Three Years of Findings

Health Workforce Research Centers (HWRCs) Key Findings, 2013-2016

March 2017

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Establishment of the Health Workforce Research Centers

Between 2013 and 2015, the Health Resources and Services Administration's (HRSA) Health Workforce Research Center (HWRC) Cooperative Agreement Program funded six research centers and one technical assistance center to provide timely and topical health workforce research to strengthen the public's understanding of health workforce and inform health workforce policy discussions at the national, state, and local levels.

Two centers are charged with examining **flexible use of health workforce**:

1. The University of North Carolina (UNC) HWRC, established in 2013, focuses on workforce roles, innovations, configurations and financing to support health system transformation.
2. The George Washington University (GW) HWRC, established in 2013, focuses on improving health care delivery and efficiency.

Four centers are specifically charged with focusing on a particular occupational segment of the health workforce:

1. The University of Washington (UW) HWRC, established in 2014, focuses on building the health workforce through **allied health** professions.
2. The University of California, San Francisco (UCSF) HWRC, established in 2013, focuses on preparing the health workforce to meet the nation's **long-term care** needs.
3. The University of Michigan (UMich) HWRC, established in 2015, is jointly supported by HRSA and the Substance Abuse and Mental Health Services Administration (SAMHSA), and focuses on the **behavioral health** workforce.
4. The University at Albany, State University of New York (SUNY) HWRC, established in 2014, focuses on improving the nation's **oral health** services.

In addition to the six research centers, a technical assistance center was created to assist states and other stakeholders in their efforts to advance workforce data collection and analysis, and to use the data to inform transformation strategies.

1. The University at Albany, State University of New York (SUNY) Health Workforce Technical Assistance Center (HWTAC), established in 2013, supports workforce planning and development.

Since 2013, the six research centers have collectively conducted almost 70 studies that help workforce stakeholders and policy makers better understand how health workforce needs are evolving in response to demographic change, payment reform, and other delivery system and policy changes. These studies also offer new analyses that will help policy makers determine if we have a workforce with the right skill mix and training to care for a growing, aging population with increasingly complex health needs. The HWTAC has helped provide new resources and materials to enable states and other entities, both public and private, to develop robust workforce data systems and solutions to address health workforce challenges.

Establishing these centers has helped to direct resources to previously understudied areas of research that have a tremendous impact on the U.S. health care delivery system's ability to provide patients with access to high quality care. There has been significant research in recent years focused on value-based payment and the impact on quality and cost, however, prior to the creation of these centers there was minimal research examining the role of the health workforce to support the delivery of high quality care, their evolving roles in team-based care models, and how payment aligns with leveraging health care workers in the most efficient way. Similarly, there was limited research on middle- and low-skill level health care occupations that play a vital role in caring for our most vulnerable patients, including a growing aged population cared for increasingly in home and community based settings. These occupations offer important entry level career pathways for rural populations, Veterans, and those without college degrees. Funding has allowed the centers to investigate different workforce strategies for increasing access to care, such as telehealth, care coordination programs, mobile technology in the home, nurse-led clinics, and Medicaid financing of graduate medical education (GME).

Collectively, the studies funded through the HWRC cooperative agreements offer significant insights into three main themes:

- **Understanding evolving health workforce roles and team configurations**, including the effect of system-level transformation on team roles, emerging health occupations, and expanded roles for existing team members. Health systems can use this information to enhance their team capacity in pursuit of population health and value based care.
- **Spotlighting job growth and career paths in middle- and low-skilled health professions**, including estimating supply and demand, training needs, and career pathways. These findings point to the value of improving education, training and career paths for these key roles and thereby maximize their contributions across the whole care continuum.

- **Identifying workforce strategies to increase access to quality health care**, including new team configurations and provider roles, the role of technology such as telehealth and teledentistry, and other factors influencing supply and utilization of services in rural and unserved communities. Policy leaders and providers can draw from this research to develop new strategies for addressing maldistribution challenges.

As health care providers and policy makers continue to focus on improving quality and health outcomes at lower cost, this research will help them to better understand the potential to impact the supply of and demand for health care services through workforce innovations. These findings can inform workforce projection models and provide data to evaluate the long-term impact of team based care, enhanced roles for middle- and low-skill workers, and workforce strategies for increasing access to care.

The results of this research have helped to:

1. **Inform policy:** Data and findings from these studies have been used by the United States Department of Health and Human Services (HHS), SAMHSA, the Indian Health Service (IHS), the HHS Office of Minority Health, and other federal agencies, the Council on Graduate Medical Education (COGME), the Medicare Payment Advisory Commission (MedPAC), the U.S. Government Accountability Office (GAO), the National Health Policy Forum, the National Academies of Science, Engineering, and Medicine, National Governors Association, and other policy organizations.
2. **Advance research methods:** New tools and resources have been created to advance the science of health workforce research, such as the new minimum dataset for behavioral health, updated dental hygiene scope of practice index, use of natural language processing to examine real-time labor market information, and a tool for allocating GME funds to match state need.
3. **Strengthen the field of health workforce research:** Twenty-one of the studies have been published in 12 different peer-reviewed journals, including top health policy journals such as *Health Affairs* and *Health Services Research*.

4. **Educate the next generation of workforce researchers:** Twenty-four students have participated in one or more of these studies. By including residents as well as medical, nursing, health policy, public health, and undergraduate students in our work, the HWRCs have trained and mentored a future generation of researchers who will continue to build the science and shape the future of health workforce policy.

Introduction

This report is designed to provide an overview of how the collective work of the six Health Workforce Research Centers (HWRCs) has contributed to a better understanding of critical health workforce challenges.

New payment and delivery models, such as Patient Centered Medical Homes (PCMHs), Accountable Care Organizations (ACOs), and new technologies, such as Electronic Health Records (EHRs), are leading to significant workforce changes as health systems look to provide more comprehensive and coordinated care.

The federal government has the goal of tying 50% of Medicare payments to quality or value by the end of 2018.[1]

States are also increasingly focused on value-based care models for their Medicaid populations and private payers have developed ACOs and other value-based payment models with the aim of lowering cost and improving quality.

Changing payment models and the increasing recognition of the importance of addressing social determinants of health are leading to an increased focus on care coordination and integration of services, such as behavioral and oral health, into primary care. In addition, the complex health care needs of an aging population make it important to better understand the workforce implications of increased care in home and community-based settings for a population with multiple chronic conditions and other disabilities. Furthermore, as the health care systems looks to maximize efficiency, it is also important to better understand how middle- and low-skilled health professionals, who provide needed care for our most vulnerable populations, can help improve access and quality.

The HWRCs have contributed a unique perspective on these emerging workforce issues by highlighting innovations in the organization and supply of the health workforce, including developing new frameworks for evaluating team roles, new methods for measuring the impact on supply, demand, access and efficiency, and building new datasets for workforce analysis. While some of the studies focused on specific segments of the health care team (e.g. behavioral health, oral health, allied health, and the long-term care workforce), others explored system-level workforce changes that resulted from participation in ACOs and PCMHs, changing settings off care, and greater adoption of EHRs and telehealth.

Findings from these studies are presented below in three broad themes that lead to new workforce insights related to:

1. **Understanding evolving health workforce roles and team configurations, including:**
    a. The effect of system-level transformations such as PCMHs and ACOs on team roles;
    b. Emerging health occupations such as community paramedics, dental therapists, and peer specialists; and
    c. Expanded roles for existing team members, such as the role of medical assistants in care coordination and social workers in team-based care.

2. **Spotlighting job growth and career paths in entry-level health professions, including:**
    a. Estimating supply and demand of allied health, clinical non-licensed personnel, and the long-term care workforce;
    b. Training needs and requirements, looking at consistency across occupations, states and settings, and the relationship with quality of care provided; and
    c. Career pathways available and the impact on earnings potential and socio-economic well-being.

3. **Identifying workforce strategies to increase access to high-quality health care, including:**
    a. New workforce roles, such as NP-led patient centered medical homes and paying family members to provide long term care;
    b. Role of technology in improving access to care through telehealth and teledentistry; and
    c. Factors influencing supply and utilization of services in rural/underserved communities.

Additional details about the methods and findings can be found in the links to briefs, reports, and peer-reviewed publications.

THEME 1: Understanding the Evolving Health Workforce Configuration

A. The Effect of System-Level Transformations on Team Roles

Researchers examined how participation in PCMHs, ACOs, and other new models of care organization led to changes in team roles, efficiency, and integration of behavioral health and oral health with primary care. The studies included both the development of analytic frameworks to evaluate team roles and a better understanding of how the impact of these transformations varies across organizational and geographic settings.

❖ *Analytic frameworks for evaluating workforce implications of health care transformation*

UNC conducted a literature review of evolving workforce roles and identified two main categories: 1) roles focused on coordinating and managing patients' care within the health care system, and 2) "boundary spanning" functions that address the patient's health care needs across health and community-based settings. Their study points to the need to develop a better understanding of how the existing workforce could be redeployed and reconfigured to address the demand-capacity mismatch.[2] Similarly, GW developed a framework for studying drivers of health workforce innovations that helps researchers develop and test hypotheses about how particular innovations—i.e. addition of new staff members such as interpreters or social workers; new roles for existing staff; new models for multidisciplinary teams—impact such measurable outcomes as patient satisfaction and hospital admission rates and their implications in different organizational contexts.[3]

❖ *Integrating behavioral health and primary care*

UMich examined barriers and best practices for integrating behavioral health and primary care. Principal barriers include: low availability of primary care and behavioral health staff, restrictions on sharing patient information, reimbursement limitations, poor workflow, and turf issues. Best practices include: a culture of collaboration, orientation or training programs for workers, and systems for "warm hand-offs" between primary care and behavioral health providers.[4] UMich also developed key indicators for a minimum dataset (MDS) that will simplify the process to identify and track the behavioral health workforce.[5] They are currently preparing profiles of marriage and family therapists and social workers using the MDS. UW conducted a landscape analysis to identify the workforce needed to integrate behavioral

health into primary care. Models ranged from the infusion of behavioral health professionals into primary care settings to the integration of basic primary care services into behavioral health clinics. UW found that integration requires a diverse team and the composition of the team and their roles may vary considerably depending on the setting, geographic region, and conditions being addressed. Common members of the health care team to achieve integration included: physicians, nurses, psychologists, social workers, licensed professional counselors, marriage and family therapists, and peer support personnel. They found minimal guidance in the literature on the workforce needed to integrate the delivery of evidence-based substance abuse treatment in primary care settings.[6]

❖ *Use of NPs/PAs in Patient-Centered Medical Homes (PCMHs)*

Many PCMHs have been interested in deploying more nurse practitioners (NPs) and physician assistants (PAs) in team-based models of care. A GW study found that the more years of experience a community health center has with the PCMH model, the more likely they are to increase their use of advance practice staff and decrease use of physicians.[7] A UNC study examined how the roles of NPs and PAs have evolved to address the new functions in PCMHs, such as, population health and quality improvement. They found that PCMH implementation has not drastically affected the roles of primary care NPs or PAs. The majority of NPs and PAs in PCMHs report primary care provider roles, with a minority reporting supplemental roles only. The finding that NPs and PAs perform different patterns of clinical tasks in primary provider roles than in supplemental provider roles may be useful for workforce modeling their task substitution potential.[8]

❖ *Integrating social workers into teams*

A UNC study on social workers found that team-based health care (inclusive of social workers) is one of the building blocks that transforms our health care system to better address population health. An analysis of 26 randomized controlled trials indicated that when compared to usual care, integrated care provided by interprofessional teams with social workers as team members improved both behavioral and physical health of patients without increasing the overall cost of care. Findings support the use of integrated care with social workers across several populations including children, adults with chronic illness and behavioral health needs, and older adults.[9]

❖ *Integrating oral health into primary care teams*

SUNY Albany developed eight case studies that document Federally Qualified Health Center's (FQHC's) efforts to integrate oral health into primary care teams. Informants stressed that co-location of services is not equivalent to integration, though it is an important facilitator. They found that the keys to integration include: an integrated EHR and inclusion of new patient health information forms that contain questions about history of dental disease and access to a dental home. Some FQHCs embed a dental hygienist in off-site primary care practices to provide preventive and educational oral health services.[10]

❖ *Impact of EHRs on visit capacity and team roles*

Several studies examined EHRs in community health centers (CHCs) and assessed the impact on capacity and roles. A GW study examining staffing patterns in CHCs between 2007 and 2013 found that those with EHRs consistently had a higher percentage of "other" medical staff (e.g. medical assistants).[11] A subsequent GW qualitative study found that administrators and clinicians believe that EHR implementation helped facilitate team-based care and in some cases led to expanded roles for licensed practical nurses (LPNs) and medical assistants (MAs) in support of population based health. They report that EHRs create a new workflow by prompting providers to assess patients' history of smoking, need for preventive screenings, and other preventive care activities such as patient education on diet and exercise for patients with a high Body Mass Index (BMI). This study also found that many CHCs were actively engaged in creating protocols to facilitate sharing of behavioral health records with primary care teams when implementing EHRs.[12] A third GW study found that EHRs do not negatively impact staff productivity in CHCs, but in fact may improve productivity in the long run.[13] A UNC study showed that incorporating practice facilitators into care teams made it easier for rural practices with limited IT staff to meet meaningful use requirements.[14] A UCSF study focused on EHRs in long-term care facilities reported that these settings do not adequately invest in training their workers to use health information technology. Workers with longer tenure were more resistant to change. Both of these factors have contributed to a lack of evidence for productivity gains due to EHR use in nursing homes.[15]

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❖ *Care management in Accountable Care Organizations (ACOs)*

A GW study focused on inpatient care suggests that, contrary to expectations, hospital participation in ACOs did not increase hours for care coordinators, case managers, patient educators, or risk managers. Furthermore, hospitals participating in ACOs have lower levels of LPN and APN staffing compared to non-ACO hospitals. It will be important to continue to explore these relationships and the impact on quality and efficiency.[16]

❖ *Less restrictive dental hygienist scope of practice laws associated with better oral health*

Dental hygienists are in a prime position to contribute to the transformation of oral health care given their training on oral health promotion, patient education, oral disease prevention, risk assessment, evidence-based disease management, and referral services that are within their professional competence.[17] Given the significant changes in dental hygienist roles over the past decade, SUNY Albany updated their matrix for assessing state scope of practice laws for dental hygienists. This enabled them to demonstrate that states with less restrictive scope of practice laws for dental hygienists had better oral health outcomes.[18]

❖ *Variation in productivity by staffing patterns*

GW examined visit rates at CHCs using four different staffing configurations (typical, high advanced-practice, high nurse, and high other medical). The study found productivity per staff person was similar across the four staffing patterns, with physicians making the greatest contributions to productivity. The study, however, also showed that advanced-practice staff, nurses, and other medical staff make significant contribution to productivity. The findings suggest that other group medical practices could incorporate more non-physician staff without sacrificing productivity and thus profitability.[19]

B. Emerging Occupations

New jobs are emerging in support of value-based care models. Many of these jobs, such as community health workers (CHWs) and community paramedics are "boundary spanning" roles that address patients' health care needs across health and community-based settings. The growing recognition of the importance of addressing behavioral health needs and social determinants of health, such as low health literacy and transportation challenges, has helped to fuel the interest in these new career paths. Other new professions, such as dental therapists, are emerging as a way to increase access to care in underserved populations. Still others, such as practice facilitators, are being created to help ensure that providers have the needed skills and resources for successful implementation of new models of care. Below are examples of key findings from the HWRCs related to emerging occupations.

❖ *Community health workers (CHWs)*

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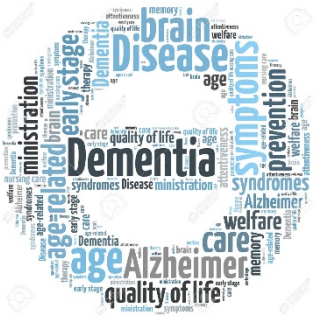
CHWs have been around since the 1960's but are experiencing a surge in demand in response to the growing recognition of the importance of addressing social determinants of health. GW examined 76 programs using CHWs and found a shift in employment settings from community-based organizations to hospitals and health systems where they are more likely to work out of clinical settings. The authors identify areas in which additional competencies should be considered to ensure that CHWs retain their unique role, while also integrating into health services.[20]

❖ *Community paramedics (CPs)*

Several states are piloting the use of community paramedics as a way to prevent patients at risk for repeat emergency room visits from having to call 911 as well as utilizing CPs to address the needs of an older population needing long term care services. UCSF conducted a landscape analysis on this new model of care that trains paramedics to provide an array of interventions, such as chronic disease management, home visits, and hospital discharge follow-up in addition to providing acute post-hospital care on an as-needed basis.[21]

❖ *Dementia care workforce*



A UCSF study highlights the need for a dementia-care capable workforce to serve an increasing number of people with Alzheimer's disease and related dementias (ADRD) and their caregivers. State level dual eligible demonstration projects included requirements for a dementia care workforce but few programs included specific descriptions of core competencies, skills, or required training.[22]

❖ *Dental therapists (DTs)*

Three states (Minnesota, Alaska, and Maine) license DTs as a strategy for increasing access to dental services for underserved communities. DT is an innovative dental career pathway that is often labeled as "midlevel" practice because the skills and competencies in which DT professionals are trained allow them to both substitute for and supplement practice by a dentist in basic restorative therapy. SUNY Albany profiled an FQHC in Minnesota where use of a dental therapist to provide simple restorations allowed greater flexibility for task shifting, such as covering simple restorations when a demanding emergency case was diverted to the dentist.[10]

❖ *Doctor of Nursing Practice (DNP)*

The American Association of Colleges of Nursing (AACN) spearheaded efforts to create the Doctor of Nursing Practice (DNP) degree to address the shortage of nursing faculty in academia and to improve clinical care. UNC conducted a study to examine the outcomes and found that the DNP-prepared nurse has the potential to be a flexible worker that can supplement clinical care and leadership vacancies; however, the full actualization of the role of the DNP-prepared nurse has not been achieved because the role is still relatively new in most organizations and is still evolving.[23]

❖ *Peer specialists*

UW found that peer specialists (who have experienced mental health or substance misuse) are being integrated in the behavioral health team and can serve as case managers or health and wellness coaches who help patients establish positive health management techniques that promote well-being and recovery.[6] In a related study, UCSF found as peer providers achieve a higher profile and greater legitimacy in the behavioral health workforce, there are concerns that standardization and professionalization of the role might jeopardize the special components of peer support that speak to lived experience. Training requirements vary by state; 40 states have statewide certification for mental health and one third for substance use disorders.[24]

❖ *Practice facilitators*

The growing emphasis placed on primary and preventive care to reduce costs will require a consistent rise in the sophistication of delivery mechanisms within the primary care practice

setting. UNC conducted a study to examine the use of practice facilitators —also called practice support coaches or quality improvement coaches—and found evidence that practice facilitation can improve quality, access to care, and patient satisfaction as organizations adapt to new meaningful use requirements and other payment changes.[12]

C. Expanded Roles

The move to team-based care is leading organizations to expand roles for existing team members as a way to better meet patient needs and thereby enable team members to practice at the top of their education and experience. As previously discussed, implementation of new payment and delivery models such as ACOs, PCMHs, along with EHRs are spurring and facilitating many of these changes. Some roles are being enhanced through new integration into primary care, as is increasingly happening with behavioral health and oral health. Below are some of the HWRCs' key findings related to expanded roles for existing team members.

❖ *RN, SW, LPN, and MA roles in care coordination*

Care coordination is viewed as a key element of reducing cost and improving health outcomes for high cost patients. UCSF and GW explored the care coordination workforce at four sites engaged in accountable care organizations (ACOs) and other risk-based models. They found sites were increasing delegation of low risk care coordination activities to LPNs and MAs to enable time for RNs and social workers to provide more intensive care management and case management services for high risk patients. Funding a care coordination workforce remains challenging even in value-based payment models.[25] A GW study of EHRs shows that EHRs are helping to facilitate these expanded roles.[12]

❖ *Physical (PTs) and occupational therapists (OTs)*

UNC examined the use of PTs and OTs among Medicare patients following a stroke. Authors found that patients seen at hospitals with higher RN staffing levels and living in counties with greater primary care provider (PCP) supply were more likely to receive therapist care in the inpatient and outpatient settings, to have continuity of care across the inpatient and outpatient setting, and to receive early therapist care in the home and outpatient setting. As hospitals move toward ACOs and bundled payments that include both acute and post-acute care, strengthening continuity of therapist care across settings may be particularly useful in preventing hospital readmission and other downstream health care costs.[26]

❖ *Behavioral health competencies*

UMich examined behavioral health competencies across multiple behavioral health professions and found competencies related to professionalism and science, knowledge, and methods and are most commonly emphasized across disciplines. Although changes to competency authority may strengthen overall health workforce capacity, potential barriers to

changes may include: resistance from behavioral health professionals who are reluctant to expand capacities without increase in pay and a lack of empirical literature detailing the types of competency changes leading to high quality and effective professionals.[27]

❖ *Physician assistants (PAs) in oral health*

SUNY Albany examined physician assistant training around oral health and found that three out of four PAs (75%) received didactic and/or clinical instruction in oral health during PA training. PAs who received education in oral health and disease were nearly three times more likely to provide oral health services in their clinical practice, compared to those who did not receive any education in oral health competencies.[28]

❖ *Physician assistant (PA) and nurse practitioner (NP) role changes*

UNC investigated changes in NP and PA specialty distribution in North Carolina between 1997 and 2013. The proportion of PAs –but not NPs– reporting practice in primary care dropped significantly. PAs were more likely than NPs to report practice in urgent care, emergency medicine, and surgical subspecialties. The study noted that physician workforce models need to account for the different and changing specialization trends of NPs and PAs.[29]

❖ *Roles of social workers in team-based care*

UNC found social workers performed three primary functions in team-based care models: 1) providing clinical interventions for patients with behavioral health problems; 2) managing care plans for patients with chronic conditions; and 3) engaging community resources on behalf of patients.[9]

THEME 2:
Spotlighting Job Growth and Career Paths in Middle- and Low-skill Health Occupations

Health care occupations are among the jobs with the fastest projected growth rate over the next decade, according to the U.S. Bureau of Labor Statistics (BLS). Many of these occupations are considered allied health occupations, such as physical therapy assistants/aides, occupational therapy assistants/aides, and home health and personal care aides. These positions are accessible entry points for a health care career given their low education requirements. Although the pay is low for many of these middle- and low-skill health occupations, they serve an important role for our most vulnerable populations, such as the elderly who need home health aides or personal care aides to assist with activities of daily living. Other middle- and low-skill occupations, such as clinical non-licensed personnel and dental assistants, provide additional support to busy dental offices and nursing staff in hospitals and may play an important role in helping to contain costs or address staffing shortages. It is important to understand who is filling these roles, the training needed to enter the field, the extent to which they substitute for other care team members versus provide supplement care, and the potential career advancement opportunities available to these large and high demand professions. Below is a summary of key HWRC findings related to middle- and low-skill health occupations.

A. Estimating Supply and Demand

Researchers used multiple data sources to develop more robust estimates of the available health workforce supply, demand for services and new data collection strategies for improving the ability to track growth in these professions.

- ***Estimating the supply of nine allied health occupations***

  UW examined multiple data sources to assess the supply and characteristics of nine allied health occupations: occupational therapists, physical therapists, respiratory therapists, speech-language pathologists, clinical laboratory technologists/technicians, dental hygienists, diagnostic-related technologists/technicians, medical assistants, and social workers. National workforce supply estimates from the American Community Survey (ACS), Current Population Survey (CPS), and Occupational Employment Statistics (OES) survey were generally comparable for the nine selected occupations. Estimates based on data from the National Provider Identifier (NPI) Registry were smaller and not available for some occupations. Social workers and MAs were the largest groups among the occupations studied. OTs and respiratory therapists were the smallest.[30]

❖ *Declining use of clinical non-licensed personnel*

Hospitals are under pressure to control costs and improve quality at a time of potential shortfalls among clinical professionals, such as nurses and licensed allied professionals.[31] In this context, GW examined trends in nursing-related clinical non-licensed personnel (CNLP) employed in hospital settings, including three new jobs not studied in earlier CNLP research (MAs, monitor technicians, and surgery technicians) and found CNLP and LPNs declined over a five-year period while RN staffing levels remained stable. They found no evidence of substitution between CNLP and nurses during the study period.[32]

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❖ *High demand for long-term care (LTC) workforce*

With an aging population, it becomes increasingly important to understand the LTC workforce. UCSF found the top two LTC occupations were home health and personal care aides (1,345,100 jobs) and certified nursing assistants (784,006 FTEs). They projected demand for LTC under a variety of scenarios, each of which pointed to high growth in demand for middle- and low-skill LTC occupations, which will necessitate greater attention to supply, training, and retention.[33]

B. Training Needs

For nearly all of the middle- and low-skill professions examined, training requirements were inconsistent across states and had minimal specifications regarding competencies needed for the roles. Several of the studies pointed to the value of improving training standards.

❖ *On-the-job care coordination training for LPNs/MAs*

LPNs and MAs are assuming increasing roles in team-based care models, including supporting care coordination activities in post-acute care and/or to address the social determinants of health. A UCSF and GW study revealed that care coordinators, and the teams they work with, do not necessarily need prior care coordination experience or certification. Health care organizations are providing on-the-job training on motivational interviewing, team-based care, and more. This is leading to significant duplication of effort as each develops their own curriculum and training programs. Several of the organizations interviewed are now working with local nursing schools to better coordinate nursing training and practice needs.[25]

❖ *Training requirements for dementia care coordinators*

UCSF found experience and training requirements for dementia care coordinators are often broadly defined, with little specificity regarding required competencies or training content. Contractual agreements between CMS, states, and managed care plans require dementia-capable care but few provided detailed description, some noting that specificity could contribute to a shortage of qualified workers.[22]

❖ *Training standards for Medicaid-funded personal care aides (PCAs)*

7 Leader States

1. Alaska
2. Arizona
3. Arkansas
4. Idaho
5. Minnesota
6. Virginia
7. Washington

Some patients are turning to PCAs as a strategy for staying in their homes versus going to a nursing home. UCSF examined the training requirements for PCAs across states and found they are underdeveloped compared with standards for other health professions such as home health aides and certified nursing assistants. A separate UCSF report highlights seven "leader states" in training standards for Medicaid-funded PCAs that have engaged in a rational approach to designing PCA training standards with the goal of better preparing these essential frontline workers to provide care. The report showcases these standards and describes, in brief, the approaches several states have taken to address the need for uniform and rigorous PCA training standards across Medicaid programs.[34]

❖ *Practice facilitation training programs*

A UNC study found that the growing and emerging field of practice is strengthened by the diversity of the prior professional experience that facilitators bring to their roles, but strong training and support mechanisms must be in place to retrain our existing workforce. Practice facilitation training programs must be strong, but agile, to keep pace with the growing breadth of skills required for primary care practices to succeed in the changing health care environment. The cost of maintaining such programs may be well worth it if they are able to help the traditional healthca re workforce achieve the goals of higher quality of care at a lower, more sustainable, cost that appear out of reach today.[14] In a related study, UCSF found that nursing homes generally lacked systematic processes for HIT implementation and underinvested in training the workforce in documentation skills.[15]

C. Career Pathways

Several studies examined career pathways available for entry and advancement into allied health, oral health, long-term care, and nursing, with some focusing explicitly on the socio-economic wellbeing of workers across health care occupations. These studies identify important barriers and challenges faced by Veterans, racial and ethnic minorities, and immigrants seeking to enter, maintain, or advance in middle- and low-skill jobs in health care. The studies provide evidence that a large segment of our health care workforce that cares for our most vulnerable populations are vulnerable, too, and reliant on federal or state assistance programs.

❖ *Allied health as a career path for Veterans*

UW conducted two studies on the career paths for Veterans. They found that allied health occupations requiring less than a Bachelor's degree are common entry points for young

veterans returning from service. However, many barriers discourage Veterans seeking to transition their military health care experience into civilian health care jobs, including navigating complex benefits, translating military education and training to meet civilian academic requirements, meeting credentialing requirements, and overcoming limited communication and knowledge about career opportunities.[35,36]

❖ *Role of immigrants in the allied health workforce*

UW examined the jobs in which immigrants (naturalized citizens and noncitizens) are most often found, and how their characteristics compared to their U.S. citizen counterparts. They found a potential mismatch in the education of the immigrants holding an allied health job and the entry-level requirements of that occupation. The findings raise concerns about the potential loss of human capital that may be arising due to unclear career pathways for immigrants.[37]

❖ *Variation in dental assistant training and careers*

SUNY Albany profiled this middle- and low-skill dental profession which involves both clinical and administrative duties and found the pathway to dental assisting ranged from on the job training to formal accredited education programs culminating in an associate degree. Allowable tasks differ by state and in some instances are decided by employing dentists. Many states recognize expanded function dental assistants (EFDAs) which typically requires extra training and competency testing to conduct tasks such as dental radiography or applying sealants.[38]

❖ *Relationship between earnings potential, educational attainment, and socioeconomic wellbeing*

UW explored the socio-economic wellbeing of workers across health care occupations in a couple of their studies. UW found that, in general, higher educational attainment was associated with higher earnings. There is a potential mismatch between skill and occupation; for example, over half of the individuals working in occupations requiring a high school degree or less attained more than a high school level of education. Despite working in health care settings, individuals across all education categories lacked health insurance ranging from 3.8% among those working in jobs requiring a bachelor's degree to 15.6% among those working in jobs requiring a high school degree or below. Uninsured rates were significantly higher among part-time workers in ambulatory and long-term care settings. Among those in occupations requiring a high school degree or below, 26.3% relied on the Earned Income Tax Credit, 18.2% relied on Medicaid, and 18.7% relied on the Supplemental Nutrition Assistance Program. LTC settings had the highest proportion of individuals working in occupations requiring a high school degree or less, and 80% of these individuals relied on one or more state/federal assistance programs.[39]

Almost two-thirds of health care occupations in this study required less than a bachelor's degree for entry, consistent with statistics that the majority of health care occupations are low- to middle-skilled.

❖ *Long-term care (LTC) workforce entry and exit*

In a study of exits and entry into the LTC workforce, UCSF found that nearly all LTC workers were women and a large share of the LTC workforce lives in poverty. Many who leave LTC jobs - especially those with lower skill levels - become unemployed or leave the labor force. In order to improve recruitment and retention of LTC workers, as well as address the high rate of poverty and lack of upward mobility of many LTC occupations, employers, educators, and policymakers should consider investments in education and training. Such investments will help to ensure an adequately trained workforce in LTC, as well as support improved retention of LTC workers.[40] A related study by UCSF found that LTC workers more often provided eldercare to family members or friends several times per month or even daily, suggesting they may be providing such care both professionally and informally, potentially exacerbating the risk of burnout in this group of workers.[41]

❖ Changing education of the LPN workforce

The LPN workforce has key roles in long-term care, hospitals, and other settings. UCSF examined changes in the education of LPNs over a 15-year period, and found that the number of people completing LPN education increased 64% from 1998 to 2013. During this time, there was particularly rapid growth in graduations from for-profit LPN education programs, with these programs accounting from only 8% of graduations in 1998 but 24% in 2013.[42]

> The numbers of African Americans, Hispanics, and Asians completing LPN education programs have grown more rapidly than the number of Whites completing LPN education and they are more likely than Whites to complete for-profit LPN education programs.

❖ *Predicting career transition from LPN to RN*

One potential avenue for addressing the Institute of Medicine Future of Nursing Report's call for an 80 percent increase in RNs by 2020, is to support LPNs with completing training to become an RN. UNC examined the predictors of those transitioning from LPNs to RNs and identified potential policy solutions for hospitals and others to consider, such as, educating LPNs about how to make the transition, creating incentives for hospitals to support LPNs in transitioning to RNs, and changing the mindset about the value of LPNs becoming RNs through focused discussions at national meetings.[43] In a related study on LPNs, UCSF found that the number of LPNs employed by hospitals has decreased significantly while the number employed in long-term care settings has increased. Within the LTC sector, LPN employment has grown most substantially in home health care settings. The authors also report important differences in LPN employment patterns across the U.S. and between metropolitan and non-metropolitan areas.[41]

❖ *Physician assistants with allied health background*

UW examined matriculating students into PA programs across the U.S. to identify the characteristics associated with those who are more likely to enter primary care. UW found that those who worked in an allied health occupation prior to entry of the PA program were more likely to express intent to work in primary care.[44]

THEME 3:
Identifying Workforce Strategies to Increase Access to High-Quality Health care

Another key area of focus for the HWRCs is to understand opportunities and challenges for improving access to health care services through different workforce strategies. The solutions explored ranged from studying how physicians substitute for each other in areas of specialty shortages (what UNC sometimes refers to as "plasticity") to the impact of using technology to improve access, such as remote monitoring, telehealth, and teledentistry solutions.

A. New Team Models and Staffing Arrangements

Several of the studies explored workforce strategies for expanding access to care in rural areas and addressing increasing demand for particular services, such as palliative care, through team based care and other workforce staffing arrangements, such as nurse-led patient centered medical homes.

❖ *NP-Led Patient Centered Medical Homes (PCMHs)*

Findings from a GW study suggest that NP-led PCMHs fill an important gap in access to primary care by enhancing NPs' ability to serve vulnerable populations in rural and medically underserved areas. Policy and program leaders may wish to identify ways to spread the NP-led PCMH models and advance to Level 3 status.[45]

❖ Team-based palliative care

Palliative care aims to support the quality of life of patients and family caregivers facing serious illness, regardless of whether the patient is expected to recover. Two-thirds of hospitals with over 50 beds now have a palliative care program. UCSF analyzed national data to assess whether there are important staffing differences by program characteristics, hospital characteristics, or region. They found that only 25% of programs have the complete interdisciplinary team recommended for quality for palliative care services, concluding that rapid and sustained efforts in education, financing, and health systems management will be required to prepare the US health workforce to meet the palliative care needs of a growing aging population.[46]

❖ *Behavioral health in rural areas*

UMich examined behavioral health service delivery in underserved areas and found numerous workforce limitations, including: 1) a need for more provider training, particularly around addressing cultural and language barriers between patients and providers; implementing

integrated care models; management; and leadership development, 2) concerns about adequacy of the workforce pipeline - larger, more qualified candidate pools are needed to fill positions, and 3) a need for recruitment incentives such as flexible work hours or financial incentives to attract providers to rural populations.[47]

❖ *Paying family members to provide LTC*

UCSF found that paying family members to provide care and paying higher wages may be keys to stabilizing the LTC workforce and improving continuity of care. Further, elder and disabled minorities who do not have family members to provide care likely need additional support to reduce turnover among their PCAs.[40]

B. Role of Technology in Improving Access

Telehealth is increasingly viewed as an option for improving access to care for underserved populations in areas of provider shortages.[48] Others point out that technology such as remote patient monitoring can improve efficiency and help address workforce shortages.[49] Several of the HWRC studies examined use of technology, looking at staffing models used to support remote patient monitoring, the impact of state policies on use of telehealth, and case studies for increasing access to dental services through teledentistry.

❖ *Remote monitoring technology*

Remote monitoring technologies are being deployed to enable health professionals to monitor patients more closely and intervene more quickly when patients' health deteriorates. Remote monitoring programs are intended to support those with long-term care needs and chronic conditions when they prefer to remain at home. UCSF research found that the most common remote monitoring staffing model is for registered nurses (RNs) to have a central role, because they are able to make adjustments to medications and other care plans following standardized protocols. The most successful remote monitoring programs leverage the skills of other health workers as well, including home health aides who help clients use remote monitoring systems at home, health information technology workers who install systems and teach clients how to use them, and physicians who develop protocols in collaboration with other team members.[50]

❖ *Use of telehealth/teledentistry in rural/underserved communities*

GW found that National Health Service Corps-approved sites located in states with more favorable telehealth coverage and reimbursement policies were more likely to use telehealth,

as were providers located in states with telehealth grant funds.[51] SUNY Albany looked specifically at teledentistry, an emerging modality for delivering oral health services to populations with significant difficulty finding services. They prepared six case studies of teledentistry programs that outlined strategies for increasing access to general and specialty dental services.[52]

C. Relationship of Training Location and Other Factors Influencing Supply and Utilization

Underserved communities are looking for new strategies for increasing their provider supply, particularly those that will increase the diversity of the workforce. Studies in this section several supply options for increasing access to high quality care by examining rural training programs and Medicaid funding of residencies as a way to address maldistribution; documenting ongoing challenges in diversifying our workforce; exploring options for mitigating shortages with the existing supply; and illustrating the important role of Medicaid coverage and an adequate supply of providers that accepts Medicaid in preventing use of avoidable emergency services.

❖ *Dental clinical rotations as a pipeline for FQHCs*

SUNY Albany found that dental student externships and dental residencies serve as a pipeline for FQHCs to hire new dentists. It appears that participation in these clinical rotations is alleviating some of the difficulties encountered by FQHCs in recruiting dentists to work in the safety net.[53]

❖ *Medicaid funding of graduate medical education (GME)*

2017 HSR Special Issue

Medicaid funding is playing an increasingly important role in states looking to address maldistribution challenges through GME. A UNC study found that state approaches to reforming GME funding include better leveraging Medicaid dollars to capture the federal match; pursuing 1,115 waivers to modify federal rules for allocating Medicaid funds; and allocating state appropriations to create GME innovation pools, fund rural rotations, and/or provide seed money to fund new residencies or expand existing programs. Most states created some type of oversight body to bring stakeholders together. While often advisory only, these oversight bodies included broad representation that helped navigate competing stakeholder interests and played a critical role in educating the legislature about GME. Congressional proposals to expand Graduate Medical Education (GME) have set a goal of funding 3,000 new GME slots for five years for a total of 15,000 new residency positions. UNC developed a methodology to show how data from a workforce projection model could be used to target GME expansions to states and specialties facing the biggest shortages.[54]

❖ *Medicaid coverage of dental services*

SUNY Albany compared Medicaid coverage of dental services in NY and OK and found that even in New York, where enrollees have extensive dental benefits, utilization of dental services remains quite low. These findings suggest that the supply of dentists participating in state Medicaid programs, coupled with an adequate adult dental benefit in Medicaid, is predictive of lower use of emergency departments for avoidable dental conditions. In New York, the number of people served in emergency departments for dental complaints decreased concomitantly with an increasing supply of participating dentists. In contrast, in Oklahoma, in which Medicaid covers only urgent dental services, utilization of emergency departments increased as the supply of dentists participating in the Medicaid program increased.[55]

❖ *Workforce diversity*

Several HWRC studies point to ongoing challenges with diversifying the health workforce. SUNY Albany found the under-represented minority dentist workforce is disproportionately smaller and unevenly distributed in relation to minority populations in the U.S.[56] UMich conducted a study of behavioral health providers in Michigan and found that racial and ethnic minorities were less likely to report having advancement opportunities.[57] While there are some promising practices to support a diverse workforce, there is limited evidence on the long-term outcomes of these programs to help support the career pathways of people of color.[58] UCSF research highlighted the increasing diversity of the LPN workforce, many of whom provide long-term care services in facilities and homes.[41]

UW found that occupations requiring a high school degree or below had the highest percentage of people of color.

❖ *Predicting physician migration*

2017 HSR Special Issue

A UNC study found that visit rates were an important predictor of a physicians' likelihood of changing practice location, which enables simulating physician migration under various policy scenarios that affect utilization, such as, expansion in coverage or decreases in utilization due to increased telemonitoring.[54] A separate UNC study found that a substantial portion of primary care physicians were "diffusing" from urban places to rural, but also, returning to urban places from rural places. Physicians who recently completed a residency or attended a public (state-supported) U.S. medical school had a greater likelihood of moving from any urban place to a rural underserved area. Females and medical specialists were less likely to move to underserved areas—despite the fact that females, overall, were more likely to move from one county to another relative to males.[59]

❖ *"Plasticity" of specialty care in areas of shortage*

UNC analyzed Medicare claims data to simulate how a change in the supply of gastroenterologists and cardiologists affected which provider type provided particular GI or cardiology services. They found situations where the outpatient specialty care needs of rural communities are partially met by other local physicians when there are local shortages of

specialists as well as cases where they are not met by other local physicians. Contrary to what was anticipated, visits to primary care physicians for GI and cardiology conditions did not increase in response. These data provide evidence that physicians of some specialties do, indeed, mitigate part of the visit shortfall when there are shortages of physicians of other specialties, but not necessarily for all specialties and/or all medical conditions.[60]

Conclusion

The collective work of the six HWRCs funded through cooperative agreements with HRSA, offer a rich body of research that informs national understanding of the workforce implications of health care transformation and efforts to improve access to high quality care for underserved populations. The studies investigate emerging models of care, such as patient-centered medical homes and increased integration of oral and behavioral health. They also shine a spotlight on career pathways for middle- and low-skill health professions and examine the competencies and training needed, the extent to which these the roles substitute for other care team members versus supplement care, and the potential career advancement opportunities available to these large and high demand occupations. The studies also shed new light on emerging workforce strategies for improving access to high quality care, such as telehealth and nurse-led medical homes. Ultimately, these studies, together with the work of the HWTAC, serve to advance the science of workforce analysis and create a strong, accessible body of research that will be a point of reference for future researchers and policy leaders seeking workforce information and strategies that will improve access, quality, and health outcomes.

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Appendix A: Peer Reviewed Journal Articles

Academic Medicine

1. Fraher EP, Ricketts TC, Lefebvre A, Newton W. The Role of Academic Health Centers and Their Partners in Reconfiguring and Retooling the Existing Workforce to Practice in a Transformed Health System. Academic Medicine. 2013; 88(12):1812-1816.

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Appendix B: HWRC Infographic

HEALTH WORKFORCE RESEARCH CENTERS (HWRC)

The six HWRCs and the technical assistance center support research to assist decision-makers at federal, state, and local levels to better understand health workforce needs.

Collectively, the HWRCs have accomplished the following:

- **GEORGE WASHINGTON UNIVERSITY HWRC - FLEXIBLE & NOVEL USE OF WORKERS (2013)**
  Focused on improving health care delivery and efficiency.
- **UNIVERSITY AT ALBANY, STATE UNIVERSITY OF NEW YORK HWRC - ORAL HEALTH (2014)**
  Focused on improving the nation's oral health services.
- **UNIVERSITY OF CALIFORNIA, SAN FRANCISCO HWRC - LONG-TERM CARE (2013)**
  Focused on preparing the health workforce to meet the nation's long-term care needs.
- **UNIVERSITY OF MICHIGAN HWRC - BEHAVIORAL HEALTH (2015)**
  Focused on promoting a skilled behavioral health care workforce.
- **UNIVERSITY OF NORTH CAROLINA HWRC - FLEXIBLE & NOVEL USE OF WORKERS (2013)**
  Focused on emerging roles of healthcare workers to support health system transformation.
- **UNIVERSITY OF WASHINGTON HWRC - ALLIED HEALTH (2014)**
  Focused on building the health workforce through allied health professions.
- **UNIVERSITY AT ALBANY, STATE UNIVERSITY OF NEW YORK - TECHNICAL ASSISTANCE (2013)**
  Focused on supporting informed workforce planning and development.

PROFESSIONS

Explored **38** different health occupations.

PUBLICATIONS

Published **22** peer-reviewed manuscripts.

2016 *Health Affairs* Editor's Pick

JOURNALS

Feb. 2017 *Health Services Research* special issue.

Published manuscripts in **12** different journals.

REPORTS

Completed **66** research reports.

STUDENTS

24 students participated in research studies.

PRESENTATIONS

Made **60** presentations of their work

2016 AcademyHealth Best Workforce Abstract

Health Workforce Research Centers (HWRCs)

Between 2013 and 2015, the Health Resources and Services Administration's (HRSA) Health Workforce Research Center (HWRC) Cooperative Agreement Program funded six research centers and one technical assistance center to strengthen the public's understanding of health workforce and inform health workforce policy discussions at the national, state, and local levels.

Collectively, the six HWRCs have conducted nearly 70 studies that serve to advance the science of workforce analysis and create a strong, accessible body of research around three main themes:

- **Understanding evolving health workforce roles and team configurations**, including the effect of system level transformation on team roles, emerging health occupations, and expanded roles for existing team members. Health systems can use this information to enhance their team capacity in pursuit of population health and value based care.
- **Spotlighting job growth and career paths in middle- and low-skilled health professions**, including estimating supply and demand, training needs, and career pathways. These findings point to the value of improving education, training and career paths for these key roles and thereby maximize their contributions across the whole care continuum.
- **Identifying workforce strategies to increase access to quality healthcare**, including new team configurations and provider roles, the role of technology such as telehealth and teledentistry, and other factors influencing supply and utilization of services in rural and unserved communities. Policy leaders and providers can draw from this research to develop new strategies for addressing maldistribution challenges.

Ultimately, these studies, together with the work of the HWTAC, serve to advance the science of workforce analysis and create a strong, accessible body of research that will be a point of reference for future researchers and policy leaders seeking workforce information and strategies that improve access, quality, and health outcomes.

Additional details about the HWRC studies can be found in the report **Health Workforce Research Centers (HWRCs) Key Findings, 2013-2016**: http://www.gwhwi.org/hwrc.html

Appendix C: Technical Assistance Center

Health Workforce Technical Assistance Center

The Health Workforce Technical Assistance Center (HWTAC) provides technical assistance to organizations that engage in health workforce planning and part of that assistance involves disseminating health workforce research. HWTAC has a variety of resources designed to support health workforce planning, including an extensive library of webinars, reports, and resource briefs. The HWTAC webinar series has proven to successfully provide relevant information to health workforce planners and policy makers and to promote health workforce research, especially the work of the other HWRCs. HWTAC has conducted almost 30 webinars to date and they are all available online for viewing. HWTAC also monitors the collection of health workforce data by organizations in states across the country. The state data collection inventory, housed on HWTAC's website, includes findings from a survey of states on data collection strategies used to collect information on the supply, demand, and education of the health workforce, as well as examples of the questionnaires used to collect the data. Forty-seven organizations in 36 states are currently in the inventory. In addition, HWTAC provides technical support to individuals and states using HRSA's web-based nursing supply and demand model. Assistance is provided in the form of webinars, live demonstrations, and technical assistance to individual users. For more information, visit www.heatlhworkforceTA.org.

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For More Information

- **George Washington University HWRC**
  Director: Patricia Pittman
  Deputy Director: Clese Erikson
  http://www.gwhwi.org/hwrc.html

- **University at Albany, State University of New York HWRC**
  Director: Jean Moore
  Deputy Director: Margaret Langelier
  http://www.oralhealthworkforce.org/

- **University of California, San Francisco HWRC**
  Director: Joanne Spetz
  Deputy Director: Susan Chapman
  http://healthworkforce.ucsf.edu/

- **University of North Carolina, Chapel Hill HWRC**
  Director: Erin Fraher
  Deputy Director: Thomas Ricketts
  http://www.shepscenter.unc.edu/programs-projects/workforce/projects/carolina-health-workforce-research-center/

- **University of Michigan HWRC**
  Director: Angela Beck
  Deputy Director: Matthew Boulton
  http://www.behavioralhealthworkforce.org/

- **University of Washington HWRC**
  Director: Bianca Frogner
  Deputy Director: Susan Skillman
  https://depts.washington.edu/fammed/chws/health-workforce-research-center-on-allied-health/

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