

Healthcare Task Force Report: Findings and Recommendations

**Illinois Workforce Investment Board
Healthcare Task Force
Janet Payne, Chair**

December 14, 2006

Introduction

The Illinois Workforce Investment Board (IWIB) established the Healthcare Task Force on April 15, 2004 to develop recommendations for addressing the causes of healthcare worker shortages in Illinois identified by Critical Skill Shortages Initiative (CSSI) and other national and state studies and initiatives. The task force was asked to focus on causes that are best addressed at the state level and to present findings and recommendations at the December 2004 IWIB Meeting.

This report summarizes the major findings and recommendations of the Healthcare Task Force. The first section summarizes the top priorities established by the taskforce including major targeted occupations and key topics that address the major types of root causes and solutions. The second section summarizes significant findings and recommendations of the task force. The final section summarizes the task force findings and recommendations and proposed next steps.

Background

The Healthcare Task Force was chaired by Janet Payne, Director of Personnel, Provena United Samaritan Medical Center. The task force included representatives of healthcare associations, state regulatory and education and workforce development agencies, community colleges, employers and labor unions. Task Force members are listed in Appendix A.

The task force met six times between July 1 and November 16, 2004 and held a conference call on November 29, 2004 to review and approve the final draft report before submitting this report to the IWIB. The task force presented an interim report to the IWIB at the September 2004 meeting.

At the first meeting, task force members reviewed findings with statewide implications derived from the CSSI regions and determined the major priorities of the task force including the major healthcare occupations and the types of root causes and solutions to be addressed. The task force first reviewed the list of healthcare occupations that were listed most frequently by all regional CSSI consortia targeting the healthcare section (See Appendix B). The task force decided to give top priority to the nursing cluster (Registered Nurses, Licensed Practical Nurses) and second priority to the therapist cluster. The task force also agreed to address questions raised by CSSI regional consortia on certified nurse aides (CNAs).

The remaining meetings focused on clarifying the nature and size of shortages and addressing each of the types of root causes and solutions.

Findings and Recommendations

This section first summarized the Healthcare Task Force findings on nursing shortages in Illinois. It then presents the major findings and recommendations on root causes and solutions requiring state-level action.

Nursing Shortages in Illinois

The IWIB Task Force reviewed a summary of the CSSI regional reports on the nature and size of the shortages on the two targeted occupations-registered nurses and licensed practical nurses. For the purpose of the report, short-term shortages are considered to be shortages currently being experienced, and long-term shortages are projected out ten years. The IWIB Task Force concludes that:

- Illinois faces a severe short-term and long-term shortage of registered nurses (RNs). According to CSSI regional findings, Illinois will face short-term shortages of approximately 10,000 registered nurses. These shortages will be significant in all regions but be more severe in some regions. This is a preliminary estimate because final determination of nursing shortages have not been completed for three regions (Northern Stateline, Central, and Southeastern) submitting data for the CSSI Calendar Round. These estimates also may increase after the completion of recommended study of nurse mobility to determine what percent of Illinois-trained nurses are not practicing in Illinois healthcare facilities in the regions in which they were trained. Long-term estimates are more difficult to establish because of assumptions on nurse retirements and the expanded demand for healthcare services because of an aging population.
- Illinois faces a significant short-term shortage of Licensed Practical Nurse (LPNs). According to CSSI regional findings, Illinois will face a short-term shortage of approximately 1,300 LPNs. Again, this is a preliminary estimate that needs to be adjusted after the final determination of shortages in the remaining three regions and adjustments are made for nurse mobility. As with RNs, long-term estimates of the LPN shortage are more difficult to determine for similar reasons.

Regional Public-Private Partnerships

Illinois must address these severe healthcare worker shortages during a period of limited state public resources. As a result, Illinois must first leverage all available public and private resources to increase the supply of healthcare workers, especially the supply of nurses. This leveraging of existing resources can best be done at the regional and local levels. Illinois is not currently

promoting and supporting regional public-private partnerships that can leverage these resources to maintain and expand nursing and other healthcare education and training programs. Illinois should explore how to promote and support regional public-private partnerships.

In order to encourage and sustain sector-specific public-private partnerships, Illinois should provide seed funding to establish a statewide network of healthcare industry coordinators to promote regional public-private partnerships to reduce shortages in critical healthcare occupations identified through the Critical Skill Shortage Initiative. This statewide network should have one state-level coordinator and regional coordinators in all regions where there are strong regional public-private partnerships in place and commitments for sustaining these partnerships.

Recommendations

- Illinois should provide state funding to serve as a catalyst and assist with the initial costs of regional healthcare industry sector coordinator(s), and slowly reduce the funding over time. However, even in the first year, public-private collaborations should be asked to provide some share of the funding. One possible scenario could be that state funding would cover 75 percent of costs in the first year and then be reduced to 50 percent in the second year and 25 percent in the third year. Prior to committing any financial resources, Illinois should receive a sustainability plan where they key stakeholders in the region (public and private sector) will commit to continuing financial support into the future.
- Funding for a regional healthcare coordinator should be tied to a performance wherein the coordinator will be responsible for specific outcomes. Although the actual outcomes could vary by region, at a minimum, they should include:
 - Expanding Capacity of Educational Programs. Expanding educational (workforce supply) capacity by working with the private sector to identify more slots for clinical experience in conjunction with regional education institutions; work with the private sector healthcare facilities to identify resources (e.g., tuition reimbursement, support services, mentors, qualified faculty, etc.) to help students succeed, and solicit the donation of equipment for healthcare education programs.
 - Promoting Best Practices. Identify and disseminate best practices in educating and training healthcare workers for possible replication within and among regions. These best practices could include K-12

and postsecondary programs and leading workplace practices for hiring and retaining healthcare workers.

- Promoting Alternative Delivery Systems for Adult Workers. Explore the feasibility of alternative delivery systems (e.g., nights/weekends, on-line or hybrid nursing programs) and workplace-based education programs to upgrade the skills of adult workers (e.g., from Certified Nurse Assistants to Licensed Practical Nurses or Registered Nurses).
- State funding for regional coordinators should be provided to existing CSSI public-private consortia to support and expand the partnerships established through the CSSI process. Illinois should ensure that these consortia hire regional coordinators that have the full support of all major stakeholders including employers and community colleges.
- State funding should provide seed money for additional staff to support regional coordinators in some regions. Funding levels should be based on a variety of factors, including: (1) scale of the region (e.g., population, geographic area); (2) amount of matching funds provided by the region; (3) existing public-private coordinators currently in the region through existing partnerships; and, (4) availability of state funds.

State Funding

The leveraging of existing public and private resources will not be sufficient to fully address the magnitude of healthcare worker shortages. Additional public investment will be required. Illinois is not providing sufficient funding support to maintain and expand programs critical to reducing severe shortages throughout the state. Given the current budget problems, Illinois should explore a variety of options. Illinois should explore the following strategies to meet projected shortages:

- State Funding for Community Colleges. Illinois public community colleges are the primary providers of LPN and associate degree RN nursing programs in Illinois, which have been the primary targets for CSSI initiatives. These colleges receive funding from three major sources: local property taxes, student tuition and fees, and state appropriations including credit hour reimbursements. Nursing programs are more expensive to operate compared to other programs. While community college credit hour reimbursements are driven by program costs, community colleges report that the current level of reimbursement for nursing programs is not sufficient to operate these programs. This is due to the fact that, because of current economic conditions, current appropriation levels do not fully fund the reimbursement rates. Further,

the state reimbursement comes two years after the programs are offered, resulting in the community colleges being forced to absorb the front-end costs for high-demand programs, such as nursing , and often hindering the creation or expansion of high-cost, high-demand programs. In addition, there is no seed money provided to community colleges to allow them to pilot new programs and/or delivery methods or innovative new initiatives to address critical skill shortages.

- Student Financial Assistance. Some states provide targeted student financial assistance for students to enter critical, high-demand careers such as nursing. This financial assistance is usually provided in the form of grants and low-interest loans that are forgiven if students work in selected healthcare fields in the state, especially in underserved areas. The Illinois Student Assistance Commission operates similar programs for other career areas such as teaching through the Illinois Future Teacher Corps (IFTC) Program. The U.S. Department of Health and Human Services operates a similar national program that could be a model for Illinois. The Nursing Education Loan Repayment Program (NELRP) offers registered nurses substantial assistance to repay educational loans in exchange for service in critical shortage facilities. Authorized by the Public Health Services Act, the purpose of the NELRP is to assist in the recruitment and retention of professional nurses dedicated to providing health care to underserved populations. All NELRP participants must enter into a contract agreeing to work full time in an approved critical shortage facility. For two years of service, the NELRP will pay 60 percent of the participant's total qualifying loan balance. A participant may work a third year at a critical shortage facility to receive an additional 25 percent of the qualifying loan balance.
- State Nursing Fund from Licensing Fees. Illinois established a state nursing fund, the Nursing Dedicated and Professional Fund. This fund is appropriated annually to the Department of Public Health and financed through state nurses' licensing fees, in part, to provide funding to award nursing scholarships pursuant to the Nursing Education Scholarship Law. Although current budgetary shortfalls will prevent the full utilization of these funds for nursing education, this fund could provide additional resources for student grants and loans to expand the supply of nurses, especially in underserved areas. This fund could also be used for expanding the supply of qualified instructors for nursing programs by providing scholarships to nurses pursuing master's degree programs. Illinois should explore how to utilize this fund in the future to expand the supply of nurses in Illinois.

Recommendation

- To explore these three strategies for expanding nursing programs in Illinois, the Illinois Workforce Investment Board should convene representatives from Illinois education agencies, community colleges as well as representatives from the private sector healthcare industry. These representatives should make recommendations to the IWIB on how to implement these strategies, in conjunction with the leveraging of existing resources through regional public-private partnerships, to address short-term and long-term nursing shortages in Illinois.

These recommendations should include estimates of the state funding levels necessary to address these shortages.

State Regulatory Policies

The regulatory environment and the business processes of a state's regulatory agencies can constrain the number of available workers particularly in the nursing cluster to fill available jobs in the healthcare industry. In Illinois, the state's regulatory agencies should be cognizant of the impact that their actions may have on the healthcare industry and the health and welfare of all Illinoisans. These agencies should take all steps necessary to ensure that they operate efficiently and effectively, and that they have the necessary resources so that they can perform their duties in a timely manner and not create unnecessary barriers that inhibit the healthcare industry's ability to hire qualified workers. Further, Illinois faces significant disadvantages, such as faculty and licensure of nurses not trained in Illinois, in addressing the national healthcare shortages compared to other states because of our state regulatory policies. Illinois should review state legislation and regulatory policies (e.g., Illinois Nursing Act) to identify opportunities to expand the number of nurses in Illinois. These issues should be considered as the Governor and General Assembly undertake the Sunset Reviews of many of the healthcare occupations. In 2005, there will be a Sunset Review of the Respiratory Care Practice Act, the Athletic Trainers Practice Act, the Illinois Physical Therapy Act, and the Illinois Dental Practice Act; in 2006, there will be a review of the Medical Practice Act and the Clinical Psychologist Licensing Act; and, in 2007, there will be a review of the Nursing and Advanced Practice Nursing Act, the Podiatric Medical Practice Act, and the Physician Assistant Act. Changes to any of these Acts can change the delivery of healthcare services in Illinois. Illinois should focus on three major issues:

- Nursing Program Faculty Requirements
- Licensure of Foreign-Trained Nurses in Illinois
- Licensure of Nurses Trained in Other States

Illinois should explore these policy changes with the full participation and involvement of the healthcare industry and professional associations, including nursing associations.

Recommendations

- Illinois should allow exceptions to its requirement that only nurses with a Master's Degree (or Doctoral) in Nursing could serve as faculty for nursing education programs. Illinois should explore allowing nurses with Master's degrees in related fields that are directly applicable to the subject they will teach to serve as faculty in nursing education programs. Exemplars of this recommendation include: an RN with a Master's Degree in Gerontology could teach a Geriatric Nursing Course; an RN with a Master's Degree in Public Health could teach a Community or Public Health Nursing Course; an RN with a Master's Degree in Hospital Administration could teach a Nursing Management Course. This may assist in alleviating the shortage of faculty in nursing programs throughout the state.
- Illinois should consider joining the Nurse Licensure Compact. This would allow nurses who live in bordering states, which are signatories to the Compact, to cross state lines and practice in Illinois without applying for an Illinois license. This may allow for nurses from neighboring states to more rapidly secure employment in Illinois.
- Illinois should allow other agencies besides the Commission on Graduates of Foreign Nursing Schools (CGFNS) to credential nurses educated outside the United States. This may allow these nurses to more readily acquire credentialing and employment in Illinois.

Keeping Illinois-Trained Nurses Working in Illinois and Underserved Areas

In addressing the root causes of nursing shortages, most CSSI regional consortia identified inter-regional and interstate mobility as a primary cause of the nursing shortage in their regions. However, these consortia were not able to provide reliable estimates of the percent of nurses trained in their regions who entered employment out of the region including out of state. The Healthcare Task Force reviewed the proposed study plan for analyzing the mobility of nurses in Illinois and made suggestions on additional questions and issues. One major issue was addressing what percentage of LPNs and RNs do not practice after graduation because they are continuing their education.

Recommendations

- Illinois state education and workforce development agencies should work with industry organizations and stakeholders to analyze the mobility of Illinois-trained nurses, especially the movement of nurses between regions, into underserved areas (especially rural areas), and to other states. These findings should be used to make final adjustments to the short-term and long-term shortages estimates for both LPNs and RNs.
- Illinois state agencies and industry associations should use these findings to work with CSSI regional consortia with high levels of nurse mobility to develop strategies to reduce the number of Illinois-trained nurses working in other states, especially Border States, and increase the number of nurses working in underserved areas, especially rural hospitals and long-term care facilities.

Improving Therapist Program Articulation

Illinois has made major strides in improving the articulation and alignment of licensed practical nursing and two-year and four-year nursing programs. Illinois should now focus on improving the articulation and alignment of other healthcare programs for shortage occupations. The first priority should be therapist programs identified through the CSSI process (e.g., physical therapy, occupational therapy and respiratory therapy), because of the rapid escalation of educational requirements and statewide shortages. Illinois should explore how to improve the articulation between therapist assistant and therapist programs to provide career pathways for therapist assistants to become four-year degree and master's level therapists. In addition, with the upcoming Sunset Review of the Illinois Physical Therapy, the Athletic Trainers Practice and the Respiratory Care Practice Acts in 2005, these discussions should begin as early as possible.

Recommendations

- The Illinois Workforce Investment Board should work with state education agencies to convene the appropriate stakeholders (education and workforce agencies, regulatory agencies, and industry and worker representatives) in the therapist cluster and develop recommendations for better articulation of therapist programs to allow for defined career pathways that will address the rapidly escalating demand for therapists throughout Illinois. Because of the success of the articulation efforts in the nursing cluster, a similar process should be undertaken to address therapist cluster articulation.

Improving Career Opportunities for Certified Nursing Assistants

Some CSSI regional partnerships identified certified nursing assistants (CNAs) as a critical shortage occupation that can provide good wages for students with work experience and can provide an important gateway to other healthcare shortage occupations that pay higher wages (e.g., LPNs, patient care technicians, phlebotomists, etc.). They also reported major regulatory barriers that make it difficult for training providers to meet employer and students needs. Other regional partnerships have not targeted nursing assistants because of the low pay and high turnover. The Healthcare Task Force did not have sufficient time to evaluate these alternative perspectives. The task force members did discuss the changing utilization and the transition occurring in the roles of CNAs in the healthcare industry. Although some hospitals are cutting back on the use of CNAs other are expanding their roles as patient care technicians, there probably will be a strong market for CNAs in the future in many hospitals and continued strong market in long-term care facilities. The task force members concluded that the Illinois Workforce Investment Board should promote continued discussion of this issue based on demonstrated performance of publicly funded programs and leading public and private practices.

Recommendations

- The Illinois Workforce Investment Board should convene state education and workforce development agencies, training providers, and industry representatives to further analyze and review the success of publicly funded nursing assistant programs in placing and retaining people and/or in transitioning them into nursing and related healthcare programs. These partners should identify leading models and develop strategies to improve the success of these programs in placing and retaining CNAs in jobs that pay competitive wages and benefits and can make CNAs a gateway to career pathways leading to higher earnings and expanded career opportunities in the healthcare industry.

Expanding K-12 Healthcare Career Development Programs

The Critical Skill Shortages Initiative (CSSI) identified the lack of career awareness and inadequate preparation of secondary students as a major cause of long-term worker shortages in healthcare. Most CSSI regional consortia identified this cause as a top priority and proposed regional solutions to improve career awareness and preparation to enter postsecondary healthcare programs in shortage occupations.

The Illinois State Board of Education (ISBE) and the Illinois Department of Commerce and Economic Opportunity (DCEO), in cooperation with other state agencies and industry associations recently launched a project to promote the national Health Sciences Career Cluster model developed by the National Consortium on Health Science and Technology Education. This national model was successfully pilot-tested in Illinois starting in 1994. This national model also has proven very successful in other states. As shown in Appendix D, this model promotes career awareness and preparation in five major pathways: therapeutic services, diagnostic services, health informatics, support services, and biotechnology research and development.

As part of this pilot project, the Illinois Office of Educational Services (IOES) at Southern Illinois University will work with state education and workforce development agencies, healthcare industry associations, employers and postsecondary education partners to promote this model with one school district in the Northeast Region, one school district in the Central Region, and a regional educational district in the Southeast Region. IOES will also promote the program model in the remaining economic development regions. IOES will work with the pilot schools to develop/enhance programs based on the national career clusters program emphasizing five major components:

1. Career Awareness and Development. Students will be given extensive career awareness and development opportunities at the K-12 level that will include the full range of careers in healthcare including the five major pathways of the national Health Science Career Cluster model.
2. Academic Standards and Rigor. Students will be required to take a rigorous academic curriculum necessary to achieve state academic standards and pursue the full range of careers in healthcare.
3. Advanced Postsecondary Credits. Secondary and postsecondary education will partner to assure students will obtain postsecondary credits while still in high school.
4. Private Sector Partnerships. Schools will establish/expand partnerships with healthcare partners to provide students with career development and work-based learning opportunities for the full-range of healthcare careers.
5. Research-based Curriculum and Instructional Strategies. Schools will utilize high quality research based curriculum materials and instructional strategies. Instructors will participate in professional development activities identified by the project.

The expansion of this national model across Illinois depends on strong working relationships between high schools and community colleges, especially in the planning and funding of advanced postsecondary credits for high school students. One major issue will be insuring that there is sufficient funding to promote both K-10 and dual credit arrangements.

Recommendations

- Because of the success of pilot projects operating in Illinois since 1994, Illinois education and workforce development agencies and industry organizations should establish a statewide advisory group and develop a plan to fully implement the Health Sciences Career Cluster model developed by the National Consortium on Health Science and Technology Education in schools throughout Illinois.
- Illinois should provide funding to immediately expand current plans to promote the national model program at schools in additional regions where there are strong public-private partnerships in place to sustain the program.
- As part of this effort, Illinois should increase the level of financial support provided to support dual enrollment programs with community colleges and high schools in critical skill occupations, especially in healthcare.

Conclusions and Next Steps

The Healthcare Task Force concluded that there are serious short-term and long-term shortages in critical healthcare occupations that require immediate state action to support regional CSSI initiatives and other regional and local efforts. The most serious shortages are for Registered Nurses. There are also significant shortages for Licensed Practical Nurses and looming shortages for Therapists that also need to be addressed.

The Healthcare Task Force recommends that the Illinois Workforce Investment Board play a catalyst role in launching the recommended statewide initiatives. The IWIB should encourage partner agencies and industry partners to support these initiatives and ask these partners to provide regular updates at future IWIB meetings.

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Appendix A

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Appendix B

Targeted Healthcare Occupations with Shortages in CSSI Regions*

Targeted in All 10 Regions

- Registered Nurses
- Licensed Practical Nurses

Targeted in Most Regions

- Physical Therapists
- Occupational Therapists
- Respiratory Therapists

Targeted in More than One Region

- Pharmacists
- Radiology Technologists/Technicians
- Medical Laboratory Technicians
- Medical Records Technicians

* Includes only the highest priority occupations. Excludes lower wage occupations that may provide pathway to higher wage occupations (e.g., CNA)

Appendix C

Figure C1: Root Causes for Registered Nurse (RN) Shortages

1. Retention of Nurses in Practice

- Stressful workplace environment (e.g., quality of care, staffing levels, professional relationships, work schedules, regulation and documentation requirements, physical demands, poor supervisory training/human resource practices, lack of management/profession respect)
- Changing work hours or inflexible work schedules for nurses raising a family
- Lack of support services, especially childcare and transportation
- Inadequate career advancement opportunities (e.g., career pathways, career mentoring/coaching, job restructuring)
- Retirement profile of existing nurses leading to massive retirement relative to smaller cohorts of graduates coming in to replace them
- Better pay and amenities in urban areas and border states (See Below)

2. Recruitment/Placement and Recapturing Licensed Nurses Not in Practice

- Rural areas cannot attract nurses, especially young, unattached nurses with no ties to communities, because:
 - Social, cultural, recreational attractions/amenities
 - Competitive salaries
- Problems identified in background checks reduce number of potential hires
- Number of nurses wanting part-time positions (e.g., starting families)
- Number of nurses choosing employment agencies versus full-time employment because of better pay and flexible schedules
- Excessive migration (leakage) of graduates to other Illinois regions (especially young, unattached nurses)
- Interstate variations in licensing requirements give advantage to bordering states because Illinois is more stringent
- Lack of coordinated public-private recruitment and placement
- Lack of opportunities for recapturing nurses without recent clinical experience (e.g., refresher courses)

- Lack of opportunities for licensing of foreign-trained nurses and stringent Illinois requirements and more difficult process compared to other states

3. Program Enrollment and Completion-Preparation of New Entrants

- Program graduates lack workplace skills and do not have sufficient clinical experiences
- Inadequate capacity of programs to enroll sufficient numbers of students because:
 - High program costs that cannot be covered by state reimbursement and tuition revenue
 - Problems in recruiting and retaining qualified faculty (e.g., interest, pay relative to nursing, credentialing requirements, state capacity to produce sufficient numbers)
 - Lack of clinical opportunities, especially in rural areas where shortages are more severe, and underutilization of night and weekend slots
- Program attrition and lower than expected licensure passage rates because:
 - Inadequate student supports, including childcare, transportation, family assistance
 - Language barriers and inadequate ESL assistance
 - Academic deficiencies and lack of academic supports
 - Financial assistance to complete programs
- Program approval process for healthcare programs is too long and complicated

4. Developing Pool of Qualified Youth and Adult Program Applicants

- New generation does not see healthcare as attractive career choice
- Students are not aware of full range of healthcare career choices
- Counselors do not understand healthcare career opportunities
- Students do not have an adequate academic preparation to enter and be successful in nursing programs
- Lack of outreach and career pathway opportunities for current healthcare workers
- Lack of outreach and career pathway opportunities for new adult workers, especially minority populations needed for bilingual care.

Figure C2: Root Causes of Licensed Practical Nurse (LPN) Shortages

- Low job satisfaction due to work conditions similar to Registered Nurses (RN) (See Above)
- Compensation is low compared to RNs and other healthcare professions
- Poor image relative to RNs and other healthcare professions
- Inadequate interest of students in becoming an LPN
- Program completers do not practice as LPNs but rather continue their education to become RNs
- Inadequate program capacity to produce sufficient numbers of LPNs
- Program approval process for healthcare programs is too long and complicated (response time is too slow)

Figure C4: Root Causes of Therapist Shortages

- Escalating educational requirements (e.g., escalation moving faster than expanding capacity)
- Lack of career pathways and articulation from therapy assistant programs
- Inadequate program capacity to produce sufficient numbers of therapists in region and state
- Inadequate compensation and poor job satisfaction

Appendix D

National Health Sciences Career Cluster Model National Consortium on Health Science and Technology Education

Planning, managing and providing therapeutic services, diagnostic services, health informatics, Support services and biotechnology research and development

Sample Career Specialties/Occupations	<ul style="list-style-type: none"> ◆ Acupuncturist ◆ Anesthesiologist Assistant ◆ Art/Music/Dance Therapist(s) ◆ Athletic Trainer ◆ Audiologist ◆ Certified Nursing Assistant ◆ Chiropractor ◆ Dental Assistant/Hygienist ◆ Dental Lab Technician ◆ Dentist ◆ Dietician ◆ Dosimetrist ◆ EMT ◆ Exercise Physiologist ◆ Home Health Aide ◆ Kinesiotherapist ◆ Licensed Practical Nurse ◆ Massage Therapist ◆ Medical Assistant ◆ Mortician ◆ Occupational Therapist/Asst ◆ Ophthalmic Medical Personnel ◆ Optometrist ◆ Orthotist/Prosthetist ◆ Paramedic ◆ Pharmacist/Pharmacy Tech ◆ Physical Therapist/Assistant ◆ Physician (MD/DO) ◆ Physician's Assistant ◆ Psychologist ◆ Recreation Therapist ◆ Registered Nurse ◆ Respiratory Therapist ◆ Social Worker ◆ Speech Language Pathologist ◆ Surgical Technician ◆ Veterinarian/Vet Tech 	<ul style="list-style-type: none"> ◆ Cardiovascular Technologist ◆ Clinical Lab Technician ◆ Computer Tomography (CT) Technologist ◆ Cytogenetic Technologist ◆ Cytotechnologists ◆ Diagnostic Medical Sonographers ◆ Electrocardiographic (ECG) Technician ◆ Electronic Diagnostic (EEG) Technologist ◆ Exercise Physiologist ◆ Geneticist ◆ Histotechnician ◆ Histotechnologist ◆ Magnetic Resonance (MR) Technologist ◆ Mammographer ◆ Medical Technologist/Clinical Laboratory Scientist ◆ Nuclear Medicine Technologist ◆ Nutritionist ◆ Pathologist ◆ Pathology Assistant ◆ Phlebotomist ◆ Positron Emission Tomography (PET) Technologist ◆ Radiologic Technologist/Radiographer ◆ Radiologist 	<ul style="list-style-type: none"> ◆ Admitting Clerk ◆ Applied Researcher ◆ Community Services Specialists ◆ Data Analyst ◆ Epidemiologist (SHSMD Stratsociety.org) ◆ Ethicist ◆ Health Educator ◆ Health Information Coder ◆ Health Information Services ◆ Healthcare Administrator ◆ Medical Assistant ◆ Medical Biller/Patient Financial Services ◆ Medical Information Technologist ◆ Medical Librarian/Cybrarian ◆ Patient Advocates ◆ Public Health Educator ◆ Reimbursement Specialist (HFMA) ◆ Risk Management ◆ Social Worker ◆ Transcriptionist ◆ Unit Coordinator ◆ Utilization Manager 	<ul style="list-style-type: none"> ◆ Biomedical/Clinical Engineer ◆ Biomedical/Clinical Technician ◆ Central Services ◆ Environmental Health & Safety ◆ Environmental Services ◆ Facilities Manager ◆ Food Service ◆ Hospital Maintenance Engineer ◆ Industrial Hygienist ◆ Materials Management ◆ Transport Technician 	<ul style="list-style-type: none"> ◆ Biochemist ◆ Bioinformatics Associate ◆ Bioinformatics Scientist ◆ Bioinformatics Specialist ◆ Biomedical Chemist ◆ Biostatistician ◆ Cell Biologist ◆ Clinical Trials Research Associate ◆ Clinical Trials Research Coordinator ◆ Geneticist ◆ Lab Assistant-Genetics ◆ Lab Technician ◆ Microbiologist ◆ Molecular Biologist ◆ Pharmaceutical Scientist ◆ Quality Assurance Technician ◆ Quality Control Technician ◆ Regulatory Affairs Specialist ◆ Research Assistant ◆ Research Associate ◆ Research Scientist ◆ Toxicologist
Pathways	Therapeutic Services	Diagnostics Services	Health Information	Support Services	Biotechnology Research and Development
Cluster K & S	<p><i>Cluster Knowledge and Skills</i></p> <p>◆ Academic Foundation ◆ Communications ◆ Systems ◆ Employability Skills ◆ Legal Responsibilities ◆ Ethics</p> <p>◆ Safety Practices ◆ Teamwork ◆ Health Maintenance Practices ◆ Technical Skills ◆ Information Technology Applications</p>				

