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The Supply Chain for Middle-Skill Jobs: Education, Training and Certification Pathways

Pathways to Middle-Skilled Allied Health Care Occupations

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Bianca K. Frogner, PhD and Susan M. Skillman, MS
Center for Health Workforce Studies, University of Washington

Executive Summary

Health care is expected to be a source of middle-skilled job opportunities in the future. This paper explores the education and training pathways to these occupations in allied health care, which generally require less than a bachelor's degree for entry.

Monitoring the growth of job opportunities and changes expected of health care workers is a challenge due to decentralized nature of data collection for allied health professions. The expectation, however, is that the roles of allied health workers will change as the health needs of the US population change and team-based delivery of care becomes more common. Middle-skilled health care workers will need to learn how to coordinate and manage care, work in teams, and help patients navigate the system.

Federal and state programs fund health care job-specific training opportunities and job assistance programs, but often operate in unpredictable and uncertain funding environments. Community and technical colleges are particularly important players in educating the middle-skilled health workforce. Private for-profit institutions are emerging as alternative sources for education and training, although there is some concern about whether they provide comparable returns to education as not-for-profit institutions. Public-private partnerships have shown success in training a health care workforce with the skills desired by employers.

Several barriers exist to building a strong middle-skilled allied health workforce capable of meeting the changing needs of the health care delivery system. Credentials and scope-of-practice laws, which keep patients safe, make it difficult for health care workers to move geographic locations or find flexibility in their careers. The pathway to a health care career is often not clear, especially in relatively new and emerging positions. Additionally, socioeconomic concerns may impact the attraction of workers into health care careers including the availability of jobs in desirable locations, low wages and low job quality, and high educational requirements.

This study offers six recommendations for generating a strong case for middle-skilled health care jobs:

1. Improve data collection by filling in the gaps for non-licensed workers, bring together siloed datasets, and identify novel ways to track emerging job titles;
2. Increase the research and discussion around career pathways and ladders;
3. Increase interprofessional dialogue throughout the educational pipeline with employers;
4. Explore apprenticeship opportunities especially in rural areas where access to training may be a challenge;
5. Raise awareness of the allied health career opportunities early in the educational pathway; and
6. Develop a panel of experts to regularly monitor the pulse of the allied health workforce.

Introduction

Historically strong job growth in the health care sector, an aging population, and increasing demand for health care due to the Patient Protection and Affordable Care Act of 2010 (ACA) have helped identify health care as a "job engine" for the US economy.[1,2] The majority of these health care occupations are entry-level opportunities requiring a pre-baccalaureate level of education.[3] To understand the education and training pathways to these job opportunities in health care, an expert committee convened by The National Academies, acting for the National Research Council and the National Academy of Engineering, commissioned this paper. This paper discusses the current supply of and the projected demand for middle-skilled occupations in health care, the policy and demographic context in which these occupations are demanded, and the education and training paths to entering these occupations and on which to build a long-term career. We also discuss the opportunities and challenges to identifying career pathways to middle-skilled occupations in health care.

Middle-skilled occupations in health care addressed in this paper are those that allow entry at the pre-baccalaureate (i.e., less than a four-year degree) level, that may or may not involve direct patient care, and that may not require any specialized skill at entry. Many fall under the heading of "allied health," a grouping for which definitions vary widely, and often encompasses some occupations that require a baccalaureate degree or higher. As such, "middle skilled" is not synonymous with "allied health", but there is considerable overlap. A few middle-skilled health care occupations at the pre-baccalaureate level may feed the pipeline of higher-skilled allied health occupations.

The Institute of Medicine (IOM) last produced a report on the allied health workforce in 1989 titled, *Allied Health Services: Avoiding a Crisis*.[4] Since this report's warning that the allied health

professions are understudied, progress has been made to improve data tracking and projections, and to build ties between the education system and employers. Improving data quality, predicting employer needs in a changing health care landscape, and identifying clear career pathways remain as challenges. In 2011, IOM held a workshop on *Allied Health Workforce and Services*, which provided great detail on the emergence and definition of the allied health field, data needs for better workforce planning, the evolving role of the allied health worker with the changing delivery system, and the challenges around accreditation.[5] This paper builds on the 2011 IOM workshop report and provides greater detail on what we know about the pathways to enter a middle-skilled job in an allied health profession since the passage of the ACA.

This paper is divided into five sections:

1. Overview of the allied health field: We discuss the challenges of defining the term "allied health" and how middle-skilled health care workers fit as a subset under allied health. We provide supply numbers and projected demand for a selection of middle-skilled, allied health occupations that allow for a pre-baccalaureate entry-level education.
2. Changing health care landscape: We provide an overview of how changes in the health care field are transforming due to demographic changes, increases in chronic disease prevalence, and legislative actions such as the ACA affect health care demand, and thus the health workforce supply.
3. Education and training: We discuss where middle-skilled allied health workers are gaining their education and training, and the mechanisms that support their entry.
4. Career pathways: We discuss how several middle-skilled allied health occupations do not have a clear career pathway, and what related efforts are being made that could improve its clarity.

5. Regulation: We discuss how regulations through accreditation, licensing, credentialing and scope-of-practice laws impact the career opportunities for middle-skilled, allied health workers.

We end with a set of recommendations that will support opportunities for middle-skilled health care occupations.

Overview of allied health field and its relationship to middle-skilled jobs

Since the term "allied health professions" was first popularized in 1966 with the federal Allied Health Professions Personnel Training Act, the field has been difficult to define.[6] The list of allied health occupations has been a moving target as new occupations have been added to the list, while others (e.g., physician assistants, physical therapists, occupational therapists, radiologic technologists, health information managers, and ophthalmic medical technologists/technicians) have distanced themselves from the term. These occupations distance themselves as their fields require greater educational preparation, take on increasing practice independence, earn higher salaries, seek greater visibility, and form their own accreditation bodies.[7] Although there is no single list of occupations covered under "allied health," it is generally accepted that allied health professions do not include physicians, dentists, or nurses. The Association of Schools of Allied Health Professions (ASAHP) Research Committee identified 66 occupations that were examples of allied health professions, including physician assistants.[8] The Health Professions Network, a "collaborative group representing the leading allied health professions," features over 45 distinct occupations.[9] In 2010, the Commission on Accreditation of Allied Health Education Programs provided accreditation to 28 occupations.[10]

Acknowledging these difficulties, the 1989 IOM report on the allied health workforce did not list a set of occupations but rather focused on "policy-related characteristics" including "the amount of autonomy in the workplace, the occupation's dependence on technology, the substitution of one level and type of personnel for another, flexibility in the location of employment, degree of regulation, and inclusion in accreditation standards for facilities."[11] In the ACA, an allied health professional is defined simply as "an individual who graduated with an allied health professions degree or certificate, and is employed as an allied health professional in a health care setting."[12] The ACA references the Public Health Service Act of 1944, which defines allied health as trained professionals, other than registered nurses or physician assistants, who share "in the responsibility for the delivery of healthcare services or related services, including services relating to the identification, evaluation, and prevention of disease and disorders, dietary and nutrition services, health promotion services, rehabilitation services, or health systems management services."[13]

Using the Occupation Finder in the Bureau of Labor Statistics Occupational Outlook Handbook, we identified approximately forty health care occupations that have pre-baccalaureate entry-level requirements, ranging from less than a high school degree to an associate degree (Table 1).[14] Of the occupations requiring a high school degree or less, all require at least some additional on-the-job training. Several, like many of the aide positions, may not be considered allied health or middle-skilled occupations given the low entry requirements. Associate degree registered nurses seem a logical addition to those on the "allied health" list of health care middle-skilled occupations given that most registered nurses attain their occupation via an associate degree in nursing (and some through a dwindling number of diploma programs). There is considerable policy effort, however, to ensure that in the near future the majority of practicing registered nurses have baccalaureate degrees in nursing.[15]

Current and projected supply and demand

The health care field is projected to see an increase of three to four million new jobs over the next decade; about 40 percent of this growth is driven by the ACA, primarily in the home health care and long-term care sectors.[16] A report by Brookings found that the ten health care occupations with pre-baccalaureate entry requirements accounted for almost half of the all health care occupations in the 100 largest metropolitan areas.[17] Allied health professions are about half of the twenty fastest-growing occupations in the US economy, with growth rates projected between 30 to 50 percent over the next decade.[18]

In Table 1, we show the current and projected employment from the U.S. Bureau of Labor Statistics for the forty health care jobs identified with a pre-baccalaureate entry level requirement. Although not considered an allied health occupation, registered nurse is the largest occupational category that can be entered with less than a baccalaureate degree for entry, and it has the largest projected growth and has one of the highest median salaries. Generally, occupations requiring completion of at least a course of post-secondary non-degree education are projected to have the largest growth over the next decade. Entry-level positions requiring less than a high school degree (i.e., home health aides and personal care aides) or post-secondary non-degree award (i.e., medical assistants) are among the largest and fastest-growing occupations, but they are also among the lowest-paid positions.

Demand projections must be assessed with caution and applied wisely in workforce planning.[19] Most models are not able to predict market and population need at the local level, and some workforce oversupply in urban areas can mask workforce gaps in rural areas when projections are summarized at the state or regional level.

Data availability and limitations

Collecting data about the size, distribution, and demographic and work characteristics of the middle-skilled health workforce has been a challenge for decades. The National Center for Health Workforce Analysis (NCHWA) in the Health Resources and Services Administration of the US Department of Health and Human Services cited challenges in their recent efforts to develop demand and supply projections for allied health professions because of insufficient data on the supply of workers and on-the-job training efforts.[20,21,22,23,24] Without a national minimum dataset for the middle-skilled health workforce, one must go to different sources, each with varying quality of information, completeness, and variable definitions. Surveys and administrative data collected by federal, state or local governments, employers, or professional societies are important, but national and state-level coordination for data collection and analysis are more useful, albeit more expensive, to derive more detail about health occupations. These efforts have been vastly more extensive for nurses and physicians than for allied health occupations.

Some of the best data on middle-skilled allied health occupations are available for those who must renew state licenses to stay active in practice, although the data in licensure records vary by state, and the reasons for a lapsed license (e.g., retirement or career transition) may not be indicated. For non-licensed positions (many of which require registration or other non-license credential), the primary source of health workforce tracking data are national datasets, such as the American Community Survey and Current Population Survey (jointly collected by the US Census Bureau and Bureau of Labor Statistics), which are not specifically designed to track health care occupations, do not allow for analysis at smaller (e.g., sub-state) geographic detail, and are reported with a significant lag period. One of the consequences is that emerging occupation titles and changing roles may go undetected.

Beyond accurately accounting for the number of middle-skilled allied health workers, there are data challenges around identifying the educational pipeline and understanding which occupations can fill which roles. As will be discussed later in this paper, the career pathways to middle-skilled allied health occupations are not always clear so capturing data on the educational pipeline of available workers is a challenge. The Integrated Postsecondary Education Data System (IPEDS) of the US Department of Education is commonly used to identify completion rates from federally funded post-secondary programs, but IPEDS does not track non-degree programs that may lead to a health care career. A related challenge is that many of the middle-skilled allied health occupations do not require a certificate or degree that is directly linkable to a health care occupation. For many allied health occupations—medical assistants are a good example—the requirements to practice vary by state so comparison by occupation does not reflect the variety of roles taken on by a worker. Another challenge is that data collection is often restricted to a coding structure such as the Standard Occupation Classification (SOC) system, which is used to classify occupations for purposes such as conducting the Census. The SOC is only updated every ten years, which makes it difficult to accurately capture emerging roles and evolving job titles.

Changing landscape of health care

The skills and training required of the health workforce are changing as the health needs of the US population change and legislation reshapes the way health care is delivered. For example, as the population ages and there is a movement towards “aging in place,” the demand will grow for workers who are able and willing to take care of the elderly in their home rather than in a more structured environment such as nursing homes.[25] As chronic disease become more prevalent, the demand will grow for more disease management skills. Another change occurring

in the US landscape is that the population is increasingly diverse, including many who speak English as a second language, which is driving the need for a more culturally competent health care workforce.

Two major pieces of health care legislation are changing the way health care is delivered. First, the Health Information Technology for Economic and Clinical Health Act of 2009 (HITECH), enacted as part of the American Recovery and Reinvestment Act of 2009 (ARRA). HITECH has injected over $12 billion to date to put in place incentives to encourage adoption of health IT among Medicare providers.[26,27] Health care providers have faced a steep learning curve to acquire the skills needed to use electronic health records, telemedicine, mobile health and other IT methods of gathering care data and interacting with patients. Gaining this facility will generate many middle-skilled occupations in the health IT field. For small practices, such as those in rural areas, getting the needed IT skills is less likely to involve hiring new IT workers and more likely to involve finding ways to obtain IT training for existing staff. But getting those training resources can be expensive, or not accessible in some rural areas.[28]

Second, the ACA that increased insurance coverage and access to health care services for 50 million Americans, is changing health care delivery by shifting the focus of care from hospitals to primary care settings, and emphasizing coordinating care across delivery settings. Hospitals have new incentives to coordinate patient care with primary care providers in order to improve patient care management and avoid preventable patient readmissions. Accountable Care Organizations (ACOs) further formalize these arrangements among providers and settings by allowing them to share in any savings that may arise from more efficient and effective patient care. The ACA also encourages care through patient-centered medical home (PCMH) models, which emphasize use of team-based care with the primary care provider coordinating care especially for patients with multiple chronic conditions.

New occupation or new role?

It is not clear whether the best way to respond to the need for team-based care, increasing reliance on IT, and other changing health needs is by creating a new occupation category, expanding the role of an existing occupation, or somewhere in between. For instance, as prevention and population disease management gain more attention, the need for health care trainers and educators increases. Also, to help transition the medical model away from acute care management to chronic disease management, there is a greater need for roles or occupations in care management, care coordination and health system navigation that help patients and health care staff navigate a complex system. Health care workers are increasingly expected to have knowledge about how to operate health IT systems and how to use the information captured by these systems.[29] Some occupations may realize they can play new roles, such as athletic trainers who have skillsets that may be adapted and even desired in ambulatory care environments, especially as more elderly patients emerge with musculoskeletal conditions.[30,31] Any expansion of occupation role, however, needs to be considered in context of scope-of-practice laws.

The extent to which these new skills and roles are incorporated into current occupations or whether a new occupation category should be created will attract attention as we prepare the health workforce of the future. Regardless, as health care delivery focuses on chronic disease management and team-based health care delivery models, all health care workers, including middle-skilled workers, will need to coordinate and manage care, work in teams, and help patients navigate the system. In order for workers to acquire these skills, the current educational programs and on-the-job trainings require updating to meet the needs of patients in this changing health care landscape.

Education and training

Funding sources and educational programs at all levels seek to support the development of the allied health workforce and career pathways. But funding can be unstable and not all educational programs succeed in opening pathways into well-paying careers. This section highlights a few key sources of funding and related programs for strengthening the education and training of a middle-skilled allied health workforce.

Federal and state funding

Under ARRA, the Office of the National Coordinator for Health Information Technology (ONC) awarded $116 million to develop a program called the Information Technology Professionals in Health Care Program (also referred to as the "Workforce Program") to train a new workforce of health IT professionals to accelerate the adoption of health IT. Two of the four Workforce Programs funded community colleges and universities to train these new professionals. The other two Workforce Programs disseminated the curriculum of these training programs and developed a competency exam for the new trainees. Of the two training programs, the Community College Consortia to Educate Information Technology Professionals in Health Care Program (CCC Program) specifically concentrated on middle-skilled health occupations. The CCC program resulted in 19,773 people across over 80 community colleges who completed six month non-degree health IT training programs as of October 2013 for the roles of practice workflow and information management redesign specialists, clinician/practitioner consultants, implementation support specialists, implementation managers, technical/software support, and trainers. At a glance, the CCC Program was successful, in that most of those who completed the programs found employment, employers expressed that the hired individuals had the

desired competencies, and many of the funded community colleges are continuing their trainings beyond the original two-year grant.[32] One-fourth of the community colleges, however, did not continue their training programs and the student attrition rate in the CCC program was about two times higher than the other university-based master's level training Workforce Program.

The ACA also allocated funds to train the middle-skilled workforce. One program is the Health Profession Opportunity Grants, which covered educational costs for recipients of the Temporary Assistance for Needy Families and other low-income individuals to train into well-paid and/or high-demand health care jobs.[33] As of the third year out of five years of funding, HPOG had enrolled 24,558 individuals across 32 grantees with "nursing assistant, aide, orderly or patient care attendant" as the most common occupation training course followed by licensed vocational nurse, registered nurse, and medical records and health information technician.[34] While most of the occupations may meet the goal of training low-income individuals into well-paying and/or high demand jobs, "nursing assistant, aide, orderly or patient care attendant" may not help an individual with a career ladder or upward mobility.

In 2014, the Workforce Innovation and Opportunity Act (WIOA) reauthorized the Workforce Investment Act (WIA) of 1998 with a few key changes. The goal of WIOA is to equip people with the skills desired by employers, and connect people with well-paying occupations.[35] WIA stimulated health workforce development across the states, particularly for occupations requiring short courses of education/training (on-the-job training, certificate programs, and associate degree programs). WIA provided job search assistance, assessment, and training for eligible adult, dislocated worker, and youth under a "work first" mission, and as a result many allied health occupations were among those WIA program recipients achieved.[36] One of the biggest changes to WIOA is moving away from a block grant to yearly authorizations of funding.

With regards to training, WIOA calls for the adoption and expansion of best practices around career pathways, industry or sector partnerships and use of industry-recognized certificates and credentials.[37] WIOA opens an opportunity for a more rigorous discussion around defining career pathways to middle-skilled allied health careers and the credentials required to get there.

Many of these training programs, particularly in public institutions, operate in unpredictable and uncertain funding environments at the state and federal level. For example, the Carl D. Perkins Career and Technical Education Act provides funds to states for secondary school districts and postsecondary institution, but funding for the Tech-Prep programs has not been appropriated since 2011. The Elementary and Secondary Education Act, which ensures equal access to quality education programs, is in the process of reauthorization. If funding is limited or eliminated, disadvantaged communities may experience a harder time identifying a career in health care. Subsidized loan programs are quickly disappearing as financial aid options shrink and the Pell Grant program struggles to meet the financial needs of eligible students while experiencing funding cuts.

The cost of higher education is a barrier to entry for many, especially youth from disadvantaged backgrounds and incumbent health care workers, wanting to enter a middle-skilled health care occupation. The issue of affordable education will gain even further attention with the reauthorization of the Higher Education Act in 2015. Several actions, however, are taking place to reduce the cost of schooling such as higher education institutions committing to freeze tuition rates. Washington State took a unique step forward to address the high cost of schooling by passing a law to reduce tuition for public colleges and universities starting in 2016. Special efforts are being made to eliminate cost barriers to veterans transitioning into civilian careers with The Veterans Access, Choice, and Accountability Act of 2014, which requires all public universities to offer veterans the in-state tuition rate when using their GI Bill.

Community colleges and private career colleges

Although four-year colleges and universities play a large role in educating the overall health workforce, community and technical colleges also educate the middle-skilled health workforce. In a study of 18 allied health occupations, 62% of those completing a post-secondary program did so at a community college.[38] Community colleges have been shown to play a strong role in providing access for students seeking rural-relevant allied health occupations.[39] The shorter education commitment, and lower tuition and housing costs of community and technical colleges, compared with baccalaureate and higher education, may provide a portal for some people who otherwise would not consider health care careers as an option.

Private for-profit institutions are increasingly playing a role in educating and training the middle-skilled health workforce. One study found that 78% of the health care credentials awarded at for-profit institutions were associate degree or non-degree programs, and the credentials were not for careers that are necessarily in high demand.[40] One study found that for-profit institutions attract minorities, older students, and otherwise disadvantaged students; many of these students experience poor job outcomes such as high unemployment, lower earnings relative to comparable students in other schools, and high debt burdens.[41] Another study found that those who receive an associate degree from a for-profit college receive a lower rate of return to their educational investment relative to those who received training in other institutions.[42] Education from for-profit institutions may not be perceived well by potential employers. A recent study found that for health jobs that do not require a certificate, applicants with a certificate from a for-profit institution were 57% less likely to receive a callback than applicants with a similar certificate from a public community college.[43]

Employer-provided training and apprenticeships

Partnerships between employers and educational institutions are desirable to ensure that individuals are getting the required competencies. One way to accomplish this goal is to bring together employers with similar needs to identify training needs for their employees.[44] One example is the Hospital Employee Education and Training (HEET) program in Washington State, which is a multi-employer training fund that pools resources through collectively bargained employer contributions. The goal of the fund is to support incumbent hospital workers to attain allied health education pre-requisites to become, for example, a clinical lab assistant, emergency department technician, central service technician, or lab assistant/phlebotomist.[45] Another example is the Jobs to Career Initiative, which was supported by $16 million over four years from the Robert Wood Johnson Foundation, Hitachi Foundation and the US Department of Labor. The program brought together 34 employers and served 900 individuals to promote skill and career development in frontline health care workers by integrating curriculum, learning, and assessment into work processes and recruiting co-workers to serve as coaches, mentors and preceptors. [46]

As an alternative to classroom-only education, apprenticeship programs provide on-the-job training opportunities. Apprenticeships are not as common in the health care industry compared other technical fields, but are being explored. In the medical field, studies show that physicians who complete their residency in a rural area are more likely to practice in a rural area. Internship or apprenticeship opportunities for lower-skilled workers in rural areas could attain similar outcomes, although the lack of long-term career opportunities, support and mentorship in rural areas may continue to be obstacles. The US Department of Labor identified ten apprenticeship programs, most of which were allied health occupations including home health aide, home care aide, pharmacy technician, and medical transcriptionist.[47] While the employers expressed high

satisfaction with these apprenticeships as a cost effective way to train and retain workers with desired skills and competencies, there is lack of awareness of these programs and challenges around oversight of regulated practices.

Fostering team-based care

A question occupying education and practice communities is how to develop a health care workforce fluent in effective team-based care, a cornerstone of the ACA. Inter-professional education can foster a culture of collaboration by bringing together students from multiple health care professions to learn and solve problems together. Providing a team atmosphere of collaboration and problem solving during education is a key step in building effective health care teams. Some universities and colleges have coordinated classes and programs to bring together the various health professions (e.g., medicine, nursing, dentistry, and pharmacy) into a learning collaborative. In effort to make inter-professional education more concrete, the Interprofessional Education Collaborative brought together six national education associations of schools of health professionals, supported by three private foundations, to release a core set of competencies for interprofessional collaborative practice.[48] Many of the pre-baccalaureate programs do not have access these types of opportunities, so workers are left to learn these skills on the job assuming that their place of work is effectively practicing team-based care.

Degree creep

Another challenge for middle-skilled health care job opportunities is “degree creep,” which refers to raising the educational level required before an entrant to an occupation can practice. For example, pharmacists could practice with a bachelor’s level (BS Pharm) in pharmacy until 2003, but now must be trained with a Doctor of Pharmacy degree (PharmD) in order to obtain a

license to practice. Athletic trainers only require a bachelor's degree but most have at least a master's degree. and there is ongoing discussion as to whether a master's degree should be the entry requirement. Expansion of educational requirements is often justifiable because fields advance and new evidence emerges. This information is incorporated into curriculum, and a higher degree acknowledges the increasing complexity of the field. But a higher educational bar also effectively reduces supply of the profession because more time is spent in education before a student enters the workforce, which also adds expense to the system because longer education paths generally confer higher salaries (in part to offset the opportunity cost of instead being in the job market). A higher degree also puts the occupations out of reach for many who are not able to set life aside to pursue the post-graduate education commitments. More aide and assistant jobs (e.g., PT assistant, OT assistant, etc.) are being developed to help fill some of middle-skilled gaps as a result of degree creep, but these assistive positions do not necessarily lead to a clear career ladder, which may impact their opportunities for career advancement.

Career pathways and ladders

Career pathways and ladders in allied health, and other health occupations, can be confusing, but are important to identify for workers to reduce turnover and ensure quality of patient care. One might infer that a career ladder leading to occupations such as physical therapy and occupational therapy involves direct lines through their aide and assistant roles. Aide and assistant occupations, however, frequently attract individuals who do not plan or are not suited to complete the baccalaureate and for some, post-graduate education required for the terminal occupation degree. Other occupations, such as medical assistant, are relatively new so the pathways up a career ladder into nursing, or technician roles, or a variety of other options is not clear. The career "ladder" in health care may be better characterized as a career "lattice"

because of the many options an entrant faces. But as a result of these complexities, career growth and professional development in health care can be daunting for entrants with minimal education and training, and for those lacking mentors and role models.

Identifying early career pathways

The ability to identify a clear pathway into a health care career would both help attract new students to the field, and maximize their opportunity to gain needed skills and competencies for to move up a career ladder into a middle-skilled health care occupation. Two groups have tackled the task of creating clarity at an early stage of education on the complex occupational pathways. First, the National Association of State Directors of Career Technical Education Consortium (NASDCTEc) developed a National Career Clusters Framework identifying 16 career clusters (including a cluster on health sciences) and 79 career pathways, which the Carl D. Perkins Career and Technical Education Act of 2006 (Perkins IV) requests that educational institutions adopt in their programming.[49] NASDCTEc also identified five health science career paths with common career technical core, knowledge and skill statements, and a plan of study for each of the following pathways: therapeutic services, diagnostic services, health informatics, support services, and biotechnology research and development.[50]

Second, the National Consortium for Health Science Education (NHSE) developed knowledge assessment tools and a clearinghouse of tools to implement educational programs that could meet the requirements for over 300 health science careers.[51] These tools were developed with the partnership of six state departments of education, the American Hospital Association, and Kaiser Permanente. By aligning educational tools with the needs of future employers, students will have better preparation for a health care career.

Career ladders

Once in a health care job, movement up a career ladder is important to improve job satisfaction, reduce turnover, and ultimately improve patient care.[52] The target is not necessarily to obtain a higher level occupation that may require a higher level of education. An early example of a successful employer-led career ladder program for incumbent health care workers was the Extended Care Career Ladder Initiative (ECCLI), which was developed under the Massachusetts Nursing Home Quality Initiative in the early 2000s. ECCLI brought together nursing homes, home health agencies, community colleges, Regional Employment Boards and Workforce Investment Boards to develop career ladders for certified nursing assistants and home health aides in effort to reduce turnover and vacancies. Although these individuals did not necessarily move into a higher level occupation, the participating organizations saw positive outcomes such as reduced turnover and vacancies, improved work environments, and improved quality of patient care. [53]

As introduced earlier, the Jobs to Careers Initiative provided on-the-job training for incumbent frontline health care workers, but almost two-thirds of these workers also received career plans and education plans in order make steps towards identifying a career ladder. [54] Another employer-led initiative dedicated to helping low-wage workers identify career ladders is the National Fund for Workforce Solutions. The National Fund has over 20 regional collaboratives and over 30 workforce partnerships focused on the health care sector, and bringing together employers, workers, communities and funders to identify the skills needed by employers and then develop relevant training to help workers gain these skills and advance in their careers.[55] In order for any of these career ladder programs to be successful, however, these programs have found the need to be prepared to deliver basic and remedial education, provide strong support

and leadership from the employer, and identify sufficient funding to support training and to increase wages as a result of training. [56,57]

Transitioning across occupations

Career transitions across health care occupations are also unclear. Students may head down one career path only to realize that it was not the best path, and feel uncertain about the next move. In general, moving among entry-level positions that require no specialized education is simple. Moving among highly specialized positions, especially if credentialing is involved, is more challenging—and less likely. A dental hygienist, for example, could potential move into a dental sales job, but could probably not move into a nursing job without additional education and training. On the other hand, a person with specialized health IT skills may be able to translate their IT skills to a non-health care environment. To make career transitions easier, O-NET has attempted to classify occupations into career clusters in which workers might easily move into a new but related position.[58] For instance, a worker can search O-NET based on the skills they have to identify other occupations that require the same skills.

A particularly unique career transition challenge is that of military personnel with health care experience who try to transition into a civilian health care career. Military skills and experience may not translate into the competencies required or follow the path required by accreditation bodies for a similar occupation in the civilian sector, and having to sit for an exam to obtain a license or take basic courses despite years of experience can take more time than the individual may have available to be out of the workforce.

Socioeconomic opportunities

One of the motivation for these career ladder initiatives is to improve the socioeconomic opportunities for workers in order to have a robust health care workforce. Generally, health care workers enjoy higher earnings than their counterparts in other parts of the economy, though this trend is not necessarily the case for those working in nursing homes or in nonprofessional health care occupations.[59] Currently the health care occupations in high demand have low educational entry requirement, however, the available occupations are also among the lowest paid (Table 1). A high share of minorities are in these low-income health care occupations especially in long-term care settings. [60,61] Workers in long-term care positions experience high turnover, are likely to be at the federal poverty level or below, and suffer from high rates of disability.[62] These trends point to a poor socioeconomic situation for many of our health care workers, and could potentially threaten the pipeline of available workers.

By employers supporting educational and training opportunities on-the-job that lead to a career ladder, the socioeconomic opportunities may improve for some health care workers. Recent studies have found that an associate degree and certificates (long-term and short term) are associated with significantly higher earnings compared to not having these degrees and certificates especially in allied health. [63,64] Another study found that those seeking health care careers through vocational or career technical education programs delivered by community colleges had among the highest rates of returns in earnings relative to the educational investment.[65] One challenge of starting in community college rather than directly starting in a four-year college is that the likelihood of finishing a bachelor's degree is significantly delayed.[66] But given that the alternative may be to not attend higher education at all, any encouragement for workers to enter into higher education in order to gain a middle-skilled health care occupation appears to have positive earnings results.

Regulation of allied health careers

The accreditation, credentialing, and scope-of-practice measures that help ensure quality care and protect patients from harm vary greatly by occupation and state, and can also serve as obstacles to allied health workers seeking to follow a career ladder.

In some occupations, completion of an accredited program is a prerequisite for a credential. Many programs in allied health are accredited by the Commission on Accreditation for Allied Health Education Programs (CAAHEP), which covers 2100 entry-level education programs in 28 health science occupations.[67] One of the biggest challenges faced by CAAHEP is coordinating the required competencies across the diversity in occupations and institutions under the umbrella of allied health. A plethora of programs, each with its own required competencies, may result in confusing requirements and expectations for those wanting to enter an allied health profession middle-skilled.

Credentialing through exams, certificates and licenses is necessary to ensure quality care for some middle-skilled health care occupations. Credentialing may require payment of fees, which may be a financial obstacle for lower income people. Credentials required to practice vary by state and by occupation, which makes it difficult for people to move from one state to another or follow the career ladder to a new occupation. The cost of credentialing has especially been an issue in the expansion of telehealth services across state lines, where every state requires providers to get credentialed in each state.[68] This barrier not only limits patient access to care, but it also limits the opportunities for allied health workers to grow their skillsets and to enter into new communities.

Scope-of-practice laws that dictate what a person can and cannot do in their occupation also vary across the country and make inter-state moves difficult. Given potential overlaps in skillsets

between occupations, competition for job opportunities has caused turf wars over which occupation may offer which set of skills, which may limit opportunities for allied health workers.[69] Scope-of-practice laws may at times be a hindrance in team-based environments where flexibility may enhance team arrangements to improve delivery of patient care.[70] In areas with workforce shortages, scope-of-practice laws limit the use of potentially innovative solutions involving shifting tasks from one occupation to another. Although studies on scope-of-practice primarily have focused on nurse practitioners, recent findings suggest that states with less restrictive scope-of-practice laws result in increased access to care for patients and cost savings.[71,72]

Conclusions and recommendations

While allied health occupations, many of which are considered among middle skilled occupations, are important and expanding components of the health care workforce, these occupations are generally understudied. Given the number of occupations requiring less than a bachelor's degree for entry, allied health appears to be a gateway to a good career path. The demand outlook is good for occupations where the projected demand outweighs the supply, which market economics suggests that graduates can find employment at good wages. The data suggest, however, that pay is relatively low for many entry-level allied health positions and career ladders may be difficult to identify or lacking. With increases in reports of high levels of educational debt facing health career students and the growing prominence of for-profit institutions with low returns on employment, a stronger case needs to be made for individuals to invest in health care careers, especially those requiring low and middle level skills.

To generate a stronger case for a middle-skilled career in allied health, we provide the following recommendations:

1. While the availability of data to track the health workforce have been improving over time, data are still needed to fill in the gaps for non-licensed workers, to bring together siloed datasets, and to identify novel ways to track emerging job titles;
2. Increase the research and discussion around career pathways, especially for those in the lowest-skilled and potentially low-paying occupations;
3. Increase interprofessional dialogue throughout the educational pipeline with health care employers to make sure the right competencies are delivered in a rapidly changing health care landscape;
4. Explore the apprenticeship opportunities identified by the US Department of Labor as potential avenues for a career path in health care especially in rural areas where access to training may be a challenge, and for veterans who may have years of experience from the field that could be quickly leveraged into a civilian job;
5. Raise awareness of the career opportunities in allied health by increasing the dissemination of the health science career clusters identified by O-NET and the curricula designed by National Consortium for Health Science Education and National Association of State Directors of Career Technical Education Consortium; and
6. Develop a panel of experts to regularly monitor the pulse of the allied health middle skilled workforce, much like the National Health Care Workforce Commission created (but yet to be funded) through the ACA.

Table 1: Selected Health Care Jobs Requiring Less than a Four-Year Degree, 2012

Occupation	Total Employment	Projected Number of Jobs, 2012-2022	On-the-Job Training	Median Pay
Entry-Level Education: Less than High School				
Home Health Aides	875,100	50,000 or more	Short-term	Less than $25,000
Personal Care Aides	1,190,600	50,000 or more	Short-term	Less than $25,000
Entry-Level Education: High School Diploma or Equivalent				
Dental Laboratory Technicians	36,790	1,000 to 4,999	Moderate-term	$35,000-$54,999
Medical Appliance Technicians	12,230	0-999	Long-term	$35,000-$54,999
Medical Secretaries	509,640	50,000 or more	Moderate-term	$25,000-$34,999
Occupational Health and Safety Technicians	62,900	1,000 to 4,999	Moderate-term	$35,000-$54,999
Occupational Therapy Aide	7,950	1,000 to 4,999	Short-term	$25,000-34,999
Ophthalmic Laboratory Technicians	29,380	1,000 to 4,999	Moderate-term	$25,000-34,999
Opticians, Dispensing	64,930	10,000 to 49,999	Long-term	$25,000-34,999
Orderlies	53,920	5,000 to 9,999	Short-term	Less than $25,000
Pharmacy Technicians	353,340	50,000 or more	Moderate-term	$25,000-34,999
Physical Therapist Aide	48,700	10,000 to 49,999	Short-term	Less than $25,000
Psychiatric Aide	77,880	1,000 to 4,999	Short-term	Less than $25,000
Veterinary Assistants and Laboratory Animal Caretakers	71,500	5,000 to 9,999	Short-term	Less than $25,000
Entry-Level Education: Postsecondary Non-Degree Award				
Dental Assistants	300,160	50,000 or more	None	$25,000 to 34,999
EMTs and Paramedics	232,860	50,000 or more	None	$25,000 to 34,999

Licensed Practical and Licensed Vocational Nurses	718,800	50,000 or more	None	$35,000 to 54,999
Massage Therapists	71,040	10,000 to 49,999	None	$35,000 to 54,999
Medical Assistants	553,140	50,000 or more	None	$25,000 to 34,999
Medical Records and Health Information Technicians	182,370	10,000 to 49,999	None	$25,000 to 34,999
Medical Transcriptionists	74,810	5,000 to 9,999	None	$25,000 to 34,999
Nursing Assistants	1,420,020	50,000 or more	None	Less than $25,000
Phlebotomists	100,380	10,000 to 49,999	None	$25,000 to 34,999
Psychiatric Technician	67,760	1,000 to 4,999	Short-term	$25,000 to 34,999
Surgical Technologists	97,150	10,000 to 49,999	None	$35,000 to 54,999
Entry-Level Education: Associate Degree				
Cardiovascular Technologists and Technicians	50,530	10,000 to 49,999	None	$35,000 to 54,999
Dental Hygienists	190,290	50,000 or more	None	$55,000 to 74,999
Diagnostic Medical Sonographers and Cardiovascular Technologists and Technicians, Including Vascular Technologists	108,230	10,000 to 49,999	None	$55,000 to 74,999
Magnetic Resonance Imaging Technologists	29,560	5,000 to 9,999	None	$55,000 to 74,999
Medical and Clinical Laboratory Technicians	157,920	10,000 to 49,999	None	$35,000 to 54,999

Medical Equipment Repairers	35,740	10,000 to 49,999	Moderate-term	$35,000 to 54,999
Nuclear Medicine Technologists	20,480	1,000 to 4,999	None	$55,000 to $74,999
Occupational Therapist Assistants	29,500	10,000 to 49,999	None	$35,000 to 54,999
Physical Therapist Assistants	69,810	10,000 to 49,999	None	$35,000 to 54,999
Radiation Therapists	18,230	1,000 to 4,999	None	$75,000 or more
Radiologic Technologists	194,790	10,000 to 49,999	None	$35,000 to 54,999
Registered Nurses	2,633,980	50,000 or more	None	$55,000 to 74,999
Respiratory Therapists	116,960	10,000 to 49,999	None	$55,000 to 74,999
Veterinary Technologists and Technicians	83,350	10,000 to 49,999	None	$25,000 to 34,999

Source: Bureau of Labor Statistics, US Department of Labor, “Occupation Finder,” Available at: http://www.bls.gov/ooh/occupation-finder.htm (cited 2015 Jun 12); Bureau of Labor Statistics, US Department of Labor, “Occupational Employment Statistics, 2012,” Available at: http://www.bls.gov/oes/2012/may/oes_nat.htm (cited 2015 Jun 12).

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