Use of Apprenticeship to Meet Demand for Medical Assistants in the U.S.

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KEY FINDINGS

Medical assistants (MAs) are key members of the health care team and are assuming new and expanded roles amid health care delivery transformation. Some health care employers are turning to apprenticeships to meet their MA workforce needs. We conducted a literature review and semi-structured phone interviews in 2018 and early 2019 with key personnel involved with registered MA apprenticeship programs in 12 states. Interviews explored program origins, delegated responsibilities, and resources and challenges with starting and maintaining MA apprenticeship programs.

Interviewees for this study identified 23 active MA apprenticeship programs and one program in development across 12 states. Programs were found in a variety of health care settings, including community health centers, school-based clinics, tribal health centers, hospital systems, and hospice care among others. Programs ranged in size from one apprentice in training per year to multiple cohorts of 20 apprentices per year.

Interviewees reported multiple reasons why employers considered apprenticeship to meet their MA workforce needs

- MA apprenticeship programs were implemented when demand for MAs outpaced what traditional education programs were able to produce or needed MAs with specific skills to fill new roles.
- Other employers desired their incumbent MAs to be credentialed through an organization offering national certification to meet state or federal requirements.
- Some employers had previous experience operating an apprenticeship program in other health care occupations before implementing them for MAs.
- Government support through federal and state grants promoted and supported MA apprenticeship programs.

MA apprenticeship programs demonstrated considerable flexibility in structure

- MA apprenticeship programs are sponsored by health care employers as well as intermediary organizations that implement their programs with one or more employers. Intermediary organization sponsors include industry associations, regional workforce development agencies, and non-profit educational institutions.

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KEY FINDINGS *continued*

- Most MA apprenticeship programs focused on training and upskilling incumbent workers who were already employed by the organization. Programs that recruited apprentices from outside the organization established specific eligibility requirements.
- Sponsors structured job-related didactic instruction and on-the-job learning components using both front-loaded and traditional models.
- In a front-loaded model, all didactic instruction is completed before starting on-the-job learning. In a traditional model, apprentices complete didactic instruction and on-the-job learning simultaneously.
- Both time-based and competency-based approaches were used by different programs to track apprentice skill acquisition and progression.
- Most sponsors partnered with local and regional community colleges to deliver didactic instruction, but some used online instruction programs and others developed their own curriculum.
- While mentors played a critical role during on-the-job learning, few sponsors or employers mentioned offering formal training to prepare mentors for their role.
- Partnerships with state government, local and community colleges, and workforce development agencies helped to identify financial support to implement MA apprenticeship programs.

Interviewees described multiple barriers and facilitators that influence the adoption, maintenance, and expansion of MA apprenticeship programs

Barriers

- Some health care employers are still hesitant about adopting an apprenticeship approach because of concerns about workforce unionization and resistance from other health care professionals in their organization.
- Strong economic conditions made it challenging to recruit apprentices because employment opportunities in other industries paid competitive wages without the training requirements.
- Managing an apprenticeship program required administrative resources. Sponsors and employers needed adequate resources and personnel to administer and manage an apprenticeship program.
- Employers often faced difficulties finding and preparing mentors within their organization to train and support apprentices during on-the-job learning.
- Most interviewees expressed having insufficient financial resources to sustain and expand apprenticeship programs.

Facilitators

- Programs were most successful when employers were committed to apprenticeship and viewed it as a long-term, organizational investment.
- Regular and consistent communication among all apprenticeship partners was important for maintaining programs.
- Pre-apprenticeship education programs prepared apprentices for success by helping prospective apprentices develop good study habits and sharpen academic skills prior to starting the MA apprenticeship program.

MA apprenticeship programs are a relatively new and flexible approach to meeting health care employer workforce demand. This study illustrates the range of approaches being used to develop the MA workforce across the U.S. through apprenticeship. The majority of interviewees stated that employers used apprenticeship to upskill and train incumbent workers for the MA position, creating a pathway into new roles. However, apprenticeship is not an immediate panacea to solving gaps in MA workforce recruitment and training. This study found that MA apprenticeship programs supplement—rather than supplant—traditional MA education programs offered through public and private community and technical colleges. Apprenticeship requires financial investment from employers over a period of time before benefits are realized.

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INTRODUCTION

Medical assistants (MAs) are listed among the 20 fastest-growing occupations in the United States, with their employment projected to grow by 29% between 2016 and 2026 ("Occupational Outlook Handbook, Medical Assistants," 2019). This growth is fueled by increasing demand for primary care services and organizational restructuring to reduce health care costs and shift tasks to lower-cost health care workers (Appelbaum & Batt, 2017; Frogner, Spetz, Parente, & Oberlin, 2015). However, as a signal that supply may not be keeping up with demand, some health care employers report difficulty filling MA positions (Coleman & Zorn, 2015; Washington's Health Workforce Sentinel Network, 2018).

MAs are key members of the health care team and work as frontline clinical support workers (Bodenheimer, Willard-Grace, & Ghorob, 2014; Chapman, Marks, & Dower, 2015). Their many tasks and duties include rooming patients, taking vital signs, reviewing patient medications, drawing blood, and vaccinations (Bodenheimer et al., 2014; Chapman & Blash, 2017; Erikson, Pittman, LaFrance, & Chapman, 2017). Amid health care delivery transformation, MAs are taking on new and expanded roles such as care coordination, health coach, medical scribe and behavioral health screening (Balasa & Roget, 2016; Bodenheimer et al., 2014; Chapman & Blash, 2017; Erikson et al., 2017; Skillman, Dahal, Frogner, & Andrilla, 2018). MAs were among the top five occupations referencing skillsets for disease management and patient education in online job ads in 2014 and 2015 (Frogner, Stubbs, & Skillman, 2018). MAs often need to obtain skills and training for these new roles and employers may need to invest in more on-the-job training for both new and experienced MAs (Chapman & Blash, 2017; Chapman et al., 2015; Grantham, 2017).

Traditional (not through apprenticeship) MA education and training programs vary across the U.S. (Chapman et al., 2015). Educational programs range in length from six-month certificate programs to a two-year associate degree programs. Many MAs complete their training in private, for-profit schools, which are typically more expensive than public community colleges. MAs may face challenges paying the loans they obtained to attend (Chapman, Marks, Dower, 2015). These and other MA programs vary in quality and ability to prepare MAs to successfully transition to a clinical environment (Hull et al., 2013). Most but not all MA programs are accredited by The Commission on Accreditation of Allied Health Education programs or the Accrediting Bureau of Health Education Schools, the two primary accrediting bodies for MA programs. Moreover, health care employers who report difficulty filling MA positions point to a variety of reasons, including a lack of qualified applicants with skills needed to be successful in their office and clinical settings (Coleman & Zorn, 2015).

Apprenticeship is a workforce development tool that provides employers with skilled workers trained to the specific needs of the employer. Nationwide, interest in apprenticeship is high and expanding into health care to address difficult-to-fill jobs, reduce turnover, and emphasize on-the-job learning (Bates, Chapman, & Spetz, 2018). Apprentices earn wages as they acquire advanced skills, creating pathways into careers that might not be accessible for workers who face barriers to pursuing a traditional educational program (e.g., cost of tuition, limited flexibility to take time off work). Over the past few years, the United States Department of Labor (USDOL) has invested in state apprenticeship strategies across a wide range of industries through ApprenticeshipUSA, state expansion grant programs, and the president's June 2017 executive order to expand apprenticeships (Aleshire, 2016; Exec. Order No. 13801, 2017). The USDOL has listed more than 40 different "apprenticeable" (eligible for registered apprenticeships) health care and health information technology occupations, including medical assistants (Mauldin, 2011).

Background on Registered Apprenticeship

In 1937, the U.S. Congress enacted The National Apprenticeship Act to establish labor standards for apprenticeships across industries and skilled trades (The National Apprenticeship Act, 1937). USDOL Office of Apprenticeship oversees regulations and guidelines for registering apprenticeship programs. A registered apprenticeship program is designed to provide education and training that meet national standards for an occupation and includes processes to ensure that apprentices who complete the program have the necessary knowledge and skills for the occupation. Registered apprenticeship programs receive ongoing technical assistance and support from USDOL and may be eligible for federal grants and tax credits (Collins, 2018). Key components of registered apprenticeship programs (**Box 1**) include job-related didactic instruction, on-the-job learning, incremental wage increases, and a national, industry-recognized credential for the occupation. Each registered apprenticeship program has a sponsor that is responsible for administering the program, developing a written plan outlining instructional content and skills to be learned, and tracking apprentices' progress (Helper, Noonan, Nicholson, & Langdon, 2016). A sponsor can be an employer or an intermediary organization such as an industry association, two- or four-year college, or community-based organization. An intermediary is any organization that helps to broker the apprenticeship. Intermediaries may help employers connect with potential apprentices or sponsor apprenticeship programs directly. An intermediary sponsor may serve multiple employers through its registered apprenticeship.

Sponsors may structure the key components of a registered apprenticeship in different ways. In a **front-loaded model**, apprentices complete all didactic instruction before starting any on-the-job learning. In a **traditional model**, apprentices complete didactic instruction and on-the-job learning simultaneously. Sponsors also determine the approach for measuring an apprentices' skill acquisition during on-the-job learning. Federal regulations present three such approaches: time-based, competency-based, and hybrid. The **time-based approach** measures skill acquisition by on-the-job learning hours. Federal regulations specify that time-based apprenticeships must require a minimum of 2,000 hours of on-the-job learning. In a **competency-based approach**, skill acquisition is measured by an individual apprentice's successful demonstration of acquired skills and knowledge. Sponsors identify appropriate means for testing and evaluating competencies. Apprentices in competency-based programs still complete on-the-job learning, but there is no minimum number of hours to complete. A **hybrid approach** measures skill acquisition through both a minimum number of on-the-job learning hours and successful demonstration of skills and competencies.

Box 1. Key Components of Registered Apprenticeship Programs

1) **Employer Involvement**: Employers must be directly involved and provide on-the-job learning.
2) **Job-Related Didactic Instruction**: Apprentices receive an organized form of didactic instruction that provides knowledge and technical subject matter related to the occupation. Federal regulations require apprentices to complete a minimum of 144 hours of instruction each year of the program.
3) **On-the-Job Learning:** Structured and supervised training on-the-job must be delivered by a mentor. A mentor must be someone who has already mastered the skills and competencies required by the occupation.
4) **Incremental Wage Increases**: A clear schedule of wage progression must be set as apprentices complete on-the-job learning and gain skills.
5) **National, Industry-Recognized Credential**: Apprentices receive a credential after completing the terms of the apprenticeship, which indicates that they have met competencies necessary for the occupation.

In this study, we focus on registered MA apprenticeship programs in the United States. We identify key components of apprenticeship programs and describe different approaches used by sponsors during implementation. We also describe motivations for as well as barriers and facilitators to implementing this workforce development tool. The findings from this study are intended to help clarify the development, design, and expansion of medical assistant apprenticeship programs in the U.S. and offer employers and government agencies ways to adopt this workforce training approach.

METHODS

For this descriptive study, we reviewed published and grey literature on health care apprenticeships in the U.S. and identified registered MA apprenticeship programs using the Apprenticeship Finder tool on the CareerOneStop website[1]. CareerOneStop gathers detailed information about apprenticeships from the USDOL's Office of Apprenticeship and other sources, and the Apprenticeship Sponsor Finder tool lists contact information on apprenticeship sponsors and state offices of apprenticeship. Apprenticeship programs are listed by occupation and state. Because not all apprenticeships may be listed in the CareerOneStop Apprenticeship Finder tool, we also learned about MA apprenticeship programs through snowball sampling.

We conducted sixteen semi-structured phone interviews between March, 2018 and January, 2019 with key personnel with experience implementing registered MA apprenticeship programs. Interviewees represented twelve states and included health care employers, industry and labor groups, and government officials. Interviewees included personnel from six different state or federal department of labor officials, four intermediary organizations sponsoring registered MA apprenticeship programs, three educational institutions providing didactic instruction components, two employers sponsoring registered MA apprenticeship programs, and one labor management partnership. A semi-structured interview guide was developed with input from experts familiar with health care apprenticeships. Interviews explored how programs started and organization of responsibilities (i.e., administration, instruction, recruitment, funding, etc.) as well as resources and challenges with starting and maintaining the program. The list of questions in the interview guide can be found in **Appendix A**.

FINDINGS

MA APPRENTICESHIP PROGRAMS

Through our interviews, we identified 23 active registered MA apprenticeship programs across eleven states (Alaska, Colorado, Idaho, Michigan, Montana, New Hampshire, Oregon, Pennsylvania, Rhode Island, South Carolina, and Washington)[2] and one state with MA apprenticeship programs in development (Minnesota). MA apprenticeship programs were implemented in a variety of health care settings, including community health centers, school-based clinics, tribal health centers, hospital outpatient departments, and hospice care. Programs ranged in size from one apprentice in training per year to multiple cohorts of up to 20 apprentices per year. Some programs have been operating for over a decade while others started within the year of our interviews. **Table 1** describes the active MA apprenticeship programs, by state, interviewed for this study.

MOTIVATION & GETTING STARTED

Interviewees were asked about the demand for MAs, why employers considered apprenticeship, and what initiated development of a MA apprenticeship program.

What was the need for MAs?

Not Enough MAs. Many of those interviewed described challenges with finding qualified applicants and filling a growing number of MA positions.

[1]CareerOneStop provides a wide range of workforce information, tools, and resources for employers and job seekers. The website is sponsored by the USDOL Employment and Training Administration. See Apprenticeship Finder Tool for more information: https://www.careeronestop.org/toolkit/Training/find-apprenticeships.aspx

[2]Since research has taken place, MA apprenticeship has greatly expanded in Washington state. In Western Washington, where a rising cost of living makes recruiting and retaining workers in low-wage healthcare occupations difficult, five of the largest health care employers in the region are introducing apprenticeships for MAs in collaboration with sponsors at The Washington Association for Community Health (WACH) and SEIU Healthcare 1199NW Multi-Employer Training Fund. This is in addition to WACH's program expansion that has now worked with 60 employers to enroll over 500 MA apprentices across Washington and Idaho.

Table1: Characteristics of active MA apprenticeship programs as described by interviewees

State	Year Started	Number of Sponsors	Number of Employers	Approximate Number of Apprentices-in-Training 2018-19	Coverage	Health Care Setting(s)
Alaska	2008	6-7	>30	50	Statewide	Community health centers, tribal clinics
Colorado	2016	2	2	8	Sub-state	Community health centers
Idaho	2018	1	1	13	Sub-state	Hospital outpatient department
Michigan	2016	1	3	37	Sub-state	Hospital outpatient department
Montana	2016	2	2	<5	Sub-state	Critical access hospital, community health center
New Hampshire	2011	4	4	85	Statewide	Hospital outpatient department
Oregon	2018	1	8	29	Sub-state	Community health center, hospital outpatient department
Pennsylvania	2016	1	1	<5	Sub-state	School-based clinic
Rhode Island	2018	2	2	12	Statewide	Hospital outpatient department, community health center
South Carolina	2015	1	3	47	Statewide	Hospice care
Washington	2014	1	>40	100+	Statewide	Community health center, hospital outpatient department

Traditional Education & Training Programs Not Producing Enough MAs. A large health care employer and intermediary organization stated that the MA education programs offered through local community and private colleges did not produce enough MAs to fill all job openings in their region. Other employers described MA shortages in rural areas where access to education and training is limited due to factors such as distance to traditional MA training and education programs. One interviewee from an organization supporting health care apprenticeships across their state suggested that increased demand for MAs was influenced by nursing labor shortages. Another interviewee acknowledged changes in health care delivery increased demand for MAs. In their state, MAs were filling roles previously held by registered nurses because the nurses were taking positions in hospital settings.

New MAs Not Prepared for Employer Needs. The educational programs in their area struggled to produce MAs that fit the employers' needs. One employer stated that many MAs who completed MA programs at public and private community and technical colleges were not professionally ready to transition into the workplace.

Need for Specialized Training. Interviewees described how MAs are in-demand in a variety of health care settings (e.g., community health centers, specialty outpatient clinics, and health services serving the state department of corrections). Employers need MAs with specialized knowledge and skills to work in each of these settings and serve their patient populations.

New Roles. An interviewee from an intermediary organization supporting health care apprenticeship programs described one employer who needed MAs with the knowledge and skills to work in an obstetrics and gynecology outpatient clinic. The same interviewee cited another employer who needed MAs to work as "floats" and move among multiple specialty settings in podiatry, optometry, and women's health.

Workforce that Reflects the Patient Population. One interviewee representing a state department of labor described how a large health care system was looking for different workforce development models, such as apprenticeship, to engage underrepresented populations in an effort to grow a MA workforce that reflected its changing patient population.

Desire for Credentialed MAs. One of the most common motivations for exploring MA apprenticeship mentioned was employers' desires for their MAs to be credentialed through an organization offering national certification. As described in the examples below,

their reasons varied, but employers largely wanted MAs to meet federal or state requirements by passing a national certification exam. **Box 2** lists four organizations that offer national certification exams.

Washington State. An apprenticeship program in Washington state was developed to help community health centers ensure their MA workforce meets state credentialing requirements. Washington is the only state requiring MAs to be credentialed with the state[3], which occurs through Washington's health professions licensing system. In addition to completing an approved training program, MAs must be certified by passing one of four national competency exams.

Centers for Medicare and Medicaid Services (CMS). Other interviewees described requirements for certified MAs in order to meet CMS guidelines for meaningful use criteria for adoption of electronic health records. An interviewee from an intermediary organization stated that many MAs in rural community health centers were not nationally certified and it was difficult for employers to find ways to get them certified to meet these guidelines. The 2015 final CMS rule for the Electronic Health Record Incentive Programs states that only "credentialed medical assistants" (along with other licensed health care professionals) would be permitted to enter medication, laboratory, and radiology orders into the computerized order entry system (Balasa, 2015 public affairs).

Box 2. Organizations Credentialing MAs Through National Certification

Each organization has its own eligibility requirements and exam.

- The **Certified Medical Assistant Credential** offered through the American Association of Medical Assistants.
- The **Registered Medical Assistant Credential** offered through the American Medical Technologists.
- The **National Certified Medical Assistant Credential** offered through the National Center for Competency Testing.
- The **Certified Clinical Medical Assistant Credential** offered through the National Health career Association.

How did sponsors get started?

Cross-sector Relationships. Several interviewees noted the importance of gathering health care employers, educators, intermediary organizations (e.g., industry associations, labor unions, workforce development agencies), and state departments of labor to discuss workforce challenges and solutions including apprenticeships. One employer that was interviewed noted that they only heard about apprenticeship by attending an advisory board meeting with public community colleges and representatives from their state office of apprenticeship. A different interviewee stated that "it all came together" through a bimonthly careers council meeting where employers meet to discuss workforce development needs. One interviewee who worked for a state's department of labor described how a state health workforce assessment project was a critical step in the development of MA apprenticeship programs. State workforce coordinators visited and interviewed rural health care facilities around the state and identified staffing and educational needs. The project constructed a network of employer contacts and identified communities and sites where apprenticeship would be a good fit.

Grant Funding. Grant funding from federal and state departments of labor provided resources to support outreach to employers and ignite program development. Interviewees described the role of the state and federal grants (e.g., American Apprenticeship Initiative[4], Trade Adjustment Assistance Community College and Career Training grant[5]) and Workforce Innovation and Opportunity Act[6] funds to start their apprenticeship programs. These multi-million dollar grants were awarded to state departments of labor and industry associations and distributed across multiple industry sectors and occupations. Our study did not explore what portion of these grants supported MA apprenticeship programs specifically.

Experience with Apprenticeship in Other Health Care Occupations. A few interviewees described previous success with the apprenticeship approach to train other occupations and shared how that experience informed adapting the approach for

[3]For more information on the Revised Code of Washington (RCW) Chapter 18.360 see: https://app.leg.wa.gov/rcw/default.aspx?cite=18.360
[4]American Apprenticeship Initiative https://www.dol.gov/featured/apprenticeship/grants
[5]Trade Adjustment Assistance Community College and Career Training https://doleta.gov/taaccct/
[6]Workforce Innovation and Opportunity Act https://wdr.doleta.gov/directives/attach/TEGL/TEGL_13-16_acc.pdf

MAs. One sponsor already used apprenticeship to meet an employers' needs for community health workers. After learning about the challenges with traditional approaches to hiring MAs, they adapted a community health worker apprenticeship to create their MA apprenticeship. Another interviewee explained that success with a medical coder apprenticeship convinced an employer to consider apprenticeship to address their MA staff issues. The employer's human resources department approached the intermediary about developing a MA apprenticeship based on previous success with the medical coder program.

Box 3. MA Apprenticeship Takeaways: Motivation and Getting Started

- MA apprenticeships were implemented when demand for MAs outpaced what traditional education programs were able to produce.
- Some employers turned to MA apprenticeship to certify their existing workforce and train MAs for specific roles in their organization.
- Other employers desired their incumbent MAs to be credentialed through an organization offering national certification to meet state or federal requirements.
- Government support through federal and state grants promoted and supported MA apprenticeships.
- Some employers had previous experience operating an apprenticeship in other health care occupations before implementing them for MAs.

SPONSORS & APPRENTICES

Interviewees were asked to describe sponsors, apprentices, and recruitment strategies in registered MA apprenticeship programs.

Who sponsors MA apprenticeships?

Employers. Similar to apprenticeships in other industries and occupations, many MA apprenticeship programs are sponsored by individual health care employers. Interviewees described employer-sponsored MA apprenticeship programs across multiple geographies and health care settings. In Alaska, employer-sponsored MA apprenticeships operate in both rural and urban locations. Community health centers in rural northeastern Colorado (Salud Family Health Centers), Montana (Sweet Medical Center) as well as in urban Philadelphia, Pennsylvania sponsor their own MA apprenticeship programs. Large health systems and physician groups in New Hampshire (Lakes Region General Healthcare, Catholic Medical Center, Core Physicians), Idaho (St. Luke's), and Minnesota (Fairview Health Services) recently started MA apprenticeship programs in their outpatient clinics. In Rhode Island, one employer-sponsored apprenticeship was administered jointly through a union management and training partnership (Care New England and Service Employees International Union [SEIU] 1199).

Example of an Employer-sponsored Apprenticeship Program

St. Luke's is the largest employer in the state of Idaho and includes nearly 200 clinics. In 2018, St. Luke's initiated their registered MA apprenticeship program and hired a coordinator to administer and keep track of the program. The State Office of Apprenticeship helped register the program and recruit participants. St. Luke's plans to expand the apprenticeship to more clinics across their network in Idaho and eastern Oregon.

Intermediary Organizations. Interviewees identified five apprenticeship programs sponsored by intermediary organizations: Alaska Primary Care Association[7], West Michigan Works![8], River Valley Workforce Institute[9] (serves Dartmouth-Hitchcock Workforce Readiness Institute), the Washington Association for Community Health[10], and the Southwestern Oregon Workforce Investment Board[11]. These organizations administered their apprenticeship programs with multiple employers. Intermediary organizations that specialize in training and industry already provide technical assistance and were well positioned to connect employers new

[7]Alaska Primary Care Association https://www.apcaapprentice.com/
[8]West Michigan Works! https://jobs.westmiworks.org/marap/
[9]River Valley Workforce Institute http://www.vthitec.org/page1/page7/index.html
[10]Washington Association for Community Health https://www.wacommunityhealth.org/
[11]Southwestern Oregon Workforce Investment Board https://www.sowib.org/

to apprenticeships to various funding resources. The Alaska Primary Care Association is an organization of 170 community health clinics around the state that provide primary care to more than 100,000 patients. Their MA apprenticeship program operates within 20 different employers/clinics. West Michigan Works! is a regional workforce development agency that sponsors the Medical Assistant Registered Apprenticeship Program. The program operates across seven counties in western Michigan and currently works with three different employers. The River Valley Workforce Institute is a non-profit educational institution that partners with employers Dartmouth-Hitchcock Medical Center to deliver workforce education programs. At the time of our interview, their MA apprenticeship program only operates in the Dartmouth-Hitchcock health system. The Washington Association for Community Health is a federally funded primary care association with a goal to strengthen and assist Washington state's community, migrant, and urban Indian health centers. At the time of our interview, they operated their apprenticeship program with 60 employers in urban and rural communities. In Oregon, the Southwestern Oregon Workforce Investment Board an administered their MA apprenticeship program with eight employers with plans to expand to other coastal areas in the state and northern California.

Example of an Intermediary-sponsored Apprenticeship Program

The Southwestern Oregon Workforce Investment Board (SOWIB) is the sponsor for a registered MA apprenticeship in southwestern Oregon. SOWIB develops sector-based strategies across three rural counties (Coos, Curry, and Douglas). The Southwestern Oregon Industry Partnership convened a meeting with representatives from higher education, economic development, and health care employers to develop an industry-focused model for workforce development in health care. With support from the Oregon Bureau of Labor and Industries, SOWIB became an apprenticeship sponsor and registered their MA apprenticeship in 2018. Eight employers, including community health centers and hospital outpatient clinics, have been involved but only six were recruiting apprentices at the time of our interview. The SOWIB program indicated they planned to expand to other workforce development areas along the Oregon coast (Lincoln County) in mid-2019 as well as clinics in Northern California.

Who participates in MA apprenticeships and how are they recruited?

Incumbent Workers. The majority of participants in MA apprenticeship programs described by the interviewees were already employed by the health care employer. These incumbent workers included nursing assistants, front office employees, workers employed in other entry-level positions, as well as MAs without certification or specialized skillsets. Employers focused their program on incumbent workers for different reasons. One employer described changing care delivery models encouraged them to use apprenticeship to upskill and prepare MAs for new roles in a more team-based clinic environment. Similarly, a different program implemented through an employer and union management relationship, wanted to upskill and cross train all certified nursing assistants into an MA role. In this program, the incumbent workers were required to participate in the MA apprenticeship

New Hires. MA apprenticeship programs that included applicants from outside the organization followed a process similar to hiring a new employee. Employers created a job posting, application process, and conducted interviews before accepting applicants into the program. Each employer determined their own eligibility requirements and selected their own apprentices, regardless of whether they were the apprenticeship sponsor or not. For example, one employer required apprentices to have at least one year of health care experience (e.g., working as a phlebotomist) and completion of a certified nursing assistant course. Another employer only considered applicants already working in the health care field. Recruitment efforts for new hires varied and depended on partners involved in the program. One intermediary-sponsored program recruited applicants for employers by holding information sessions and working with local workforce development agencies and community-based organizations to identify eligible candidates. A few interviewees described how their state office of apprenticeship and public workforce system played a role in recruitment by connecting disadvantaged workers to MA apprenticeship programs.

What is pre-apprenticeship?

Two interviewees described how pre-apprenticeship was used to prepare and recruit external applicants. Pre-apprenticeship is an educational program that prepares individuals to successfully enter and complete a registered apprenticeship (Collins, 2018). These programs may provide instruction in general education, including mathematics and writing, as well as career exploration and how to prepare a resume. Completing a pre-apprenticeship can help identify candidates ready to participate in a rigorous registered apprenticeship. Pre-apprenticeships are not required for program registration and USDOL does not regulate these programs. For example, West Michigan Works! structured their application and screening process as a pre-apprenticeship. Their pre-apprenticeship prepared prospective apprentices for a typing assessment and community college entrance exams and provided job coaching. The pre-apprenticeship process helped applicants create a career portfolio with a resume and submit an application to an employer for an apprenticeship spot.

Box 4. MA Apprenticeship Takeaways: Sponsors & Apprentice Eligibility

- Health care employers of different sizes and geographies sponsor registered MA apprenticeships. Intermediary organizations also sponsor registered MA apprenticeships and implement their programs with one or more employers. These organizations include industry associations, regional workforce development agencies, and non-profit educational institutions.
- Most MA apprenticeships focused on training and upskilling incumbent workers already employed by the organization. Programs that recruited apprentices from outside the organization established their own eligibility requirements and selected their own apprentices.
- Two sponsors used pre-apprenticeships to prepare and recruit prospective apprentices to succeed in a registered apprenticeship.

KEY COMPONENTS OF MA APPRENTICESHIPS

Flexibility and adaptation are intrinsic to the registered apprenticeship model. Partners collaborate to create and adapt programs to meet the needs of employers, while adhering to the basic structure required of a registered apprenticeship. We asked interviewees to describe at least one MA apprenticeship program in their state—how they are organized, who is responsible for which components, and available resources. The following section highlights the five key components (**Box 1**) of the MA apprenticeship programs identified for this study and illustrates their similarities and differences. All of these apprenticeships were registered at the state or federal level.

Job-Related Didactic Instruction – How is it developed and delivered?

All registered apprenticeships have a job-related didactic instruction component (also referred to as "related instruction," which is separate from clinical training and on-the-job learning) to support both technical and soft skills development and prepare apprentices for on-the-job learning (also referred to as on-the-job training). We found that MA apprenticeship program sponsors developed and delivered this component in different ways. Interviewees stated that nearly all program sponsors collaborated with multiple partners—state offices of apprenticeship identified standards for the MA occupation[12] and sponsors worked with education partners. Education partners included public community colleges, at least one four-year college, and online providers.

College-based Instruction. Most MA apprenticeship sponsors relied on community colleges to deliver didactic instruction in-person in campus classrooms and lab spaces. For example, in Michigan and New Hampshire, employers and community colleges developed shared curriculum together so that didactic instruction could be delivered at community college sites near the employers. In Rhode Island, Care New England collaborated with a four-year college (Rhode Island College) and the Health care Career Advancement Program[13] (H-CAP) to develop didactic instruction. H-CAP is a national labor/management organization that provides training programs and workforce development tools to labor/management training funds and organizations.

[12] WorkforceGPS, a technical assistance website sponsored by the Employment and Training Administration of the U.S. Department of Labor stores examples of standards and work processes by occupation: https://apprenticeshipusa.workforcegps.org/resources/2017/11/30/09/34/Example-Apprenticeship-Standards-and-Work-Processes

[13] Healthcare Career Advancement Program https://hcapinc.org/

Because Care New England's program targeted incumbent workers, H-CAP assisted with curriculum design to make sure that instructional approaches met the learning styles of incumbent workers who had not been in a formal, traditional education program for years. One benefit of working with community colleges is the potential for apprentices to earn college credits to apply toward an associate's or bachelor's degree. Interviewees described two programs where MA apprentices earn college credits. In the Washington Association for Community Health program, students earn 56 college credits through a public community college. Apprentices in the West Michigan Works! program earn college credits that may be applied to a bachelor's degree in other health sciences programs through articulation agreements established with four-year colleges and universities. Articulation agreements are formal agreements between one or more educational institutions that document credit transfer policies. However, not all MA apprenticeship sponsors that worked with a community college were able to guarantee college credits to their apprentices.

Developed by Sponsor. Some sponsors developed their own didactic instruction curriculum with guidance from internal and external experts. These sponsors designed curriculum to align with competencies tested on the Certified Clinical Medical Assistant exam administered by the National Healthcareer Association. St. Luke's in Idaho worked with the National Healthcareer Association to create a curriculum that prepares apprentices for national certification. St. Luke's hired a nurse to lead didactic instruction and spent four hours each week in instructional time on site. Agape Home Health in South Carolina used internal personnel and expertise to develop their own curriculum, which is delivered through an online learning portal.

Online Instruction. Two MA apprenticeship programs delivered related didactic instruction through online providers Penn Foster[14] and U.S. Career Institute[15]. Employers involved in these programs noted that they chose this approach because online education providers were less expensive and easier for their apprentices to access in rural areas.

On-the-job learning – How is it delivered?

All on-the-job learning occurred on-site with employers and apprentices were paid hourly wages. While not a requirement, we also learned that a few employers pay their apprentices wages for time spent in didactic instruction. Apprentices were assigned a mentor who monitored and tracked their skill development. Mentors were already employed by the employer and included MAs, registered nurses, licensed practical nurses, and licensed vocational nurses. Some programs offered mentors a wage increase for their role in training apprentices, while others did not. Mentor training varied across programs. One intermediary-sponsored program facilitated regular communication between instructors for the job-related didactic instruction component and mentors for the on-the-job learning so that mentors understood what apprentices were learning and how to coach specific skills.

What are the different apprenticeship training models?

Sponsors arranged didactic instruction and on-the-job learning components in different ways to meet the needs of employers and apprentices. Interviewees described two training models used by MA apprenticeship programs: front-loaded and traditional.

Front-loaded. In a front-loaded apprenticeship model, all didactic instruction is completed before starting on-the-job learning. For example, in the River Valley Workforce Institute program, 400 hours of didactic instruction was conducted at the Institute before any on-the-job learning started at Dartmouth-Hitchcock Medical Center. Employer-sponsored apprenticeships in New Hampshire involved 320 hours of didactic instruction and hands-on lab experiences at a community college with an additional 160 hours of supervised practicum under instructor supervision for a total of 480 hours of didactic and technical instruction before on-the-job learning began. Another employer required apprentices to pass a national certification examination before starting on-the-job learning.

[14]Penn Foster https://www.pennfoster.edu/college
[15]U.S. Career Institute https://www.uscareerinstitute.edu/certificates/health-care-programs/medical-assistant

Traditional. In the traditional apprenticeship model, apprentices complete didactic instruction and on-the-job learning simultaneously. For example, apprentices in St. Luke's program spend four hours in related didactic instruction and 36 hours in on-the-job learning each week. Apprentices are paid wages during all four hours. In the West Michigan Works! program, MA apprentices spend 16 hours per week in classroom instruction and 24 hours in on-the-job learning with the employer. Every ten weeks, apprentices participate in an eight-day, unpaid practicum experience where they develop skills and are tested on specific competencies learned during the previous instruction period. If mentors determine that an apprentice is competent in one or more skills learned during this period, the apprentice can start using that skill during on-the-job learning in the next quarter.

What are the different approaches for assessing skill acquisition and terms of the apprenticeship?

Federal regulations present three different approaches for apprentices to progress through their program and to track skill acquisition: time-based, competency-based, and hybrid. Interviewees for this study described time-based and competency-based MA apprenticeship programs.

Time-based. The time-based approach measures apprentice skill acquisition through a minimum number of hours of on-the-job learning. Federal regulations specify that time-based programs must require at least 2,000 such hours (approximately one-year of full-time employment). Interviewees described a range of required hours. Most time-based programs required the minimum 2,000 hours of on-the-job learning, while others required up to 4,000 hours. The number of hours greatly impacts the length of time to complete the apprenticeship. One program focused on incumbent workers who had been working as MAs for years allowed apprentices to "grandfather" hours based on their previous experience and complete the apprenticeship earlier. Some program sponsors for time-based programs, however, said that they plan to shift toward a competency-based model in the future.

Competency-based. Competency-based programs measure apprentice skill acquisition through successful demonstration of skills and competencies. These programs developed a checklist of job functions and performance criteria to track apprentice progression through the program. Mentors use the checklist to evaluate apprentice performance. While apprentices in competency-based programs still complete on-the-job learning, there is no minimum number of hours. These programs were often completed in one year or less.

Are apprentices required to pass a national certification exam?

All MA apprentices who complete a registered apprenticeship program earn a certificate of completion from USDOL that is a nationally-recognized credential and indicates to employers that a worker has met standards for the MA occupation[16]. However, some sponsors also required apprentices to pass a national certification exam offered by one of the four organizations (**Box 2**): American Association of Medical Assistants, American Medical Technologists, National Center for Competency Testing, and the National Healthcareer Association. This additional requirement came at the request of employers and was not required by USDOL to register an apprenticeship. Among programs with this requirement, the most common national certification exam mentioned by interviewees was the Certified Clinical Medical Assistant exam offered by National Healthcareer Association. As stated previously, some of these programs tailored their didactic instruction to prepare MA apprentices to pass this national certification exam. One program used another national certification exam. MA apprentices in the West Michigan Works! program sit for the Registered Medical Assistant exam offered by the American Medical Technologists.

What financial supports are available for MA apprenticeship?

Sponsors rely on a patchwork of financial supports to launch and sustain MA apprenticeship programs. Partnerships with industry, educational institutions, and government help to identify different sources of financial supports to build and support

[16]Labor Standards for the Registration of Apprenticeship Programs, 29 C.F.R. § 29.5 (2008). For more information, see: http://www.lni.wa.gov/TradesLicensing/Rules/files/apprenticeship/29CFRPart29.pdf

MA apprenticeship programs. Key partners described by interviewees included: state and federal offices of apprenticeship, state and local workforce development agencies, community organizations, community college systems, online health care education providers, industry associations, labor management organizations, and K-12 school districts. Interviewees identified and described the following financial supports.

Grant Funding. Nearly all of the interviewees emphasized the importance of grant funding to support MA apprenticeship programs. As stated earlier, interviewees stated that grant funding was particularly important for launching new programs and expanding existing ones. Grants helped to assuage employer concerns about costs associated with implementing a new program such as didactic instruction (e.g., community college tuition, curriculum development), marketing program to employers, and apprentice recruitment. Among the variety of grants mentioned included: American Apprenticeship Initiative grants (USDOL)[17], H-1B Technical Skills Training Grants (USDOL)[18], Trade Adjustment Assistance Community College and Career Training grant program (USDOL)[19], and Real Jobs Rhode Island[20] grants (Rhode Island Department of Labor and Training).

Workforce Innovation and Opportunity Act (WIOA) Funds. Some interviewees cited that programs used USDOL WIOA funds through state or local workforce development agencies to subsidize costs associated with didactic instruction and wages. Access to these funds is dependent on apprentices' eligibility for WIOA services, such as being a dislocated worker; public assistance recipient, and/or low-income adult; and/or an individual who is deficient in basic skills (Workforce Innovation and Opportunity Act, 2014).

Incentives. Some states offer tax incentives to private employers to support their MA apprenticeship program. In South Carolina, private employers are eligible for a $1,000 tax credit for each apprentice. While Montana has a similar tax credit incentive, the employers sponsoring MA apprenticeship programs in their state were ineligible because they were non-profit organizations.

ADOPTING, MAINTAINING, AND EXPANDING MA APPRENTICESHIPS: BARRIERS AND FACILITATORS

Sponsor and employer interviewees were asked to share barriers and facilitators to maintaining and expanding their MA apprenticeship program.

Barriers

Concerns About Apprenticeship Approach. Interviewees reported that health care employers are still hesitant about adopting an apprenticeship approach and concerned about unintended consequences. An interviewee who plays a role in introducing apprenticeships to new employers stated that many health care employers are apprehensive about trying something new because they perceived that it is difficult to start a program. One interviewee noted that employers fear apprenticeships will lead to MA workforce unionization. Another interviewee stated that when nurses in the organization raised concerns about MAs taking away their jobs, the employer discontinued the MA apprenticeship program. Others shared that employers often look for quick and easy fixes to their workforce needs rather than make a long-term investment in MA apprenticeship.

Box 5. MA Apprenticeship Takeaways: Key Components of Apprenticeship Programs

- Sponsors have flexibility to design and deliver didactic instruction in a way that meets both standards of apprenticeship and employer needs. Most sponsors partnered with community colleges to deliver this component.
- Mentors played a critical role during on-the-job learning; few interviewees, however, mentioned that sponsors or employers offered formal training to mentors.
- Sponsors structure and deliver related didactic instruction and on-the-job learning components in both front-loaded and traditional models to meet employer needs. Sponsors use both time-based and competency-based approaches to track apprentice skill acquisition and progression.
- Partnerships with state government, community colleges, and workforce development agencies helped to identify multiple sources of financial support to implement MA apprenticeships.

[17]See footnote 4.
[18]H-1b Technical Skills Training grants https://www.doleta.gov/business/H1B_Tech_Skills.cfm
[19]See footnote 5.
[20]Real Jobs Rhode Island grants http://www.dlt.ri.gov/realjobs/

Strong Economic Conditions Made It Challenging to Recruit Apprentices. A few interviewees viewed current strong economic conditions as a short-term barrier to maintaining and expanding MA apprenticeship programs. One interviewee described how other industry sectors in their region pay equivalent or higher wages for jobs that require less training than MAs, which makes it difficult to recruit potential apprentices to their program. This observation is well supported in the literature. When unemployment rates are low, recruitment is a challenge because individuals may have other job opportunities that require less training and pay higher wages. Also, when unemployment is low, college enrollment tends to drop because there are other available and competing paid opportunities (Hillman & Orians, 2013).

Managing an Apprenticeship Program Required Administrative Resources. Many interviewees cited concerns with having enough resources and personnel to administer and manage an apprenticeship program. One interviewee from an intermediary-sponsored apprenticeship described challenges with tracking the progress of apprentices through the program and meeting reporting requirements. They also admitted that administrative staff turnover within their own organization was a barrier to adding more apprentices. Another intermediary-sponsored apprenticeship expressed challenges with managing roles and responsibilities among employers and partners. Tracking apprentice progression through the program across multiple employers necessitated increased staffing demands. Interviewees familiar with employer-sponsored apprenticeships stated that employers are concerned about having enough human resources personnel to coordinate and lead a program.

Difficulty Filling Mentor Positions. Several interviewees described challenges with finding, training, and supporting mentors during on-the-job learning. Mentors play a critical role in training apprentices on the job, but some interviewees noted that employers with limited staffing struggled to identify individuals for the role. One interviewee who conducts outreach to expand apprenticeships in health care often hears employers say they are already short on staff and giving up a fully trained employee to mentor an apprentice is difficult. A few interviewees experienced challenges with preparing mentors for their role. One employer shared that when MA apprentices first came into the clinic, mentors were surprised by the limited knowledge of the apprentices. Mentors were accustomed to training newly hired MAs who had completed some traditional education program and were less familiar with a skills training role of individuals with little to no clinical skills. Other interviewees shared similar experiences of apprentices not being received well during on-the-job learning and reported that it was challenging to ensure program leaders, mentors and apprentices shared expectations. Interviewees also shared that offering financial incentives and providing training for mentors seemed helpful.

Insufficient Financial Resources to Sustain and Expand Apprenticeship. Despite multiple financial supports available to support programs, nearly every interviewee identified limited financial resources for maintaining and expanding MA apprenticeship programs either within employer organizations or across their state. One employer expressed concern about sustaining the financial resources to operate the program internally and creating a new position to oversee the program. Another interviewee acknowledged that instructional costs charged by community colleges to deliver instruction are a barrier to sustainability. One interviewee, from an intermediary supporting apprenticeship development, stated that employers are concerned with sustainability of their apprenticeship program once grant funding is no longer available. One interviewee from a state office of apprenticeship noted that changes in state administration can hamper expansion as funding priorities shift. Other employers described workforce development funds, such as from USDOL's WIOA programs, were challenging to use for apprenticeship of incumbent workers due to WIOA's worker eligibility criteria.

Facilitators

Maintain Regular Communication Among Partners. Several interviewees emphasized the importance of meeting regularly with partners to discuss barriers and challenges faced in program operation. One intermediary sponsoring an apprenticeship program

met weekly with a liaison from their state office of apprenticeship to provide program updates. Another intermediary sponsor met with employers on a monthly basis to hear feedback regarding on-the-job learning and resolve any issues. The interviewee acknowledged that these meetings allowed them to adjust and improve the program to make sure competencies learned aligned with employer needs. One interviewee who worked for a state office of apprenticeship stressed the importance of the state engaging with employers for at least 60-90 days after starting the apprenticeship. Ensuring a smooth program launch was critical to maintaining and expanding the program.

Employer Commitment to Apprenticeship Approach. Interviewees noted that MA apprenticeship programs are most successful when employers are highly committed and view apprenticeship as long-term, organizational investment. Some even suggested that employers need to embed apprenticeship into their hiring practices and understand the benefits of solidifying a pipeline of workers into other health care occupations such as licensed practical nurses and behavioral health occupations. Other interviewees provided specific recommendations, such as creating a position to coordinate and lead the program and providing mentors with wage increases.

Pre-Apprenticeships to Prepare Apprentices for Success. While pre-apprenticeship is not required by USDOL for registered apprenticeship, two interviewees touted them as critical to the success of their MA apprenticeship programs. Pre-apprenticeship is an education program that helps prospective apprentices develop study habits and sharpen academic skills before starting an apprenticeship. It also creates a pipeline of prospective apprentices by helping to identify and recruit individuals who are ready for apprenticeship and connecting them to employers.

Box 6. MA Apprenticeship Takeaways: Barriers & Facilitators To Adopting, Maintaining, and Expanding Apprenticeship Programs

Barriers:

- Concerns about apprenticeship approach: Some health care employers are still hesitant about adopting an apprenticeship approach because of concerns about workforce unionization and resistance from other health care professionals in their organization.
- Strong economic conditions made it challenging to recruit MA apprentices: Employment opportunities in other industry sectors pay equivalent or higher wages without requiring individuals to complete a rigorous training program.
- Managing an apprenticeship program required administrative resources: Sponsors and employers needed adequate resources and personnel to administer and manage an apprenticeship program.
- Difficulty filling mentor positions: Employers often faced difficulties finding and preparing mentors within their organization to train and support apprentices during on-the-job learning.
- Insufficient financial resources to sustain and expand apprenticeship programs: Most interviewees expressed having limited resources to support their program within their organization or for expansions.

Facilitators:

- Maintain regular and consistent communication: Communication among apprenticeship partners was important for maintaining programs.
- Employer commitment to apprenticeship approach: Programs were most successful when employers were committed to the apprenticeship approach and viewed it as a long-term, organizational investment.
- Pre-apprenticeships to prepare apprentices for success: Pre-apprenticeship education programs helped prospective apprentices develop good study habits and sharpen academic skills.

LIMITATIONS

Our study is limited in the following ways. Because we did not identify a single complete list of all registered MA apprenticeship programs in the U.S., we are not able to determine if the interviewees we spoke with were representative of the range of programs across the country. Almost all of our interviewees represented government agencies or organizations promoting health care apprenticeship, which may have limited our ability to capture the details of on-the-job learning components (e.g., the role of mentors in apprenticeship) and understand the employer perspective on program implementation. Despite these limitations, this exploratory study makes an important contribution to understanding key structural components of MA apprenticeship programs and lays the groundwork for future studies evaluating the use of apprenticeship in health workforce planning.

DISCUSSION

This study found that registered apprenticeship is highly flexible despite specific structural components and requirements. Across the U.S., MA apprenticeship programs have been developed and adapted in various ways to meet employer needs.

We found that while most MA apprenticeship programs were sponsored directly by employers, others were sponsored by intermediary organizations that partner with multiple employers. Where highly organized intermediaries existed in a state, more employers were recruited to participate in MA apprenticeship programs. Where programs were employer-sponsored, the demand for MAs or the need for MAs with specific skills was sufficiently high that the organization sought a new approach to recruiting and training their MA workforce.

Most interviewees described relatively small programs, suggesting that MA apprenticeship programs supplement—rather than supplant—traditional MA education programs offered through public and private community and technical colleges. MA apprenticeship sponsors took advantage of both time-based and competency-based training models, and no clear pattern emerged indicating why one model might be chosen over the other. Several of the programs using a time-based model were considering moving to a competency-based approach to shorten apprentices' time to program completion. Some also saw the competency-based approach as faster and more responsive to workforce training when applied to certain contexts (Crofut, 2018). The USDOL's Office of Apprenticeship recently commissioned the Urban Institute to develop national competency-based frameworks for a variety of occupations, including MAs, to help employers develop their own competency-based registered apprenticeships ("Competency-Based Occupational Frameworks for Registered Apprenticeships," 2018).

The majority of programs interviewed recruited incumbent workers into apprenticeship to upskill and create career pathways within their organization. Although some also recruited outside their organization, focusing apprenticeship on incumbent workers allowed employers to identify and invest in their existing workforce.

Partnering with community colleges to design and deliver didactic instruction was a convenient option for many of the MA apprenticeship programs, and in at least one site was implemented in a way that created opportunities for apprentices to earn college credits that later may be applied to higher-level degree. In sites where the sponsor wanted a curriculum tailored to their specific program, where community and technical college partners were not readily available, or where colleges were already oversubscribed or otherwise not able to offer after hours and weekend classes, the MA apprenticeship program either developed their own curriculum or contracted an online learning program.

Both intermediaries and employers reported several barriers to maintaining and expanding their programs. This study did not identify the actual expenses associated with apprenticeship programs, but we did hear sponsors' concerns about sustaining program

funding and about the administrative burden associated with operating an apprenticeship. These concerns may dissuade some employers from continuing or expanding MA apprenticeship programs. Intermediary-sponsored MA apprenticeship programs appeared to alleviate administrative burden to employers and offered them a way to grow their own workforce without the time and expense of registering their own program.

CONCLUSIONS

Amid health care transformation, MAs have become one of the fastest-growing occupations with continually evolving and expanding roles across different health care settings. Apprenticeship is a relatively new strategy to meet health care employer workforce demand, and this study illustrates the range of apprenticeship approaches being used to develop the MA workforce across the U.S. Employers' motivations for deploying apprenticeship varied; some sought an approach to recruitment for hard-to-fill positions and others were more focused on ensuring their MA workforce had consistent and targeted skills for their workplace. There was general agreement, however, that administering apprenticeship programs required administration resources that were difficult for some employers to sustain. Wider communication of the value of apprenticeship for preparing people to become MAs, and identifying more funding mechanisms to support program administration, would address some of the key barriers to implementation and expansion.

As MA apprenticeship programs are further developed and more are implemented, ongoing study is needed to track the outcomes of different models. Health care's "Quadruple Aim" reminds us that system changes should improve population health, enhance the patient's care experience, reduce costs, and improve the work life of health care providers (Berwick, Nolan, & Whittington, 2008; Bodenheimer & Sinsky, 2014). Continued research is needed to follow the experiences of MA apprentices and their work settings, including how their competencies and career trajectories, job retention and satisfaction compare with MAs who entered the occupation through community and technical college training programs. Future studies should also compare the outcomes of different models of apprenticeship, such as competency-based versus time-based programs. MA preceptors and mentors play key roles in apprenticeship implementation, yet little is known about how these roles are selected and recognized. Further study is also needed to follow apprenticed MAs to see how their job retention and satisfaction compares with colleagues entering from traditional approaches.

Apprenticeship is not an immediate fix to solving gaps in MA workforce recruitment and training. It takes time to develop and implement an apprenticeship program and may not satisfy the MA workforce needs for all employers. Financial supports for starting and expanding programs would likely increase the number of programs. More studies are needed to better understand how to scale apprenticeship programs and measure their value in health care settings. This study provides, however, that apprenticeship creates a highly flexible resource for employers to use to recruit new MAs, and to upskill and train incumbent workers, and potentially support pathways for these "entry level" workers into MA careers.

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APPENDIX A.
SEMI-STRUCTURED INTERVIEW GUIDE QUESTIONS

1. What is the structure or design of your apprenticeship?

- Program length?
- How do you identify and assess qualified candidates for the apprenticeship?
- Is your program a registered apprenticeship?
- Is your program accredited?
- Do apprentices receive college credits? If so, from which/what type of institution? How many credits?
- Is there a fee for the program? If so, who pays?
  - ◊ Is your program employer-sponsored?
- Are your requirements time-based, competency-based or hybrid/combination?

2. What is the size of your program?

- How many apprentices have completed your program?
- How many are currently enrolled?
- How many employers are involved?
  - ◊ What settings? (i.e., hospital, outpatient, urban/rural, etc.)
- Is your apprenticeship expected to grow in the future?
  - ◊ If so, by how many apprentices? employers?

Organizational Model

3. When, why, and how did your program start?

- Who was involved?
- What was the demand for MAs in the environment?

4. How is the program organized? Who is responsible for what?

- Administration?
- Curriculum?

Challenges/Barriers

5. What challenges or barriers did you encounter when starting an apprenticeship program?

- Curriculum development/approval?
- Financial?
- Willing preceptors/supervisors/mentorship?
- Institutional support?

6. What challenges or barriers prevent you from expanding your apprenticeship to other sites?

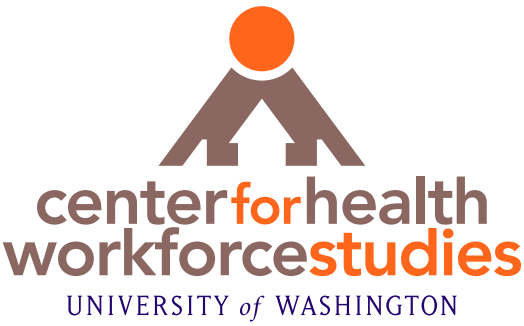
- State regulations/policy?
- Financial?
- Employer buy-in?

Facilitators/Helpful Resources

7. What resources have been most helpful with starting and maintaining the apprenticeship?

- Grant funding?
- Partners? (e.g., labor organizations)
- National or state organizations?
- Sponsoring institution?

8. What advice would you give to an employer looking to start an apprenticeship?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