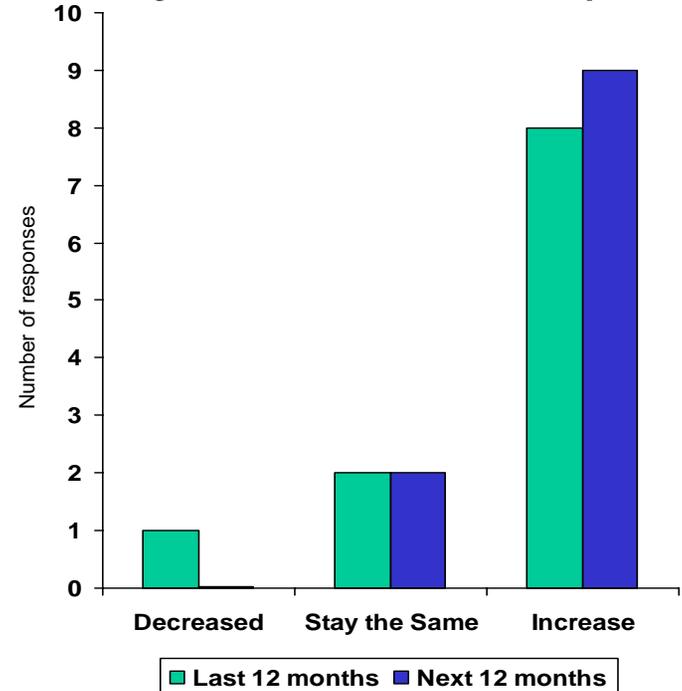
In the next 12 months, all of the Northern Virginia hospitals surveyed expected to either retain their current workforce or hire additional workers. Nine hospitals reported that they would grow their health care workforce in the year ahead, two said it would stay the same, and none said they planned to decrease the size of their workforce. During the previous year, only one said it had decreased its workforce, two said its workforce had remained the same and eight said its workforce had increased in numbers.

Because of the depth and breadth of workers they hire, hospitals have the biggest recruiting challenges. None of those surveyed viewed recruiting as easy. Four hospitals/systems said it was somewhat difficult, two viewed it as very difficult, and five said it depended on the positions for which they were recruiting.

Ease of Recruiting Qualified Health Care Workers



Change in Workforce Needs for Hospitals



Source: PwC Analysis of Northern Virginia Workforce Survey

Physicians' Offices, Clinics, Outpatient Centers Expect to Add More Staff

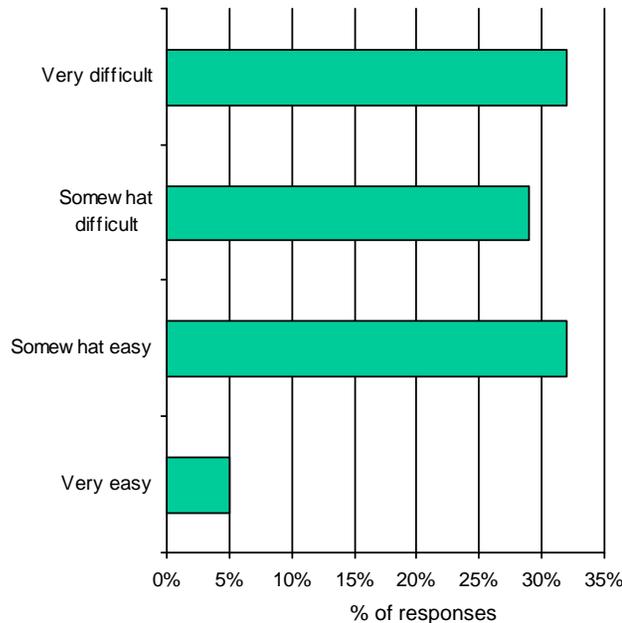
Northern Virginia's Future Health Care Workforce Needs

Ambulatory care centers, which include physician offices, outpatient surgery centers and other types of outpatient care, hire the full spectrum of health care workers. Of the job occupations surveyed for this study, all but four work in ambulatory care settings.

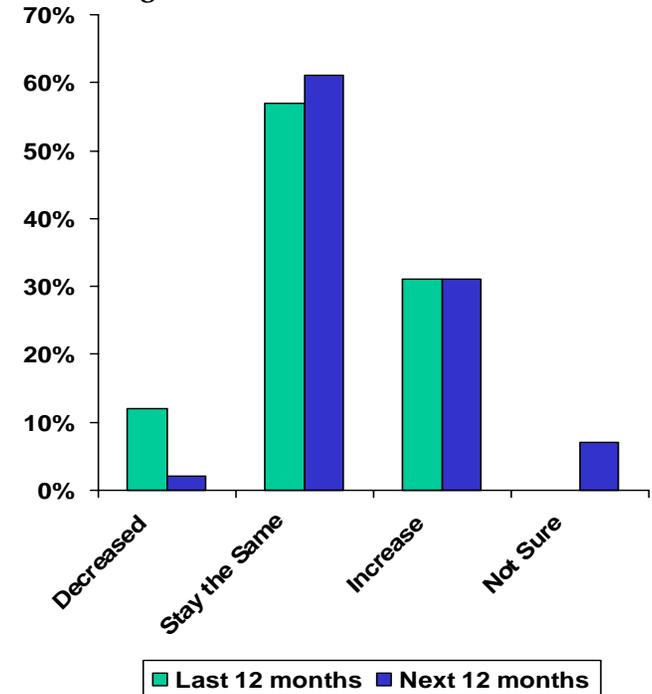
This group also sees problems in recruiting. A little more than one third -- 37% -- said it was very easy or somewhat easy to recruit; 61% said it was very difficult or somewhat difficult to recruit.

29% of the ambulatory care respondents said their workforce needs would increase in the next year. More than half said it would stay the same.

Ease of Recruiting Qualified Health Care Workers



Change in Workforce Needs for Clinics



Source: PwC Analysis of Northern Virginia Workforce Survey

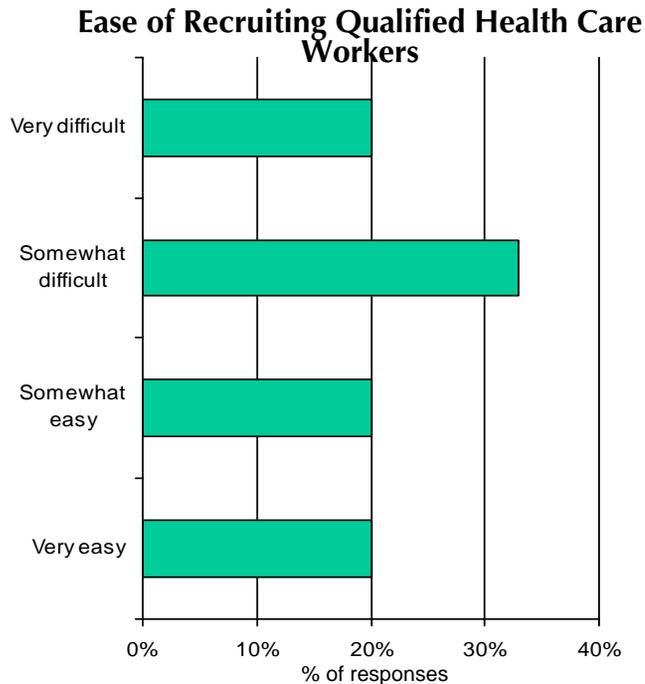
Dentists' Offices Report Easier Ability to Hire Staff

Northern Virginia's Future Health Care Workforce Needs

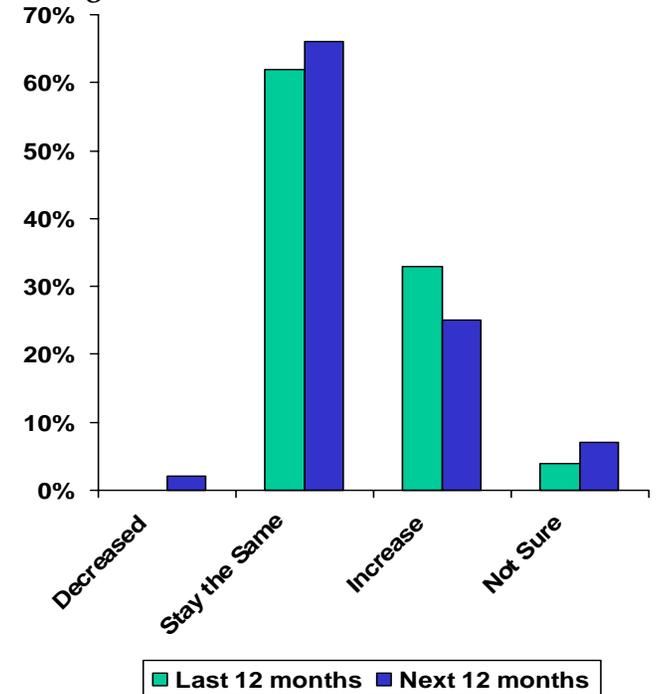
Dentist offices hire hygienists and assistants. The workforce needs are more static among this group. 62% said their workforce had stayed the same in the past year and 66% said it would stay the same in the next year.

The group was also split over the ease of hiring hygienists and dental assistants. 53% said it was very difficult or somewhat difficult to recruit qualified workers while 40% said it was very easy or somewhat easy. About 7% were unsure.

Ease of recruitment was highest in this group, which is also reflected in the low vacancy rates – 2% for dental assistants and 4% for dental hygienists. This is in part a result of a small labor force per employer.



Change in Workforce Needs for Dental Offices



Source: PwC Analysis of Northern Virginia Workforce Survey

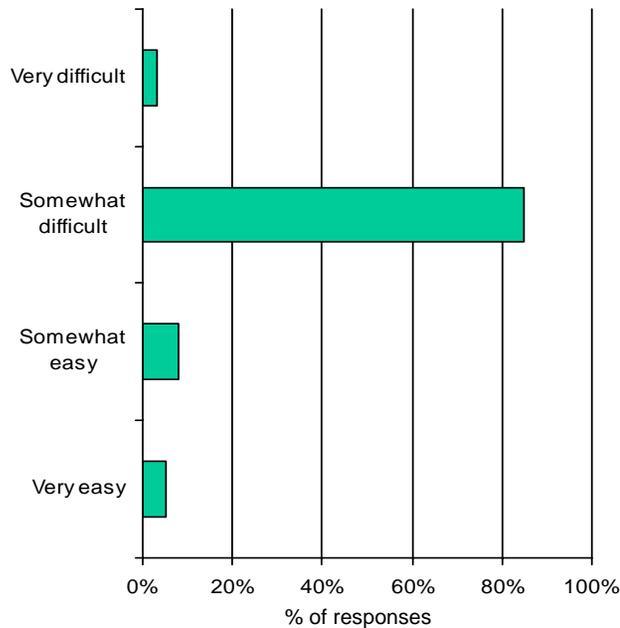
Long-term Care Providers Constantly Challenged to Hire More

Northern Virginia's Future Health Care Workforce Needs

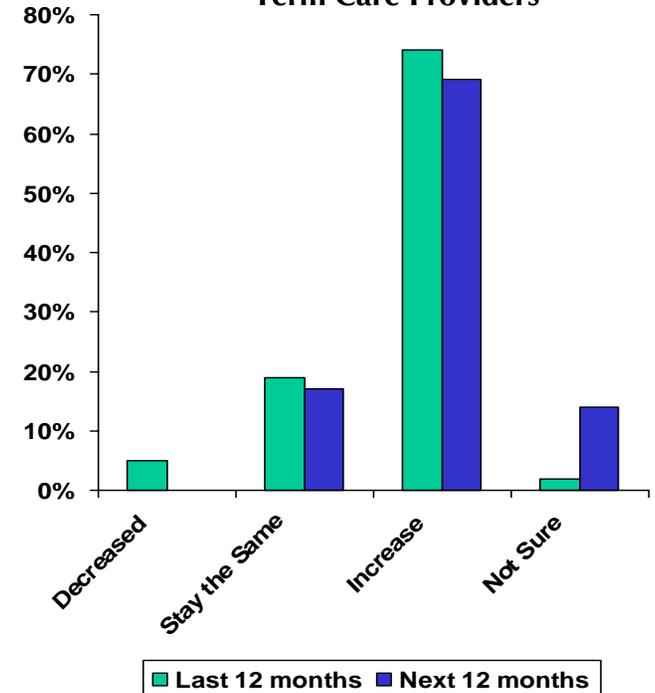
Long-term care providers collectively agreed that recruiting workers was “somewhat difficult.” Only 13% said it was easy or somewhat easy. This segment included responses from nursing homes, assisted living facilities, adult day care programs and home health care agencies.

Because of high turnover rates, recruiting by these employers is never-ending. Turnover in long-term care can be as high as 100%. Northern Virginia long-term-care employers said their turnover rates were as low as 40% and as high as 100%. Uncertainty about hiring was highest among long-term care providers. 14% said they were unsure whether the size of their workforce would change.

Ease of Recruiting Qualified Health Care Workers



Change in Workforce Needs for Long-Term Care Providers



Source: PwC Analysis of Northern Virginia Workforce Survey

Hiring Workers Can Take Months

Northern Virginia's Future Health Care Workforce Needs

Vacancies can take months to fill. As the chart below illustrates for nursing, vacancies often take at least three months to fill for RNs and two months for LPNs. Statistics for other occupations were not available. The issue is complicated by the fact that many positions are part-time and therefore it may take twice the effort to fill because more than one person must be recruited. Recruitment is especially difficult in specific areas of nursing, e.g., the critical care units and the emergency departments.

In Virginia, nurses have comparatively long tenure. The average tenure for RNs was 7.3 years in 2001, according to a study by the Virginia Hospital and Health Association. However, the long tenure may be due in part to older nurses in the workforce. The average age of a nurse in the State of Virginia is 45. Only 20% of the nurses in the State are under age 30, according to the Board of Nursing.

Staffing Statistics for the State of Virginia

	1999	2001	Change
Total RN vacancies	2,195	2,811	28%
Time to fill RNs (general)	2.9 months	3.5 months	21%
Time to fill RNs (specialty)	3.7 months	3.8 months	3%
Time to fill LPNs	Not available	2.2 months	N/A

Source: Virginia Hospital and Health Association

Economic Impact of Unfilled Jobs is \$170 Million Annually

Northern Virginia's Future Health Care Workforce Needs

Employment in the health care sector results in “ripple” effects that spread throughout the economy. The “ripple” effect refers to the interdependence of different sectors of the economy, as illustrated by the fact that increasing economic activity in one sector, such as health care, will increase economic activity in other sectors. For instance, increasing the number of nurses could decrease the amount of non-productive time waiting to obtain health care services. This acceleration would increase the demand for certain products, such as medical supplies, and could increase productivity among workers. Additional clinicians in the workforce also patronize local businesses, which increases the demand for employees in other occupations.

If all of the health care vacancies in Northern Virginia were filled, the region could see a positive impact of nearly 4,000 additional jobs and approximately \$170.3 million payroll dollars. Obviously, it's probably impossible to eliminate the entire shortage of health care workers. The chart also illustrates the effect of eliminating some portion of the shortage, such as 25%, 50%, and 75%. Some of this impact would be offset by reducing overtime and temporary agency dollars.

Economic Impact of Eliminating the Current Regional Health Care Workforce Shortage (\$ in millions)

	100%	75%	50%	25%
Additional Direct FTEs	2,800	2,100	1,400	700
Additional Indirect FTEs	1,176	882	588	294
Total FTE Impact	3,976	2,982	1,988	994
Additional Direct Payroll ^A	\$116.2	\$87.2	\$58.1	\$29.1
Additional Indirect Payroll	\$54.1	\$40.5	\$27.0	\$13.5
Total Payroll Impact	\$170.3	\$127.7	\$85.1	\$42.6

Source: PwC Economic Impact Analysis. ^A Computed using average annual compensation for the health care sector (approximately \$40K)

Section 4: Review of Best Practices in Health Care Workforce Issues

Issues and Implications for the Health Care Workforce

Review of Best Practices in Health Care Workforce Issues

It's not all about money. While many interviewees said that salaries have to increase for certain professions, others worried about the implications of that trend. "Nursing is becoming a profession that is aspired to more now because of the high salaries than the love of the profession."

Technical skills are critical, but shouldn't eclipse need for higher learning. Health care workers must be problem solvers. Programs must include these skills as well as technical skills.

Computerization will transform the industry, but could increase turnover. The workforce is aging and computerization may hasten workers' exits. "Mature age worker will be affected due to the lack of interest in computer-based technology," said one nurse recruiter.

The human side of health care can't be overemphasized. A nurse recruiter said: "The graduates are coming out unprepared to deal with the human side of health care. They do not know how to deal with the patient and provide a high level of "bedside" care. It is not the clinical skills, it's the maturity and professionalism."

Health care occupations are high stress and more emotional support is needed. Health care providers need to provide a network of support for employees for total support. (Take care of our own.) There needs to be a safety net environment for employees.

Recruitment is difficult and demanding. Health care recruiters are stressed. "There is not enough HR Staff. Sometimes employees are hired who might not be fully qualified. This results in more rapid turnover. "

Unique Aspects Exist for Health Care Professionals

Any discussion of Best Practices must start with unique variables to the issues. Health care careers carry many of these variables. Unlike many careers, those in health care have intangible incentives and disincentives. While these can be difficult to measure, they must be addressed by both educational institutions and employers.

Review of Best Practices in Health Care Workforce Issues

Incentives

Personal fulfillment

Health care careers are often chosen on the basis of personal fulfillment. Health care workers “want to make a difference” in the lives of their patients. Maintaining this motivation is essential to retention.

Job security

Health care careers are in demand, and most students who train for these careers easily find jobs. For example, more than 90% of students who graduate from health care training programs at Northern Virginia Community College have jobs within six months. Public school officials said nearly 100% of their students who pass the necessary licensing exams find jobs in the first six months.

Disincentives

Stress

Indications are that stress in the workplace is increasing for health care workers. Consumers are more demanding, litigious and sick. They are aging and with aging comes illness and disease. The average 75-year-old has three chronic conditions and is on five medications. Living with chronic illnesses drains a patient’s mental and physical capacity. “Stress is high and increasing. The emotional drain is significant,” said one health care education leader. “We need to provide a network of support for employees.”

Bridging the chasm from classroom to clinical setting

The move from classroom to work setting for many careers is nearly seamless. In health care, it can be jolting even if clinical and on-site training has occurred.

Many health care employers do not hire new graduates because “colleges and training programs cannot provide the kind of experience and maturity needed for this kind of work.”

Specialized Training

Hospital employers often need to spend years educating and preparing specialized nurses and clinicians.

Issues that Impact Recruiting

Review of Best Practices in Health Care Workforce Issues

Recruitment Issues

Occupation Awareness

Lack of awareness about certain occupations

- While students may be aware of what a nurse or pharmacist does, many are not familiar with the role of a surgical technologist, speech pathologist or CT scanner.

Misconception about the occupations

- Students don't realize that many health care careers are "high-tech." Said one hospital executive: "Technology is a large aspect of health care jobs and will continue to increase. This is not a particular awareness that students or teachers have."

Access to Training

Many training programs are at capacity

- At Northern Virginia Community College, there is over a one-year wait for nursing programs and radiology programs and a three-year wait for registered dental hygiene. Certified nurse assistant programs at the high-school level often have more applicants than available slots
- "There will be a critical shortage of faculty as the programs scale up. Presently there is a serious faculty constraint," said one education leader.
- A shortage of clinical training sites is a critical element in increasing the number of nursing and allied health student graduates.

Limited availability of non-English speaking training instructors

- Educators said that more of their students are foreign-speaking. Providing instructors in a multiplicity of languages is expensive and difficult.

Inability to Retain

Low pay

- While some positions pay well, many lower-level jobs pay poorly.

Poor hours

- These are "labor intensive jobs with too much responsibility and unattractive work hours."

High turnover

- High turnover becomes a self-fulfilling prophesy. Most employers interviewed cited burnout as a common problem. Often, other workers must take up the slack when their co-workers quit. This burns them out and leads to more turnover.
- When asked about the consequences of vacancies, one employer said: "Nursing staff must work more hours."

Challenges in Retention

Review of Best Practices in Health Care Workforce Issues

Retention is problematic for health care providers nationally and within Northern Virginia. Turnover rates, as previously discussed, are high. Increased retention, both within the occupation and in the job are key to reducing vacancy rates. Issues contributing to retention challenges that surfaced in interviews follow:

Management skills: A hospital executive expressed frustration in finding good nurse managers. The lack of strong nurse management skills often contributes to nurses' dissatisfaction and turnover. "Nurses have a hard time conceptualizing how to manage. The number of internal and external candidates is limited. We need to better understand why the job is unappealing."

Training programs that help health care professionals enhance their technical skills with good business and management skills add value to their organizations. More than one health care employer interviewed noted that employees in low-paying, stressful positions stay there because they like and respect their manager. Sometimes, it's the only thing keeping them in the job, they added. Management training must include leadership skills, said one interviewee. "The four-year programs need to emphasize leadership." Nurses who show interest and skills in management need to be coached and mentored.

Retirements: Many health care employers said retirement was a chief reason for turnover. As the health care workforce ages, retirements will continue to put stress on recruitment needs.

Faculty Shortages: There is not a sufficient supply of instructors and starting faculty salaries are not competitive. Specifically, industry lures faculty away to higher paying jobs as soon as they are fully trained. The supply of Masters trained faculty is very limited.

Mentors: The nursing shortage does not allow time for mentoring, which exacerbates the shortage. New employees require significant mentoring and coaching. People who enter the health care field have very high standards. Mentors help transition less experienced personnel into the role of lead care provider. This has a direct affect on retention.

What are workforce best practices?

Workforce best practices are strategies or methods that result in the improvement of key health care workforce indicators such as:

- employee turnover rate
- vacancy rates
- employee satisfaction
- improvement of employee performance

Best practices are programs or systems recognized as “exceptional” among their peers. Our research has identified several workforce best practices that are assisting health care organizations to effectively cope with the effects of the tight health care labor market. These organizations are deploying innovative solutions and are model performers for peers in their field. Case studies that summarize the outcomes of best practices in the “real world” are included in Appendix B.

Many health care providers in Northern Virginia are innovators in the health care workforce solution. Evidence of these solutions are many of the case studies and examples provided in Appendix B. Inova Health System is highlighted in the “Health Workforce Solutions for The Robert Wood Johnson Foundation,” April 2002 as a shining example of one of the health care delivery organizations that have created career-advancing learning organizations to benefit their nurses.

The development of the Northern Virginia Health Care Workforce Alliance is further evidence of the innovation that exists on the part of providers, educational institutions and employers to help identify and put in place solutions to the problem.

Overview of Best Practices

There are three main categories of health care workforce best practices:

• Education and Training

- Best practices in education and training focus on encouraging growth in the health care field by providing health care training to persons new to health care or encouraging advanced training to persons inside of health care. Most programs achieve this through free training and education, paid training and internship opportunities, and accelerated training programs.

• Recruitment

- Recruitment best practices include initiatives aimed at recruiting new workers into the field of health care. These initiatives also focus on encouraging workers that have left their field to re-enter to workforce. Strategies around workforce recruitment often include awareness programs, enhanced benefits, loan forgiveness, increased marketing of health care careers, and flexible work hours.

• Retention

- Best practices for retention are focused on strategies used to retain health care workers. Retention tools often include innovative benefits such as employee driven scheduling, development of clinical specialist and manager positions, market rate adjustments, career ladders, child care among others.
- Specific challenges in the health care field are retaining the experienced employees who are so important in training and mentoring the less experienced employees. Significant years of experience are required before people in the skilled professionals are comfortable. Without mentors, the less experienced professionals are apt to leave.

National Programs

Review of Best Practices in Health Care Workforce Issues

Program	Description
Allied Health Reinvestment Act	<ul style="list-style-type: none"> H.R. 4016 is intended to provide nationwide funding for programs in education, recruitment and retention for allied health professions.
Nurses for a Healthier Tomorrow	<ul style="list-style-type: none"> NHT is a coalition is a coalition of nursing and health care organizations working to attract people to the profession through ad campaigns and an informational website. (www.nursesource.com)
American Assembly of Men in Nursing	<ul style="list-style-type: none"> AAMN is dedicated to supporting male nurses and encouraging men to enter the nursing field. (www.op.nysed.gov/nurseclearinghouse.htm#recruit)
“No Overtime” Bills	<ul style="list-style-type: none"> Various states have passed legislation banning mandatory overtime for nurses and other health care workers. (www.odh.state.oh.us/odhprograms/hcforce/statefed.pdf)
The Bernard Hodes Group	<ul style="list-style-type: none"> A recruitment and staffing firm, completed a 2004 survey of health care recruiters. Findings indicated effective recruitment strategies for nurses and allied health workers. (www.hodes.com/HRCommunities/pdfs/healthcarematters_jan04.pdf)
National Institutes of Health – Lifeworks	<ul style="list-style-type: none"> Lifeworks website provides information for middle and high school students that promotes health care careers. (www.science.education.nih.gov/lifeworks.nsf)
US Congress – Nurse Reinvestment Act	<ul style="list-style-type: none"> The 2003 Act provides nationwide funding for nationwide programs in education, recruitment, and retention. (www.op.nysed.gov/nurseclearinghouse.htm#recruit)

Section 5: Northern Virginia's Educational Institutions Role in Supplying the Health Care Workforce

Feeding the Need for a Health Care Workforce

Educational Institutions' Role in Supplying Northern Virginia's Health Care Workforce

As discussed earlier, health care organizations require a mix of lower skilled and highly skilled employees. For the occupations researched in this study, most of the training can be acquired in two- to four-year programs. Pharmacists, nurse managers, and physical therapists often require post-graduate advanced training.

The vacancies documented in the study exist because there aren't enough graduates from the appropriate training programs or employees are leaving the industry, either for a new opportunity or to retire. Young people aren't the only ones looking for health care careers. Access to education is vital for individuals searching for a second career. Northern Virginia is home to thousands of young retirees and recent immigrants, many of whom are looking for a job.

In reviewing the supply of trained health care workers, key findings include:

- **Health care training is job security** - Educational institutions said between 95% and 100% of their students are placed in the first six months of graduation or certification.
- **Faculty are aging** - Faculty are aging, which could limit the flow of graduates. In Virginia, the average nursing faculty was 53.2 years in 2002, according to the Virginia Hospital and Health Association.
- **Far more training programs are needed to meet the demand** - The primary impediment is lack of faculty and dollars. The cost of training a health care worker is generally higher than many other types of training. This is exacerbated by the need for clinical practice.
- **Faculty salaries are insufficient** - This creates faculty vacancies, which lead to fewer students being trained. In general, nursing faculty may make less than nurses working in hospitals. At some schools, the disparity in pay is as much as \$20,000 per year.
- **Educational institutions must train more students than are currently needed to compensate for leaving the profession on a short or long term basis** - This occurs for numerous reasons, including career changes, family issues, etc.
- **The number of enrollments in area nursing programs has been increasing** - However, this may not hold true if higher paying employment opportunities surface.

Access to Education Enhances Recruitment and Retention

Educational Institutions' Role in Supplying Northern Virginia's Health Care Workforce

A continuum of learning must be available to produce a steady supply of health care workers. The continuum starts in high school and often continues into graduate school. For example, without the availability of graduate-level courses for nurses, educational programs lack faculty to teach the programs needed. Lack of nursing faculty has been identified in numerous state and national studies as a primary issue in the nursing shortage.

The availability of additional training to move up the career ladder also is vital for retention purposes. Education creates what has been referred to as a “skill premium.” Workers who don't have access to this premium often leave the profession.

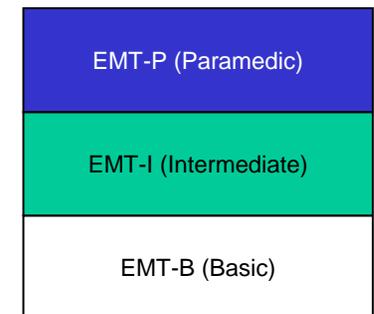
The graphic at right shows the career ladder for nurses and Emergency Medical Technicians. Some studies, such as *Help Wanted: Making a Difference in Healthcare* from the state of California, have articulated the career ladders available to health care workers. The study found that laying out the career ladders enhances both recruitment and retention.

The continuum of learning should be well-coordinated, enabling students to smoothly move up their chosen career ladders. Education silos will hamper this process.

Possible Career Path for a Nurse



Possible Career Path for Emergency Medical Technician (EMT)



Career-Long Need for Learning

Most health care occupations require training or degrees, certification, and continuing education. As shown, many health care occupations have specific education prerequisites. Licenses or certificates are often required. Continuing education must be available throughout a professional's career to maintain a license or certification.

Prerequisites for Select Health Care Occupations

<u>Title</u>	<u>Prerequisites</u>
Certified Nurse Aide	Graduate of nurse aide education program
Dental Hygienist	Graduate of dental hygienist program
Licensed Practical Nurse	Graduate of state-approved nursing education program
Medical Laboratory Technologist	Graduate of state-approved program, 4-year baccalaureate degree program for Medical Technologist
Nurse Practitioner (16 categories)	R.N. certification & Nurse Practitioner program
Occupational Therapist	Graduate of ACOTE-approved program
Pharmacist	Graduate of state-approved school of pharmacy
Physical Therapist	Graduate of physical therapist program
Physical Therapist Assistant	Graduate of physical therapist program
Radiologic Technologist	Graduate of American Registry of Radiologic Technologists program
Registered Health Information Administrator (RHIA)	Graduate of an accredited 4 -year baccalaureate degree program
Registered Health Information Technician (RHIT)	Graduate of an accredited 2-year associate degree program
Registered Nurse	Graduate of state-approved nursing education program
Respiratory Care Practitioner	Graduate of respiratory program or CRT or RRT
Speech Language Pathologist	Graduate degree in audiology or speech-language pathology

**Educational
Institutions'
Role in
Supplying
Northern
Virginia's
Health Care
Workforce**

Graduates of Northern Virginia Schools and Colleges Often Remain

Educational Institutions' Role in Supplying Northern Virginia's Health Care Workforce

High schools, community colleges and universities all train students who work in Northern Virginia's health care organizations. Interviews with educators indicate that most of their graduates often stay in the area to work.

Profiles of these area educational institutions are in Appendix A:

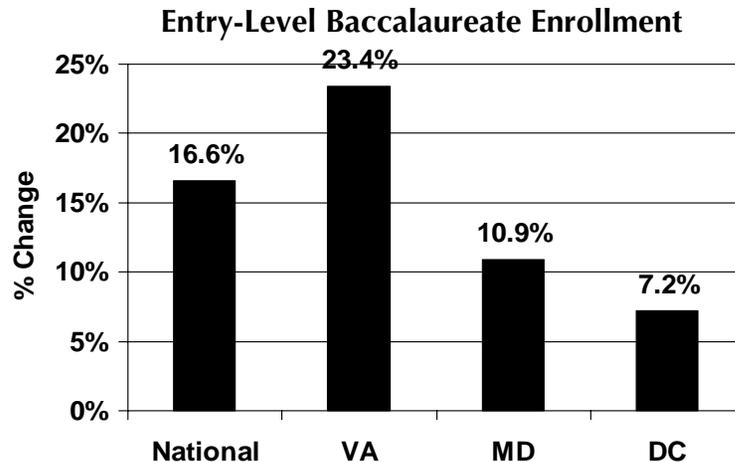
- Arlington County Schools
- Fairfax County Schools
- George Mason University
- Marymount University
- Northern Virginia Community College

Enrollment in Nursing Programs Increased in 2002 and 2003

Educational Institutions' Role in Supplying Northern Virginia's Health Care Workforce

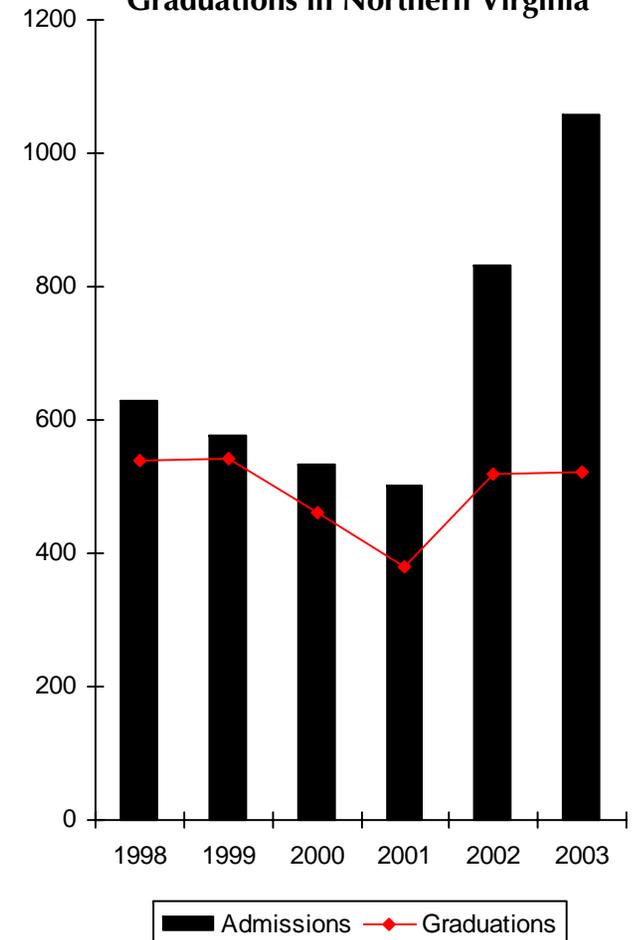
The number of nurses graduating from nursing programs in Northern Virginia has remained fairly consistent for the past six years as seen in the chart. However, admissions to these programs increased 66% in 2002 and an additional 27% in 2003. A subsequent increase in graduations should be expected in the next few years.

Indications are that enrollment continued to surge in 2004. The chart below shows the percent increase in enrollments in the surrounding region between 2003 and 2004.



Source: 2003-2004 American Association of College of Nursing Enrollment and Graduations in Baccalaureate and Graduate Programs in Nursing

Nursing Program Admissions and Graduations in Northern Virginia



Source: Reports of Statistics 1997-2003, Commonwealth of Virginia Board of Nursing

Yet, Educational Institutions Are at Capacity

Educational Institutions' Role in Supplying Northern Virginia's Health Care Workforce

Representatives from local health care educational programs said they are functioning at capacity. They said expanding to meet future needs carries the following challenges:

- Shortage of clinical rotation settings, especially in labor and delivery, mental health and pediatrics.
- Faculty salaries are frequently less than industry salaries. One educational institution said that nurses in local hospitals can make as much as \$30,000 a year more than their faculty nurse instructors. Increasing faculty salaries by \$20,000 would help ease the shortage immensely. Marymount said it has had two tenured faculty positions open for two years.
- Costs of educating nursing and allied health students are generally significantly higher than the comparable costs incurred with other fields of study.

"Shortages directly affect capacity, and that affects the quantity of patients who can be cared for and the number of students that can be trained."

-- President of a Large Educational Institution in Northern Virginia

Section 6: Health Care Occupations of the Future

What Will The Future Health Care Workforce Look Like?

Health Care Occupations of the Future

While nobody is predicting the end of clinical care as we know it, there is no doubt that technological changes and new discoveries in fields such as genomics, informatics, and life sciences will drive health care worker needs in the future. The workforce of the future will undoubtedly be more information technology oriented and will also need to be well versed in cultural competency.

The leading edge of these trends will require educational attainment and training at a higher level than needed before. A new emphasis on multi-disciplinary studies is expected as bench scientists are asked to assume more managerial roles and the life sciences melds into information technology creating a new class of "life-technologist".

Not every new job will require an advanced degree. As the fields of nanotechnology, robotics, and diagnostic technologies begin to grow, a new cadre of technicians must be trained and equipped to keep the technology running. These future technicians will be trained in technology trade schools and community college systems.

In addition, as technology increases, changes in patient care can be made. These include such improvements as processes for lifting patients, which allow nurses to remain in their chosen field longer.

Future Health Care Occupations Matrix

Many future health jobs will be similar to current jobs but with the addition of more technological education and skill needs. Some jobs, especially those related to bio-technology will require a new paradigm of education, training, and multi-disciplinary background.

Health Care Occupations of the Future

Job Title	Description	Challenges
Clinical Information Technologist	<ul style="list-style-type: none"> IT professionals who are knowledgeable about the life sciences 	<ul style="list-style-type: none"> Melding technical and clinical ability requires large education investment
Medical Device Designer	<ul style="list-style-type: none"> New systems and advancements in robotics and prosthetics requires design skills 	<ul style="list-style-type: none"> Very specialized, niche area of engineering/CAD work
Nanotechnologist	<ul style="list-style-type: none"> Design and implementation of medical nanotechnology 	<ul style="list-style-type: none"> Educational background is the nexus of where life sciences meets engineering and physics
Genomic Pharmacist	<ul style="list-style-type: none"> Pharmacist working with customized therapeutic drugs 	<ul style="list-style-type: none"> Will require additional education beyond current degree program
Health Information Office Specialist	<ul style="list-style-type: none"> Billing, coding, HIPAA compliance and electronic health record (EHR) 	<ul style="list-style-type: none"> Need for significant number of skilled employees to meet physician office demands at affordable price
Senior Care Manager	<ul style="list-style-type: none"> Blend of health care employee and hospitality 	<ul style="list-style-type: none"> Need for employee who is skilled to work in the long term care environments
Bioterrorism Planner	<ul style="list-style-type: none"> Coordinates bioterrorism preparation and response for medical and gov't facilities 	<ul style="list-style-type: none"> Accessing specialized training and knowledge bases

Future Health Care Occupations Matrix

Not all health occupations will be technology based. There is a growing need for communications assistance and health education outreach to a multi-cultural community. Many of the new language needs have moved far beyond Spanish and into language groups such as Vietnamese, Arabic, and Hindi.

Health Care Occupations of the Future

Job Title	Description	Challenges
Translator	<ul style="list-style-type: none">■ Provide communication links between patients and medical staff	<ul style="list-style-type: none">■ The multitude of language groups in our highly urbanized areas will require multiple translator resources available 24/7
Cultural Competency Officer	<ul style="list-style-type: none">■ Coordination of linguistic and cultural resources	<ul style="list-style-type: none">■ Interpreter and cultural needs are largely regional and change over time based on assimilation of immigrant communities

Appendix A:
Select Northern Virginia Health Care Educational
Institutions and Employers

Appendix A: Select Northern Virginia Health Care Educational Institutions and Employers

Fairfax County schools participate in numerous types of education for health care careers. The schools provide training programs for the following careers:

- Dental careers (Assistant and Radiographer)
- LPN (at time of graduation students can certify as CNAs and post-secondarily continue LPN training and licensing)
- Animal Science (veterinary skills)
- Occupational/Physical Therapist Aide
- Medical Health Technologist (as an introduction to many careers such as medical assistant, respiratory careers and pharmacy technicians)
- Fire and EMS science (Coming in the fall of 2004) Emergency Medical Technician-B certification, health care provider CPR training, Level I fire training

Arlington County Public School officials noted that program needs are determined through labor statistics analysis, community interests as manifested by parent/student requests and collaborations with professional organizations. The school system employs an academy approach to its training programs and is able to hire as needed provided there are available instructors. Generally, officials said there are sufficient resources to train all interested students.

Arlington County Public Schools provide the following health care training programs:

- Emergency medical technician
- Physical therapist aide and sports medicine preparation
- Certified nurse assistant

Appendix A: Select Northern Virginia Health Care Educational Institutions and Employers

Northern Virginia Community College is the largest supplier of health care graduates in Northern Virginia. With six campuses, the school is the largest institution of higher education in Virginia. It is a state supported school.

The school's Medical Education Center opened in 2003 and provides training in collaboration with George Mason University and Virginia Commonwealth University. About 1,000 students are enrolled in nursing and allied health courses at the Medical Education Center. The center's enrollment is expected to eventually grow to 3,000 students. Significant waiting lists exist to enter some of the programs. For example, there is a 3 to 4 year wait to enter the dental hygienist program and a 3 year wait for the radiology technician program.

The Medical Education Campus has unique imbedded medical and dental clinics for the treatment of indigent patients while at the same time affording clinical training sites for students.



Pre-employment training programs include:

- Nursing Assistant/ Patient Care Assistant
- Medical Office Assistant
- Medical/ Dental Office Receptionist
- Medical/ Dental Office Manager
- Pharmacy Technician
- Dental Chair Side Assistant
- Clinical Coding

Two-Year Degree programs include:

- Dental Hygiene (RDH)
- Emergency Medical Services Tech (EMT-P)
- Health Information Technology (RHIT)
- Medical Laboratory Technology (MLT-ASCP)
- Nursing (RN)
- Physical Therapist Assistant (PTA)
- Radiography – Diagnostic Imaging (RT-R)
- Respiratory Therapy (CRT) and (RRT)

Admissions for the Associate Degree in Nursing Program at Northern Virginia Community College were up 72% in 2001 after dropping 33% between 1998 and 2000. It should also be noted that admissions continued to rise by 6% annually between 2001 and 2003.

Nursing graduations, on the other hand, experienced an average annual decline of 8% between the years 1998 and 2001. Since then, graduations have increased by 28%.

Appendix A: Select Northern Virginia Health Care Educational Institutions and Employers

Marymount's School of Health Professions offers a variety of course programs and levels. In the Fall of 2004, the college will begin offering a clinical Doctor of Physical Therapy (DPT) degree. This program is the first doctoral program at the University.

Degree Programs Offered:

- Doctor of Physical Therapy
- Master of Science
Health Promotion Management
- Master of Science in Nursing
Critical Care Nursing, Family Nurse Practitioner, Nursing Education
- Bachelor of Science
Health Sciences, Health Promotion, Pre-Physical Therapy, Health Education, Assisted Living Management, Gerontology
- Bachelor of Science in Nursing
- Associate of Applied Science in Nursing
- Graduate programs in nursing administration, international health, gerontology and nursing education, gerontology, biostatistics, public health

Marymount University offers Associate Degree Programs in Nursing. Admissions at Marymount steadily declined from 1998 to 2001, and then saw a sudden surge in 2002. Graduations, on the other hand, decreased by approximately 30% between 2001 and 2003. An estimated 95% of health care graduates and 100% of nursing graduates are hired within six months of graduation. Most graduates stay and work in Northern Virginia. Marymount's nursing program is extremely competitive. Only one out of five applicants was accepted last year. The university also has a 12-month "Fastrack" nursing program for students getting a second degree. Marymount had the first RN to BSN program in the country, which was funded by a Kellogg grant in the late 1960s.





In 2003-2004 the College of Nursing and Health Sciences has 49 full-time faculty and 7 full-time health science faculty. It has 839 undergraduate students, 272 master's students, and 45 doctoral students, with additional students in certificate programs and extended studies, both in Nursing and in Health Science. The graduate nursing programs are consistently ranked in the top 50 in the nation.

Since 1999, admissions to GMU's Baccalaureate Degree Programs in Nursing have been increasing. The greatest increase was seen in 2003, when admissions grew by 76%.

Graduations continued to decrease from 1998 until 2002. In 2002, there was a huge spike and graduations increased by nearly 123%. This was followed by another 10% decrease in graduations in 2003. GMU has an assisted living program.

Degree Programs:

- Advanced Clinical Nursing, MSN
- Exercise, Fitness and Health Promotion MS
- Health Systems Management MS
- Gerontology, M.S.
- Nursing MSN, MSN/MBA, PhD
- Nursing Administration, Nurse Practitioner MSN, RN to MSN Pathway

Certificate Programs:

- Gerontology
- International Health
- Nursing Administration
- Nursing Education
- Quality Improvement and Outcomes Management in Health Care Systems

Appendix A: Select Northern Virginia Health Care Educational Institutions and Employers

Select Health Care Employers - Inova Health System

Inova Health System is the largest health care provider in the Metropolitan Washington DC area. It includes the region's second largest hospital and has earned Magnet status from the American Nurses Credentialing Center – recognition for excellence in nursing services.

Profile

- Not-for-profit health care system based in Northern Virginia
- 13,000 employees
- 1,424 collective inpatient beds
- Five acute care hospitals
 - Inova Fairfax Hospital in Falls Church, Virginia
 - Inova Fairfax Hospital for Children in Falls Church, Virginia
 - Inova Alexandria Hospital in Alexandria, Virginia
 - Inova Mt. Vernon Hospital in Mt. Vernon, Virginia
 - Inova Fair Oaks Hospital in Fair Oaks, Virginia
- Named Great Places to Work for Nurses in 2001 – Washingtonian Magazine
- Top 100 Companies – Working Mothers 2001, 2003

Services Provided

- Level 1 trauma center
- Full service medical and surgical
- Cardiology and Cardiac Services
- Cancer treatment
- OB/GYN and Pediatric services
- Orthopedics
- Rehab facilities
- Inova Diabetes center
- Home health care
- Mental health and addiction

Future Plans

- Inova Heart Hospital and Vascular Institute at Fairfax Campus - Fall 2004
- Inova Fair Oaks expansion adds beds and increases in outpatient facilities
- Emergency Department expansion at Inova Fairfax Hospital scheduled for completion in 2005

Source: HealthLeaders Market Overview, www.healthleaders.com

Appendix A: Select Northern Virginia Health Care Educational Institutions and Employers

Select Health Care Employers - Virginia Hospital Center

Appendix A: Select Northern Virginia Health Care Educational Institutions and Employers

Virginia Hospital Center is a large independent acute care community hospital . It is one of the top five private sector employers in Arlington County. It has a Work Force Enhancement Program which is a partnership with Northern Virginia Community College (NVCC) for employees to earn college credits towards an Associate Arts & Sciences degree or a certificate-granting program.

Profile

- Located in Arlington, Virginia
- Owned and operated by Virginia Hospital Center-Arlington Health Systems
- One of the top five private sector employers in Arlington County
- Houses the only lung cancer center in Northern Virginia
- Approximately 1500 employees
- Over 700 physicians
- 334 beds

Source: Virginia Hospital Center,
www.virginiahospitalcenter.com/; Arlington
County, VA, <http://www.co.arlington.va.us/>

Services Provided

- Full Service Medical and Surgical
- Cardiology and Cardiac Surgery
- Oncology
- Women & Infant Health
- Neurosurgery
- Rehabilitation services
- Outpatient surgery
- Emergency medicine
- Stroke treatment

Future Plans

\$150 million, new hospital facility in late 2004 with:

- 100% larger radiology and diagnostic imaging
- 60% larger ED
- 30% more critical care beds
- New 20 bed inpatient rehab unit
- 50% more doctors' offices

Select Health Care Employers - Hospital Corporation of America (HCA)

Appendix A: Select Northern Virginia Health Care Educational Institutions and Employers

HCA, the largest publicly traded hospital corporation in the US, owns two acute care hospitals in Northern Virginia and various other health care facilities. These facilities are undergoing numerous expansion projects. The HCA Cares healthcare scholarship program was created to help train and employ workers displaced since the tragic events of September 11th for jobs in healthcare.

Profile

- HCA, the national for-profit company, owns and operates two acute care hospitals in Northern Virginia
 - Reston Hospital Center in Reston
 - Northern Virginia Community Hospital in Arlington

- HCA also owns
 - Reston Ambulatory Surgery Center in Reston
 - Fairfax Surgical Center in Fairfax
 - Dominion Hospital in Falls Church
 - Mental health facility

- Over 700 combined physicians
- 291 combined beds

Source: HealthLeaders Market Overview,
www.healthleaders.com

Services Provided

- Full service medical surgical hospital
- OB/GYN
- Medical/Surgical
- Neurosurgery
- Speech therapy
- Orthopedics
- Emergency medicine
- Ambulatory surgery

Future Plans

- Reston initiated a major expansion project in 2001 to be complete in 2004. Plans include expanded medical and surgical units, for a total of 60 new beds among other expansions.
- Awaiting approval to construct 164-bed Broadlands Medical Center in Loudoun County. Plans are to transfer beds from other local hospitals.

Select Health Care Employers - Sunrise Senior Living

McLean, Virginia, based Sunrise Senior Living is the nation's largest provider of senior living services. Sunrise has been named a "Great Place to Work" by Washingtonian magazine. Sunrise Senior Living has focused on creating care manager positions which improve patient and staff satisfaction.

Appendix A: Select Northern Virginia Health Care Educational Institutions and Employers

Profile

- Sunrise operates senior living facilities in over 390 communities in the U.S. and abroad. Its headquarters is based in Northern Virginia. The Company has over 30,000 employees. Communities are in the following Northern Virginia locations:
 - McLean
 - Falls Church
 - Fairfax
 - Oakton
 - Arlington
 - Reston
 - Alexandria
 - Springfield
 - Sterling
 - Mt Vernon
 - Ft. Belvoir
 - Lorton
 - Leesburg
- Named "Great Place To Work" by Washingtonian Magazine in 2003

Services Provided

- Assisted living
- At home assisted living
- Independent living
- Alzheimer's care
- Nursing and Rehabilitative care
- Short term care
- Affiliation with Inova Health System

Future Plans

- Continued growth achieved through internal growth, new construction and new management services opportunities

Source: Sunrise Senior Living – "www.Sunriseseniorliving.com"

Appendix B:
Select Best Practices in Health Care Workforce Issues

Appendix B: Select Best Practices in Health Care Workforce Issues

Virginia Hospital Center

Arlington, Virginia

Program Title:

CAMPMED

Program Description:

The first annual is a summer camp for seventh and eight grade students. The camp provides an opportunity for students to view the many career options in health care. Students meet and interact with professionals, including registered nurses, physical therapists, radiology technicians, pharmacists, physicians, dieticians, respiratory therapists, social workers and others. The cost of the camp is free. A recommendation by a middle school counselor is required.

Objective:

tour and learn about the ED, the OR, radiology, pharmacy, nursery and physical and occupational therapy.

Source: www.virginiahospitalcenter.com

Virginia Hospital Center

Arlington, Virginia

Program Title:

DO YOU KNOW A NURSE?

Program Description:

Launch of a 30 page illustrated children's book to promote positive attributes about nursing to children, and encourage them to recognize nursing as an important and sought after career. The book depicts nurses from all over the world in their varied roles, from a traveling nurse to a legal representative.

Source: www.virginiahospitalcenter.com

Appendix B: Select Best Practices in Health Care Workforce Issues

Reston Hospital Center

Reston, Virginia

Program Title:

College Scholarship Programs

Program Description:

Reston Hospital Center supports eleven graduating local high school seniors with college scholarships. Scholarships are provided by the Medical Staff and the Volunteer Services programs at Reston Hospital Center. The scholarships are provided based on students academic achievements and interest in pursuing health care careers.

Source: www.restonhospital.com

HCA Health System

Falls Church, Virginia

Program Title:

HCA Cares Scholarship Program

Program Description:

HCA Cares is a public-private partnership addressing two serious needs in the U.S. – unemployment and the national shortage of health care workers. The program is monetarily supported by HCA and the Department of Labor. The scholarships are offered to people who want to become registered nurses, licensed practical nurses, radiology technologists, surgical technicians, and certified nursing assistants in return for a work commitment equal to the length of training. A commitment area is Northern Virginia.

Source: www.hca.com

Appendix B: Select Best Practices in Health Care Workforce Issues

Sunrise Senior Living

McLean, Virginia

Program Title:

Sunrise University

Program Description:

Sunrise University is a continuous learning curriculum that invests in training through leadership and customer service. The training program has evolved and developed to become a premier program in the industry.

Sunrise University has been created to bring together their broad range of classroom training, hand-on training, shadowing and mentor program. The University concept assists in providing a better understanding of the educational program, which is designed to benefit their team members, and provide an atmosphere of continuous learning. For each position from Executive Director to Assistant Cooks and Administrative Assistant a program of study has been developed and is expected to be completed in the first 4 to 6 months of employment.

Sunrise Senior Living

McLean, Virginia

Sunrise has developed an environment focused on its residents. Supporting this environment are dedicated team members who are trained in the hospitality, personal care and nursing fields. Team members are carefully screened and undergo a thorough training process to prepare them for their role. Sunrise team members share Sunrise's passion for seniors and commitment to quality and are empowered to help reinforce the philosophy.

Sunrise prepares an individualized service plan for each resident focused on their needs and desires. Using this plan, professional care managers deliver resident-centered assistance and care. This process enables the care managers to spend additional time with residents to better understand their needs and develop special bonds. This operating philosophy is attributed with a dramatically higher staff retention rate.

Appendix B: Select Best Practices in Health Care Workforce Issues

State of Maryland

Program Title:

“Skills Based Training for Employment Promotion Program” STEP

Program Description:

Two part program designed to increase the skills of low-income working parents so that can move into better paying positions in high-demand areas.

- Local workforce areas partner with businesses to train existing employees so they can move from low-wage jobs into better paying, career track jobs with benefits, such as health care.
- Local workforce areas work directly with individuals to determine goals and then enroll the individuals in training programs and provide them support to reach those goals.

Inova Health System

Falls Church, Virginia

Program Title:

Advanced Web-Site on Career Advice

Program Description:

Inova Health System has created a web site that provides career information to people interested in:

- future of health care
- researching the health care career field
- information for school guidance counselors
- financial aid opportunities
- what to expect from internships
- Mentorships: Making an investment in one’s professional success. How to successfully use a mentor to gain career growth and satisfaction.

Source: www.inova.com

Appendix B: Select Best Practices in Health Care Workforce Issues

Inova Health System

Falls Church, Virginia

Program Title:

Inova Partnership for Nursing

Program Description:

Two new partnerships with local nursing schools are designed to increase the number of top nurses coming to work at Inova upon graduation.

- At GMU's college of Nursing and health Sciences, philanthropic gifts currently support 18 students in an accelerated 12-month nursing degree program for those already holding bachelor degrees.
- NVCC's evening and weekend program currently has 23 nursing students who will graduate in 2005.

Students from both programs have made a commitment to work at Inova for at least two years following graduation.

Source: www.Inova.com

Program Title:

Institute for Nursing Excellence

Program Description:

The Inova Institute for Nursing Excellence creates programs and services and implements strategies that strengthen nursing practice, education and research at Inova. Est. in 2001, through a grant from the Prince Charitable Trusts in DC, the Institute serves as a resource for nursing professionals to enhance their skills and training, share information and expertise, and recognize nursing achievement.

Source: www.Inova.com

Appendix B: Select Best Practices in Health Care Workforce Issues

Inova Health System

Strategic Business Award for Effective Workforce Planning

Program Description:

- Award which recognizes an innovative workforce planning program with demonstrated results on a company's bottom line.
- Leading effort to become the "employer of choice" by developing leaders, promoting a customized employment experience that promotes career development, encouraging lifelong learning and supporting a positive work-home life balance.

Nurse Extern Program

Program Description:

- A program that welcomes student nurses to help strengthen clinical skills, explore career opportunities, acquire workplace experience and begin a career portfolio.
- The externship is a paid summer program designed to facilitate continued learning in the acute care and outpatient settings.

Career Exploration for High School Students

Program Description:

- Career Day Speakers
- Teen Volunteer Program
- Scheduled Facility Tours with limited observation component

Source: www.inova.com

Best Practices – Training and Education

Appendix B: Select Best Practices in Health Care Workforce Issues

Mercy Hospital and Medical Center

Chicago, Illinois

Chicago Mexico Nurse Initiative

Program Description:

- Training program for nurses trained in Mexico and other Latin countries to become licensed to work in Illinois
- Program consists of three 8-week classes
- Goal of program is to bring more bilingual/bicultural nurses to the hospital

El Barrio

Cleveland, Ohio

Creando Posibilidades

Program Description:

- El Barrio, a Latino social services organization, partnered with The Cleveland Clinic to provide a nursing assistant training program
- Participants receive 11-days of intense paid training and graduates of the program are guaranteed positions at The Cleveland Clinic
- Allows hospitals to fill vacancies during busiest hours
- The program also offers a nursing academy at a local high school where students receive information about health care careers

Hospital of Saint Raphael

New Haven, Connecticut

HOPE (Having an Opportunity to Prepare for Employment)

Program Description:

- 16-week, welfare-to-work program where participants receive job skills training
- Participants come to the hospital 4 days a week for classes and volunteering in their area of interest
- 50 % of graduates are hired by the hospital

Source: www.hospitalconnect.com/healthcareworkforce

Appendix B: Select Best Practices in Health Care Workforce Issues

TMC-U at Tuscon Medical Center

Tucson, Arizona

Program Description:

TMC-U enables employees to earn degrees in health care fields from area colleges in return for a two-year employment commitment to the hospital. The program allows the hospital to fill health care worker positions and increase employee retention. The hospital pays for tuition, books, and fees.

As of spring 2003, 10 % of TMC health care employees were involved with the TMC-U training program.

Outcomes

- 10 % of employees enrolled in TMC-U
- Increased worker morale
- Increased number of qualified employees

Source: Erikson, Jane. "TMC education program: Careers are born." *The Arizona Daily Star*. 6 Feb 2004

Direct Caregiver Association

Tucson, Arizona

Program Description:

The Direct Caregiver Association (DCA), screens and trains people to become professional caregivers (nursing assistants and home health aides). The organization is funded by the agencies that hire DCA graduates.

Because of the screening and training process, DCA graduates have a lower turnover rate than other professional caregivers.

Outcomes

- Average wages of trainees increase from \$6.12 an hour to \$9.40 an hour.
- 84 % work in field after training
- Trainees have lower turnover rates

Source: Erikson, Jane. "Help for the helpless." *The Arizona Daily Star*. 25 Jan 2004

Appendix B: Select Best Practices in Health Care Workforce Issues

Richmond Redevelopment and Housing Authority

Richmond, Virginia

Program Description:

Hope For Health Care, a 6-week certified nursing aide-training program, is free to Richmond, Virginia, public housing residents.

Participants are assigned case managers with whom they develop career goals, monthly job retention coaching, and case management services to address barriers to successful completion--ultimately helping graduates retain jobs.³

Outcomes

- 91 % job retention rate
- 100 % graduation rate
- Increased worker morale
- Produced over 145 Certified Nurse Aides since 2001

Source: Richmond Redevelopment and Housing Authority .
<http://www.rsha.org/html/hope6/healthcare.htm>

Surgical Technologist Training Program

Milwaukee, Wisconsin

Program Description:

9-month program that trains entry-level hospital employees (i.e. maintenance and cafeteria workers) at Covenant Healthcare and Aurora HealthCare hospitals to become surgical technologists.

Workers that complete the program are placed at Covenant or Aurora Hospitals and must commit to two years of service.

Outcomes

- Decreased technologist vacancies at hospitals
- Increased worker morale
- Increased number of qualified employees
- 20 students completed program as of 2004

Source: Dresang, Joel. "Milwaukee Health Care." Milwaukee Journal Sentinel. 21 Dec 2003.

Appendix B: Select Best Practices in Health Care Workforce Issues

Baptist Health Medical Center

Herber Springs, Arkansas

Program Title:

Grow Your Own

Program Description:

- Program employs local students who are completing studies in the health care field
- Participants are offered positions in their field of study upon graduation
- Helped hospital ease the recruiting and staffing of hard-to-fill positions

Source: www.hospitalconnect.com/

The Cleveland Clinic

Cleveland, Ohio

Program Title:

Mom Shift

Program Description:

- “Mom Shift” is targeted at nurses that have left the field to raise families
- Hospital requires “mom shift” nurses to take a refresher course before they are allowed to see patients
- Shift begins at 9am and ends at 2pm
- Allows hospitals to fill vacancies during busiest hours
- “Mom Shift” nurses assist full-time nursing staff with regular duties

Source: Ohio Hospital Association, www.ohanet.org

Appendix B: Select Best Practices in Health Care Workforce Issues

Southern Ohio Medical Center

Sandusky, Ohio

Program Title:

SOMC Scholars

Program Description:

- SOMC offers scholarships to family members of current employees pursuing studies in “hard-to-fill” health care positions
- Scholarship recipients must agree to work at SOMC upon graduation
- Program was created as a means to retain current staff and recruit new employees

Source: Ohio Hospital Association, www.ohanet.org

Mount Carmel College of Nursing

Columbus, Ohio

Program Title:

Camp Mount Carmel

Program Description:

- Summer camp for children entering grades 7, 8, and 9 that have an interest in health care
- Activities include
 - Mentoring programs
 - Visits to clinics
 - Hospital tours
 - Viewing of a live surgery

Source: Ohio Hospital Association, www.ohanet.org

Appendix B: Select Best Practices in Health Care Workforce Issues

University of Nevada System

*Reno, Las Vegas
Las Vegas, Nevada*

Program Title:

None

Program Description:

- In 2003 the Nevada State Legislature increased funding at the University of Nevada's 2 nursing schools
- Funding allowed the Orvis School of Nursing in Reno to accept more students for 2003 and will allow the school to double enrolment by 2005

Source: Timko, Steve. "Nevada's nursing shortage could become major crisis". *Reno-Gazette Journal*. 2 Feb 2004

Minnesota Hospital Association

St. Paul, Minnesota

Program Title:

www.MyFirstDay.org

Program Description:

- Website was created by the MHA in an attempt to get high school students interest in health care careers
- The website contains information on career planning, health care programs at Minnesota colleges and universities, a job bank, and educational materials for school counselors

Source: www.myfirstday.org

Appendix B: Select Best Practices in Health Care Workforce Issues

Scripps Health

San Diego, California

Program Description:

In 2000, Scripps revised its nursing recruiting strategies to include an online application process, a national recruiting telethon, and hiring recruiters from the technology industry for new ideas.

As a result, the nursing vacancy rate decreased by more than 50 %.

Outcomes

- Nursing vacancy rate decreased more than 50 %
- Increased worker morale
- Increased number of qualified employees

Source: Rogers, Michelle. "Meeting the Mandate." HealthLeaders. Dec 2003.

Health Alliance of Greater Cincinnati

Cincinnati, Ohio

Program Description:

Potential employees who live more than 50 miles away from the Health Alliance hospital they are joining will receive a relocation package valued up to \$15,000. The package includes moving assistance, realtor referrals, and spouse relocation assistance.

Additional options include a car lease for a year, college loan repayment, home decorating allowance, dependent care, and first year housing costs.

Outcomes

- Increased number of qualified employees
- Decreased vacancy rates

Source: Ohio Hospital Association, www.ohanet.org

Appendix B: Select Best Practices in Health Care Workforce Issues

Johnson and Johnson

Nationwide

Program Description:

\$25 million dollar recruitment campaign, that began in 2002, aims at increasing the number of nurses nationwide. Key activities include:

- Web site-www.discovernursing.com
- Sponsorship of regional and national nursing scholarships, grants, and fellowships
- National television advertising campaign

Outcomes

- Many nursing schools experiencing increased enrollment due to increased marketing
- Raised \$3 million for scholarships

Source:http://www.jnj.com/news/jnj_news/20030429_093808.htm

ANCC Magnet Program

Nationwide

Program Description:

The Magnet Program was developed by the American Nurses Credentialing Center and recognizes hospitals and other health care organizations that provide high quality nursing care and patient care. Only 102 organizations nationwide have achieved Magnet status.

Magnet status hospitals typically have lower vacancy and turnover rates than non- Magnet hospitals, offer low staff-to-patient ratios, competitive salaries, and little or no use of agency nurses.

Outcomes

- Increased worker morale
- Average Magnet nurse vacancy rate is 5.1 % lower than national average
- Average Magnet nurse turnover rate is 7.2 % lower than national rate

Source: AFSCME, <http://www.afscme.org/una/sns08.htm>

Appendix B: Select Best Practices in Health Care Workforce Issues

Christus St. Francis Cabrini Hospital

Alexandria, Louisiana

Program Title:

Walk In My Shoes

Program Description:

- This program allows hospital administrative staff to shadow nursing staff for a day
- Program was created in response to nurses' complaints that administration did not understand a nurse's job duties

Source: www.hospitalconnect.com/healthcareworkforce

St. Mary's Hospital Medical Center

Madison, Wisconsin

Program Title:

Retention Program

Program Description:

- Hospital administrators promote a sense of ownership in the staff in order to keep vacancy and turnover rates low
- Administrators regularly
 - Share income statements and other financial details are with the staff so they understand the "bigger picture"
 - Give clinical nurses the final say in patient care matters
 - Avoid mandatory overtime

Source: Bergin, Mary. "St. Marys Helps Reshape Nursing". The Capital Times & Wisconsin State Journal. 11 March 2004

Appendix B: Select Best Practices in Health Care Workforce Issues

St. Peter's Health Care Services

Albany, New York

Program Description:

St. Peter's offers nurses an online bidding system where employee nurses and non-employee nurses can bid for shifts and pay rates.

Nurses log onto a hospital's Web site, view all empty shifts in units and make an offer to work for a rate within a specified range posted by the hospital. When the skill level and other factors are equal, the lowest bidder wins.

Outcomes

- Decreased overall nursing vacancy rate from 11 to 5%.
- Saved \$1.7 million in agency nurses' wages.

Source: Chang, Alicia. "Online bidding eases nursing shortage". The Milwaukee Sentinel. 14 Dec 2003

Raritan Bay Medical Center

Perth Amboy, New Jersey

Program Description:

Forgivable home loans are offered at Raritan Bay Medical Center, with assistance from Fannie Mae, to employees that are first-time home buyers as a retention tool for the hospital. The loans are targeted at employees in high demand positions such as nursing, pharmacy, and laboratory technicians. Loan recipients must remain at the hospital for 2-3 years in order for the loan to be forgiven.

Outcomes

- Over 30 participants since summer 2002
- Increased employee retention
- Increased worker morale
- Decreased turnover rates

Source: Russell, Suzanne. "Perth Amboy hospital helps employees". Home News Tribune. 11 February 2004

Appendix B: Select Best Practices in Health Care Workforce Issues

Baptist Health South Florida

Coral Gables, Florida

Program Description:

Baptist Health was named as one of *Fortune* magazine's "100 Best Companies to Work For" in 2004. Baptist Health's wide range of employee benefits have created a worker-friendly culture at Baptist that helps in employee recruitment and retention. Some of Baptist Health's benefits include an employee wellness program, on-site child care centers, tuition reimbursement, and health care education partnerships with area universities.

Outcomes

- Attained nurse vacancy rate 1.5% lower than state average
- Attained nurse turnover rate 4.4% lower than the state average
- Increased employee morale

Source: Baptist Health South Florida. <http://www.baptisthealth.net/>

Achieve

Cleveland Ohio

Program Description:

Achieve offers social worker counseling services to entry-level employees at 11 Cleveland nursing homes. The program is sponsored by Towards Employment, a Cleveland based non-profit. The goal of the program is to help workers address issues ranging from transportation problems to work-related stress to increase retention.

After 90 days, 82% of participants remain in their positions, compared with Achieve's target of 60% and a county target of 55%.

Outcomes

- 82% remain employed
- Decreased turnover rates by 25%

Source: Adelle Waldman. "Program helps reduce worker turnover". *The Plain Dealer*. 2 October 2003

Appendix C: Methodology

About the survey

The survey, described in this report as the Northern Virginia Health Care Workforce Survey, was conducted by PricewaterhouseCoopers in April and May of 2004. This survey conveys a point in time and shouldn't be construed as an annual rate for these occupations. As such, vacancy rates for the larger occupations are more likely to accurately reflect ongoing vacancy rates. While numerous studies have been conducted on nurse vacancy rates, this study encompassed a much broader range of the health care workforce. Organizations surveyed included more than 150 hospitals, physician offices, outpatient centers, dental offices, nursing homes, assisted living centers, home health care agencies, hospices and adult day care centers.

Current Shortage/Vacancy Rates

- Using a survey instrument, data was collected regarding the total number of FTEs currently employed and current budgeted vacancies at a sampling of health care providers within the study area. More than 150 surveys were conducted.
- The data was sorted and consolidated based on the respondent's provider type. Provider cohorts included Hospitals, Medical Clinic/Outpatient Facilities, Home Health Agencies, Long-term Care Facilities, Emergency Medical Technicians, Dental Offices, and others.
- Based on the size of the sample, information for each occupation within the cohorts was grossed up to represent the total universe (e.g. 90% of hospital beds were represented in the sample, therefore the data collected was grossed up by an additional 10%).
- Summed total FTEs currently employed with total budgeted vacancies to calculate total demand. Then divided total budgeted vacancies to calculate vacancy rates.

This research included 30 qualitative interviews. Executives were interviewed at the following organizations:

- ◆ Health care employers
 - Capital Hospice
 - Chesapeake Center
 - Contemporary Nursing Solutions
 - Dewitt Healthcare Network
 - Fairfax County Fire and Rescue Department
 - Fairfax County Long-term Care Coordinating Council
 - Fairfax Surgical Center
 - Foundation for Genetic Medicine
 - Inova Health System
 - Kaiser Permanente
 - Lumenos
 - Manor Care
 - Northern Virginia Community Hospital
 - Prince William Health System
 - Professional Health Resources
 - Reston Hospital
 - Sunrise Senior Living
 - Virginia Hospital Center
- ◆ Economic development authorities
 - Fairfax County Economic Development Authority
 - Loudoun County Economic Development Authority
- ◆ Education institutions
 - Arlington Public Schools
 - Fairfax County Public Schools
 - George Mason University
 - Marymount University
 - Northern Virginia Community College

Definitions of Occupational Titles Surveyed for this Study

Appendix C: Methodology

CT scanning technologist	CT scanning technologists operate CT scanners to produce cross-sectional images of patients.
Dental assistants and hygienist	<p>Dental assistants perform patient care, office, and laboratory duties. They work chairside as dentists examine and treat patients. They hand instruments and materials to dentists and keep patients' mouths dry and clear by using suction or other devices. Assistants also sterilize and disinfect instruments and equipment, prepare trays of instruments for dental procedures, and instruct patients on postoperative and general oral health care.</p> <p>Dental hygienists remove soft and hard deposits from teeth, teach patients how to practice good oral hygiene, and provide other preventive dental care. Hygienists examine patients' teeth and gums, recording the presence of diseases or abnormalities. They remove calculus, stains, and plaque from teeth; perform root planning as a periodontal therapy; take and develop dental x rays; and apply cavity-preventive agents such as fluorides and pit and fissure sealants.</p>
Emergency medical technician/ and paramedic	<p>EMTs and paramedics typically are dispatched to an emergency by a 911 operator, and often work with police and fire department personnel. Once they arrive, they determine the nature and extent of the patient's condition while trying to ascertain whether the patient has preexisting medical problems. Following strict rules and guidelines, they give appropriate emergency care and, when necessary, transport the patient. Some paramedics are trained to treat patients with minor injuries on the scene of an accident or at their home without transporting them to a medical facility. Emergency treatment for more complicated problems is carried out under the direction of medical doctors by radio preceding or during transport.</p>
Home health aide	<p>Home health aides help elderly, convalescent, or disabled persons live in their own homes instead of in a health facility. Under the direction of nursing or medical staff, they provide health-related services, such as administering oral medications. Home health aides may check patients' pulse rates, temperatures, and respiration rates; help with simple prescribed exercises; keep patients' rooms neat; and help patients move from bed, bathe, dress, and groom. Occasionally, they change nonsterile dressings, give massages and alcohol rubs, or assist with braces and artificial limbs. Experienced home health aides also may assist with medical equipment such as ventilators, which help patients breathe.</p>

Definitions of Occupational Titles Surveyed for this Study

Appendix C: Methodology

Licensed practice nurse	LPNs provide basic bedside care, taking vital signs such as temperature, blood pressure, pulse, and respiration. They also prepare and give injections and enemas, monitor catheters, apply dressings, treat bedsores, and give alcohol rubs and massages. LPNs monitor their patients and report adverse reactions to medications or treatments. They collect samples for testing, perform routine laboratory tests, feed patients, and record food and fluid intake and output. To help keep patients comfortable, LPNs assist with bathing, dressing, and personal hygiene.
Medical and clinical lab technicians	Lab technicians examine and analyze body fluids, tissues, and cells. Generally, they perform less complex tests and laboratory procedures than technologists perform. Technicians may prepare specimens and operate automated analyzers, for example, or they may perform manual tests in accordance with detailed instructions. Like technologists, they may work in several areas of the clinical laboratory or specialize in just one. Histotechnicians cut and stain tissue specimens for microscopic examination by pathologists, and phlebotomists collect blood samples.
Medical and clinical lab technologists	Laboratory technologists perform complex chemical, biological, hematological, immunologic, microscopic, and bacteriological tests. Technologists microscopically examine blood, tissue, and other body substances. They make cultures of body fluid and tissue samples, to determine the presence of bacteria, fungi, parasites, or other microorganisms. Clinical laboratory technologists analyze samples for chemical content or a chemical reaction and determine blood glucose and cholesterol levels. They also type and cross match blood samples for transfusions. Technologists in small laboratories perform many types of tests, whereas those in large laboratories generally specialize.
Medical and nurse managers	Nurses who hold an administrative position at the nurse manager level are responsible for the proper allocation of available resources to provide efficient and effective nursing care. The nurse manager provides input into executive-level decisions and collaborates with the nurse executive and others in organizational programming and committee work. Nurse managers assume a leadership role in planning, organizing, implementing, and controlling the care of individuals. This may include aspects of quality outcomes, staff development, care management, and research.
Medical records and health information technicians	Clinical coders assign a code to each diagnosis and procedure. Technicians then use computer software to assign the patient to one of several hundred “diagnosis-related groups,” or DRGs. Registered Health Information Technicians (RHIT) are health information technicians who ensure the quality of medical records by verifying their completeness, accuracy, and proper entry into computer systems. They also use computer applications to assemble and analyze patient data for the purpose of improving patient care or controlling costs. The Registered Health Information Administrator (RHIA) is skilled in the collection, interpretation, and analysis of patient data. Additionally, they receive the training necessary to assume managerial positions related to these functions.

Definitions of Occupational Titles Surveyed for this Study

Appendix C: Methodology

MRI technologist	Radiographers operate machines that use strong magnets and radio waves, rather than radiation, to create an image.
Nursing aides, orderlies and attendants	Also known as nursing assistants, geriatric aides, unlicensed assistive personnel, or hospital attendants, these professionals perform routine tasks under the supervision of nursing and medical staff. They answer patients' call lights, deliver messages, serve meals, make beds, and help patients eat, dress, and bathe. Aides also may provide skin care to patients; take their temperatures, pulse rate, respiration rate, and blood pressure; and help patients get in and out of bed and walk. They also may escort patients to operating and examining rooms, keep patients' rooms neat, set up equipment, store and move supplies, or assist with some procedures.
Occupational therapist	OTs help people improve their ability to perform tasks in their daily living and working environments. They work with individuals who have conditions that are mentally, physically, developmentally, or emotionally disabling. They also help them to develop, recover, or maintain daily living and work skills. Occupational therapists help clients not only to improve their basic motor functions and reasoning abilities, but also to compensate for permanent loss of function. Their goal is to help clients have independent, productive, and satisfying lives. Occupational therapists also use computer programs to help clients improve decisionmaking, abstract-reasoning, problem-solving, and perceptual skills, as well as memory, sequencing, and coordination—all of which are important for independent living.
Pharmacist	Pharmacists dispense drugs prescribed by physicians and other health practitioners and provide information to patients about medications and their use. They advise physicians and other health practitioners on the selection, dosages, interactions, and side effects of medications. Pharmacists must understand the use, clinical effects, and composition of drugs, including their chemical, biological, and physical properties.
Pharmacy technician	Pharmacy technicians help licensed pharmacists provide medication and other health care products to patients. Technicians usually perform routine tasks to help prepare prescribed medication for patients, such as counting tablets and labeling bottles. Technicians refer any questions regarding prescriptions, drug information, or health matters to a pharmacist. Technicians may establish and maintain patient profiles, prepare insurance claim forms, and stock and take inventory of prescription and over-the-counter medications.

Definitions of Occupational Titles Surveyed for this Study

Appendix C: Methodology

Phlebotomist	Phlebotomists draw blood from patients for laboratory analysis
Physical therapist	(PTs provide services that help restore function, improve mobility, relieve pain, and prevent or limit permanent physical disabilities of patients suffering from injuries or disease. They restore, maintain, and promote overall fitness and health. Their patients include accident victims and individuals with disabling conditions such as low-back pain, arthritis, heart disease, fractures, head injuries, and cerebral palsy. Therapists examine patients' medical histories and then test and measure the patients' strength, range of motion, balance and coordination, posture, muscle performance, respiration, and motor function. They also determine patients' ability to be independent and reintegrate into the community or workplace after injury or illness.
Physical therapist assistants	Physical therapist assistants and aides perform components of physical therapy procedures and related tasks selected by a supervising physical therapist. These workers assist physical therapists in providing services that help improve mobility, relieve pain, and prevent or limit permanent physical disabilities of patients suffering from injuries or disease. Physical therapist assistants record the patient's responses to treatment and report the outcome of each treatment to the physical therapist.
Radiologic technologist/technician	Radiologic technologists and technicians take X-rays and administer nonradioactive materials into patients' bloodstreams for diagnostic purposes. Some specialize in diagnostic imaging technologies, such as computerized tomography (CT) and magnetic resonance imaging (MRI). Also referred to as radiographers, they also may produce X-ray films (radiographs) of parts of the human body for use in diagnosing medical problems. Radiographers position radiographic equipment at the correct angle and height over the appropriate area of a patient's body. Using instruments similar to a measuring tape, they may measure the thickness of the section to be radiographed and set controls on the equipment to produce radiographs of the appropriate density, detail, and contrast.
Registered nurse	RNs work to promote health, prevent disease, and help patients cope with illness. When providing direct patient care, they observe, assess, and record symptoms, reactions, and progress in patients; assist physicians during surgeries, treatments, and examinations; administer medications; and assist in convalescence and rehabilitation. RNs also develop and manage nursing care plans, instruct patients and their families in proper care, and help individuals and groups take steps to improve or maintain their health.

Definitions of Occupational Titles Surveyed for this Study

Appendix C: Methodology

Respiratory therapist	Respiratory therapists evaluate, treat, and care for patients with breathing or other cardiopulmonary disorders. Practicing under physician direction, they assume primary responsibility for all respiratory care therapeutic treatments and diagnostic procedures, including the supervision of respiratory therapy technicians.
Speech language pathologist	Speech-language pathologists, sometimes called speech therapists, assess, diagnose, treat, and help to prevent speech, language, cognitive, communication, voice, swallowing, fluency, and other related disorders. They work with people who cannot make speech sounds, or cannot make them clearly; those with speech rhythm and fluency problems, such as stuttering; people with voice quality problems, such as inappropriate pitch or harsh voice; those with problems understanding and producing language; those with cognitive communication impairments or hearing loss.
Surgical technician	Technicians who perform any combination of following tasks before, during, and after surgery to assist surgical team: Places equipment and supplies in operating room and arranges instruments, assists team members to place and position patient on table, scrubs arms and hands and dons gown and gloves., aids team to don gowns and gloves, maintains supply of fluids, such as plasma, saline, blood, and glucose for use during operation, hands instruments and supplies to surgeon, holds retractors, cuts sutures, and performs other tasks as directed by surgeon during operation.
Surgical technologist	Surgical technologists, also called scrubs and surgical or operating room technicians, assist in surgical operations under the supervision of surgeons or registered nurses. Before an operation, surgical technologists help prepare the operating room by setting up surgical instruments and equipment, sterile drapes, and sterile solutions. They assemble both sterile and nonsterile equipment, as well as adjust and check it to ensure it is working properly. Technologists also get patients ready for surgery by washing, shaving, and disinfecting incision sites. Technologists also observe patients' vital signs, check charts, and assist the surgical team with putting on sterile gowns and gloves.

Sources for occupational descriptions – US Department of Labor, Bureau of Health Statistics, Occupational Outlook Handbook, 2004-2005; Health Care Careers, May 2003; Nursingworld.com; Websters online dictionary.

Sources Used to Determine Current and Future Supply

Appendix C: Methodology

	BLS data	Solucient database	PwC survey	PwC consultants	Bureau of Health Professions	Interviews	Census Data
CT Scanning Technologist			X	X		X	X
Dental assistants and hygienists		X	X				X
EMTs and paramedics			X			X	X
Home health aides	X	X	X	X	X		X
Licensed practical nurses	X		X		X		X
Medical and clinical lab technicians	X	X	X	X			X
Medical and clinical lab technologists	X	X	X	X			X
Medical and nurse managers	X		X				X
Medical records and health info technicians	X	X	X				X
MRI technologist		X	X	X			X
Nursing aides, orderlies, certified nurse assistants, attendants	X		X		X		X
Occupational Therapists	X	X	X	X			X

Sources Used to Determine Current and Future Supply

Appendix C: Methodology

	BLS data	Solucient database	PwC survey	PwC consultants	Bureau of Health Professions	Interviews	Census Data
Pharmacists	X	X	X				X
Pharmacy technicians	X	X	X				X
Phlebotomists		X	X				X
Physical therapists	X	X	X	X			X
Physical therapy assts.		X	X				X
Radiologic technologists, technicians	X	X	X	X			X
RNs	X		X		X		X
Respiratory therapists	X	X	X	X			X
Speech language pathologists		X	X				X
Surgical technician		X	X	X			X
Surgical technologists	X	X	X	X			X